5/10/2011 13:20:48

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/10/2011
Time : 13:20:48
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01664-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-12 | A_1_6B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-13 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-14 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01664-15 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |

# ALPHA SPECTRUM ANALYSIS

Sample Description: LCS
Batch Identification: B11-01664
Sample Identification: 11-01664-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:01
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2125 +/- 0.0044 on 4/9/10 20:56:03
Effective Efficiency: 0.2125 +/- 0.0044

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

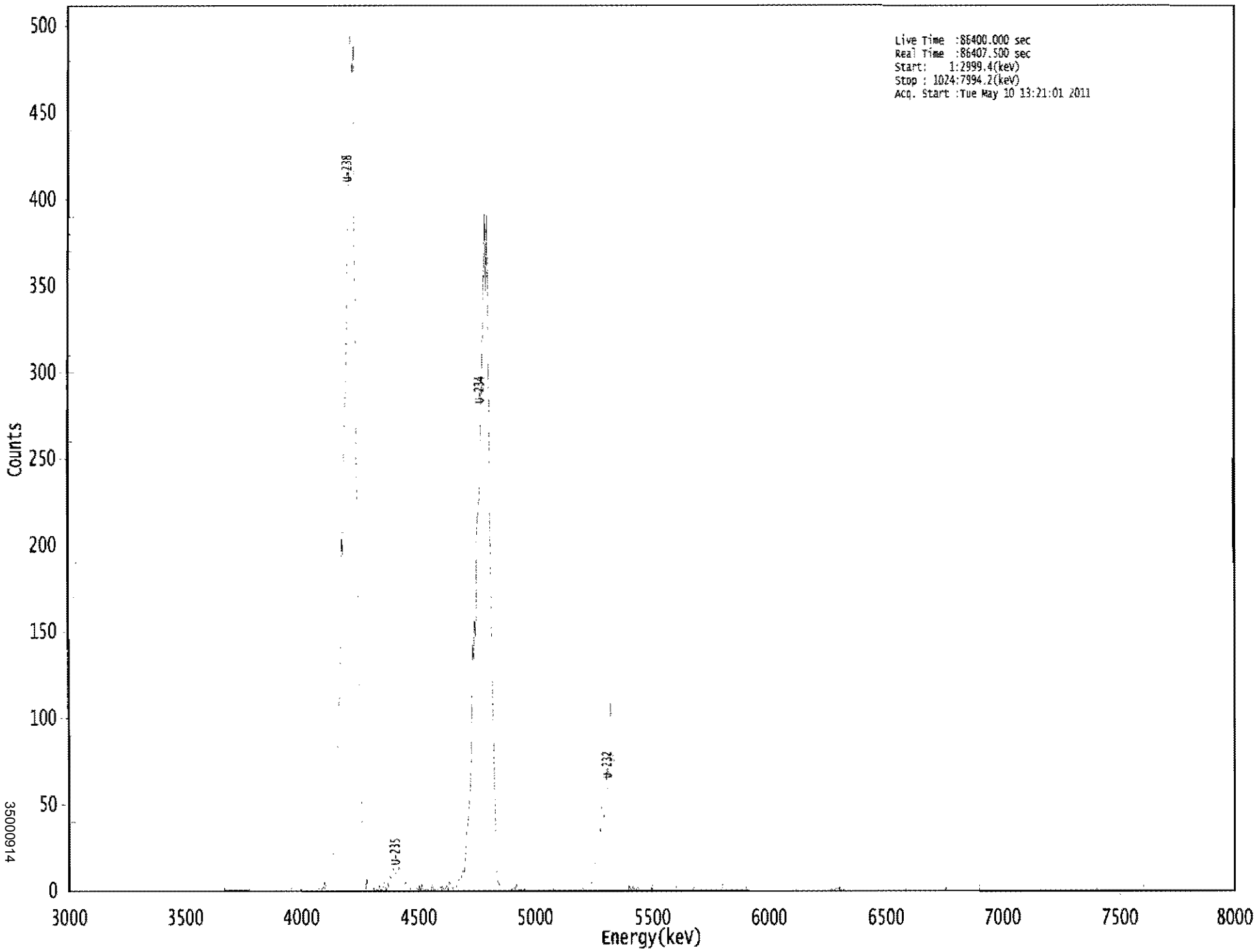
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5.313 | 1237.00 | 35.17 | 0.00 | 0.00E+000 | 49.0 |
| U-234 | 4.774 | 5109.00 | 71.48 | 0.00 | 0.00E+000 | 59.4 |
| U-235 | 4.407 | 180.00 | 13.42 | 0.00 | 0.00E+000 | 55.7 |
| U-238 | 4.207 | 6118.00 | 78.22 | 0.00 | 0.00E+000 | 54.3 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.8250E+000 | 3.51 | 3.9923E-003 | 2.06 |
| U-234 | 7.5375E+000 | 2.49 | 3.9923E-003 | 2.06 |
| U-235 | 3.2760E-001 | 7.73 | 4.9250E-003 | 2.06 |
| U-238 | 8.9874E+000 | 2.42 | 3.9752E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012245.CNF




35000914

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCSD
Batch Identification: B11-01664
Sample Identification: 11-01664-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:03
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1922 +/- 0.0040 on 4/9/10 20:56:53
Effective Efficiency: 0.1922 +/- 0.0040

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

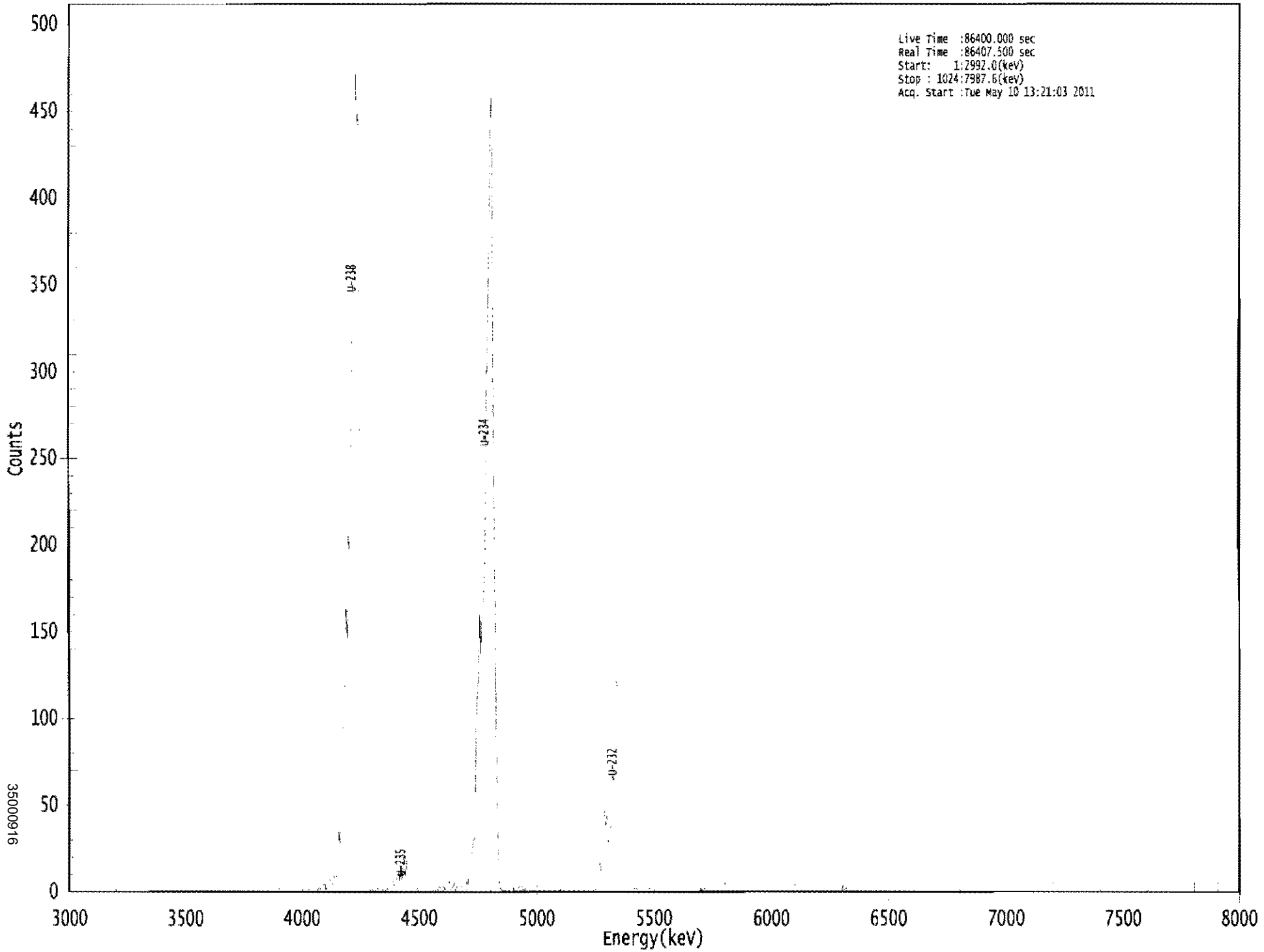
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5.320 | 1206.00 | 34.73 | 0.00 | 0.00E+000 | 37.8 |
| U-234 | 4.780 | 4548.00 | 67.44 | 0.00 | 0.00E+000 | 35.8 |
| U-235 | 4.416 | 180.00 | 13.42 | 0.00 | 0.00E+000 | 12.2 |
| U-238 | 4.213 | 4884.00 | 69.89 | 0.00 | 0.00E+000 | 38.6 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.9667E+000 | 3.54 | 4.4130E-003 | 2.06 |
| U-234 | 7.4168E+000 | 2.54 | 4.4130E-003 | 2.06 |
| U-235 | 3.6212E-001 | 7.73 | 5.4439E-003 | 2.06 |
| U-238 | 7.9306E+000 | 2.51 | 4.3940E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012246.CNF




35000916

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: MBL
Batch Identification: B11-01664
Sample Identification: 11-01664-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:05
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/9/10 20:57:28
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

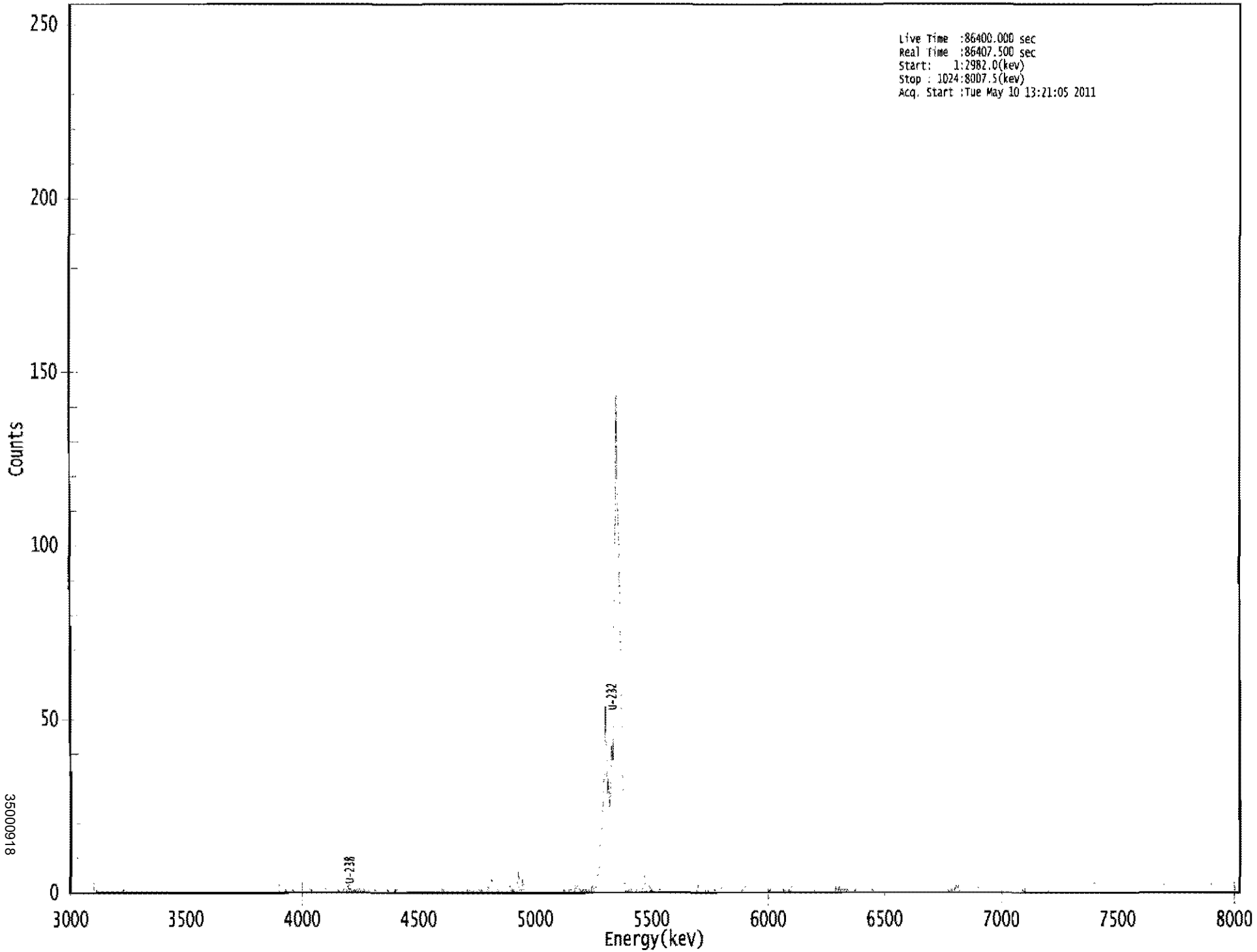
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5320.806 | 1174.00 | 34.26 | 0.00 | 0.00E+000 | 29.0 |
| U-234 | 4773.130 | 20.00 | 4.47 | 0.00 | 0.00E+000 | 8.2 |
| U-235 | 4372.273 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| U-238 | 4191.646 | 13.00 | 3.61 | 0.00 | 0.00E+000 | 7.4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.7005E+000 | 3.57 | 3.9196E-003 | 2.05 |
| U-234 | 2.8970E-002 | 22.45 | 3.9196E-003 | 2.05 |
| U-235 | 5.3607E-003 | 57.77 | 4.8354E-003 | 2.05 |
| U-238 | 1.8750E-002 | 27.81 | 3.9028E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012247.CNF




35000918

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-014
Batch Identification: B11-01664
Sample Identification: 11-01664-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:06
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2196 +/- 0.0045 on 4/9/10 20:58:18
Effective Efficiency: 0.2196 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

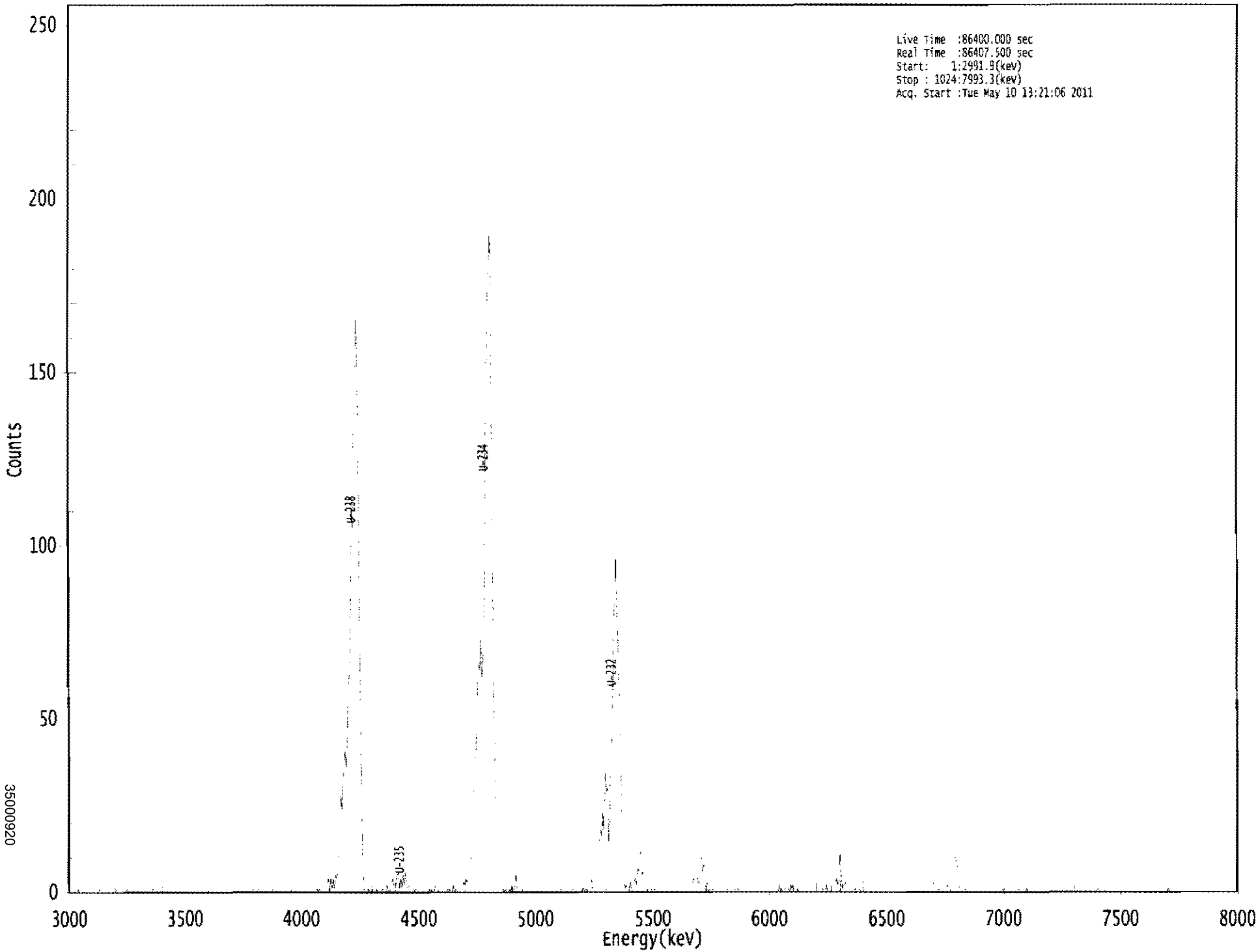
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5322.763 | 887.00 | 29.78 | 0.00 | 0.00E+000 | 33.1 |
| U-234 | 4781.101 | 1869.00 | 43.23 | 0.00 | 0.00E+000 | 34.4 |
| U-235 | 4415.175 | 52.00 | 7.21 | 0.00 | 0.00E+000 | 11.1 |
| U-238 | 4212.368 | 1567.00 | 39.59 | 0.00 | 0.00E+000 | 38.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.2662E+000 | 3.94 | 3.8630E-003 | 2.05 |
| U-234 | 2.6681E+000 | 3.09 | 3.8630E-003 | 2.05 |
| U-235 | 9.1575E-002 | 14.02 | 4.7655E-003 | 2.05 |
| U-238 | 2.2274E+000 | 3.26 | 3.8464E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012248.CNF




35000920

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-015
Batch Identification: B11-01664
Sample Identification: 11-01664-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:08
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2122 +/- 0.0044 on 4/11/10 09:13:21
Effective Efficiency: 0.2122 +/- 0.0044

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

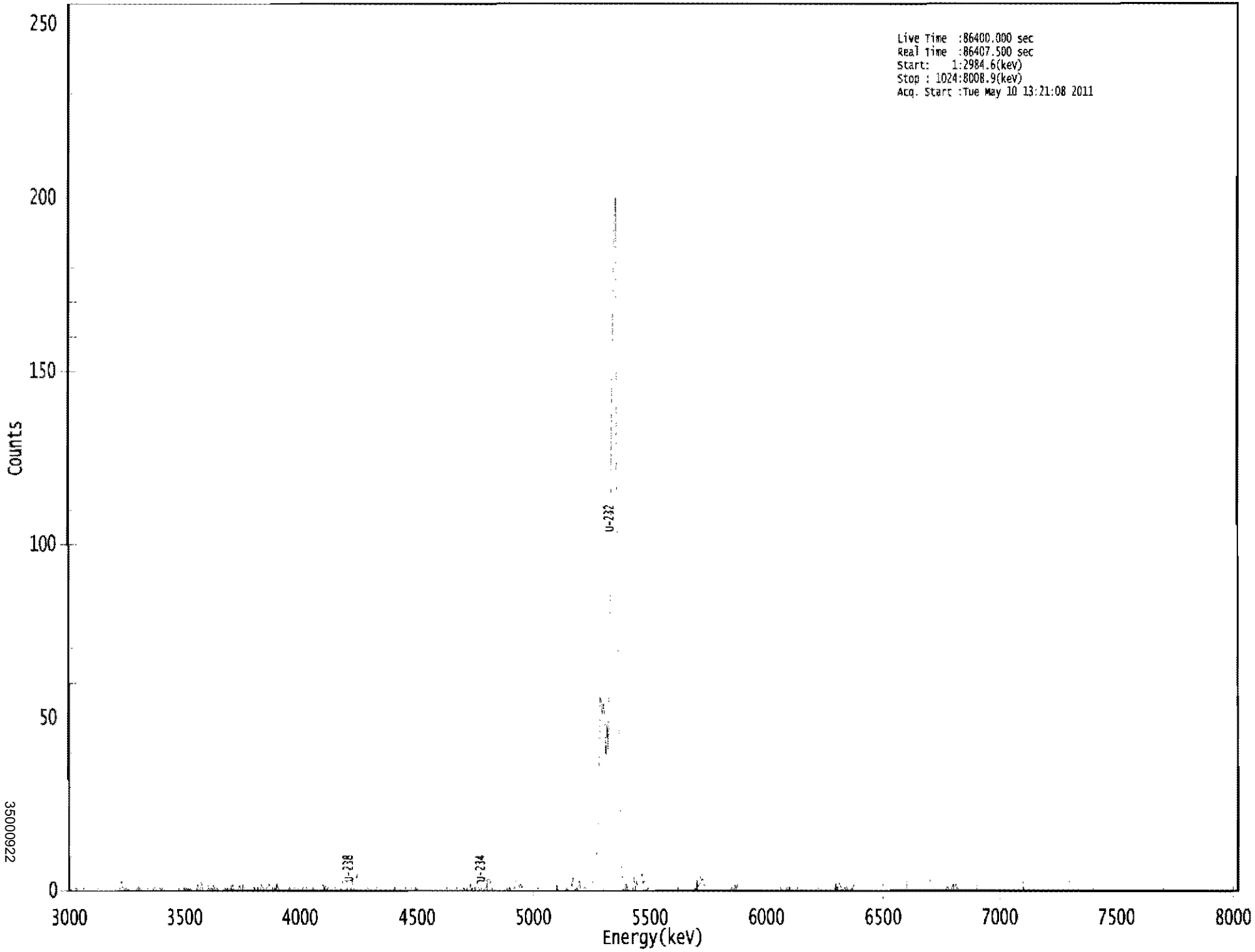
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5320.750 | 1675.00 | 40.93 | 0.00 | 0.00E+000 | 27.5 |
| U-234 | 4762.656 | 29.00 | 5.39 | 0.00 | 0.00E+000 | 13.1 |
| U-235 | 4439.569 | 4.00 | 2.00 | 0.00 | 0.00E+000 | 4.9 |
| U-238 | 4195.869 | 27.00 | 5.20 | 0.00 | 0.00E+000 | 8.2 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.4745E+000 | 3.19 | 3.9976E-003 | 2.06 |
| U-234 | 4.2842E-002 | 18.68 | 3.9976E-003 | 2.06 |
| U-235 | 7.2897E-003 | 50.04 | 4.9315E-003 | 2.06 |
| U-238 | 3.9716E-002 | 19.35 | 3.9805E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012249.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-016
Batch Identification: B11-01664
Sample Identification: 11-01664-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:10
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2061 +/- 0.0042 on 4/11/10 09:13:55
Effective Efficiency: 0.2061 +/- 0.0042

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

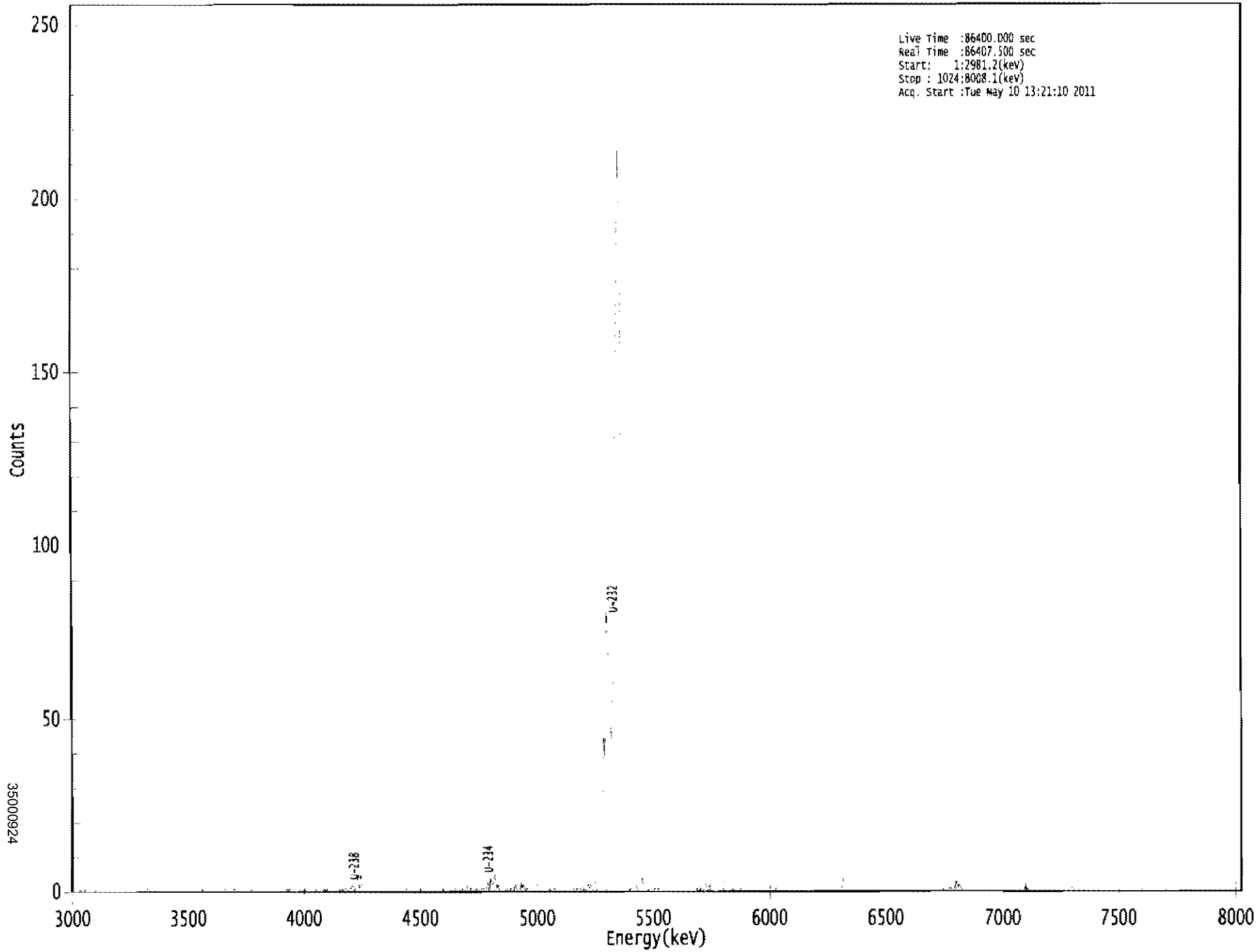
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5321.652 | 1866.00 | 43.20 | 0.00 | 0.00E+000 | 27.3 |
| U-234 | 4779.085 | 32.00 | 5.66 | 0.00 | 0.00E+000 | 13.5 |
| U-235 | 4452.928 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| U-238 | 4203.987 | 31.00 | 5.57 | 0.00 | 0.00E+000 | 10.2 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.8377E+000 | 3.10 | 4.1151E-003 | 2.06 |
| U-234 | 4.8663E-002 | 17.80 | 4.1151E-003 | 2.06 |
| U-235 | 3.7520E-003 | 70.74 | 5.0765E-003 | 2.06 |
| U-238 | 4.6940E-002 | 18.08 | 4.0974E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012250.CNF




35000924

# A L P H A S P E C T R U M A N A L Y S I S

Sample Description: ARS1-11-00897-017
Batch Identification: B11-01664
Sample Identification: 11-01664-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:12
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2259 +/- 0.0046 on 4/11/10 09:14:49
Effective Efficiency: 0.2259 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

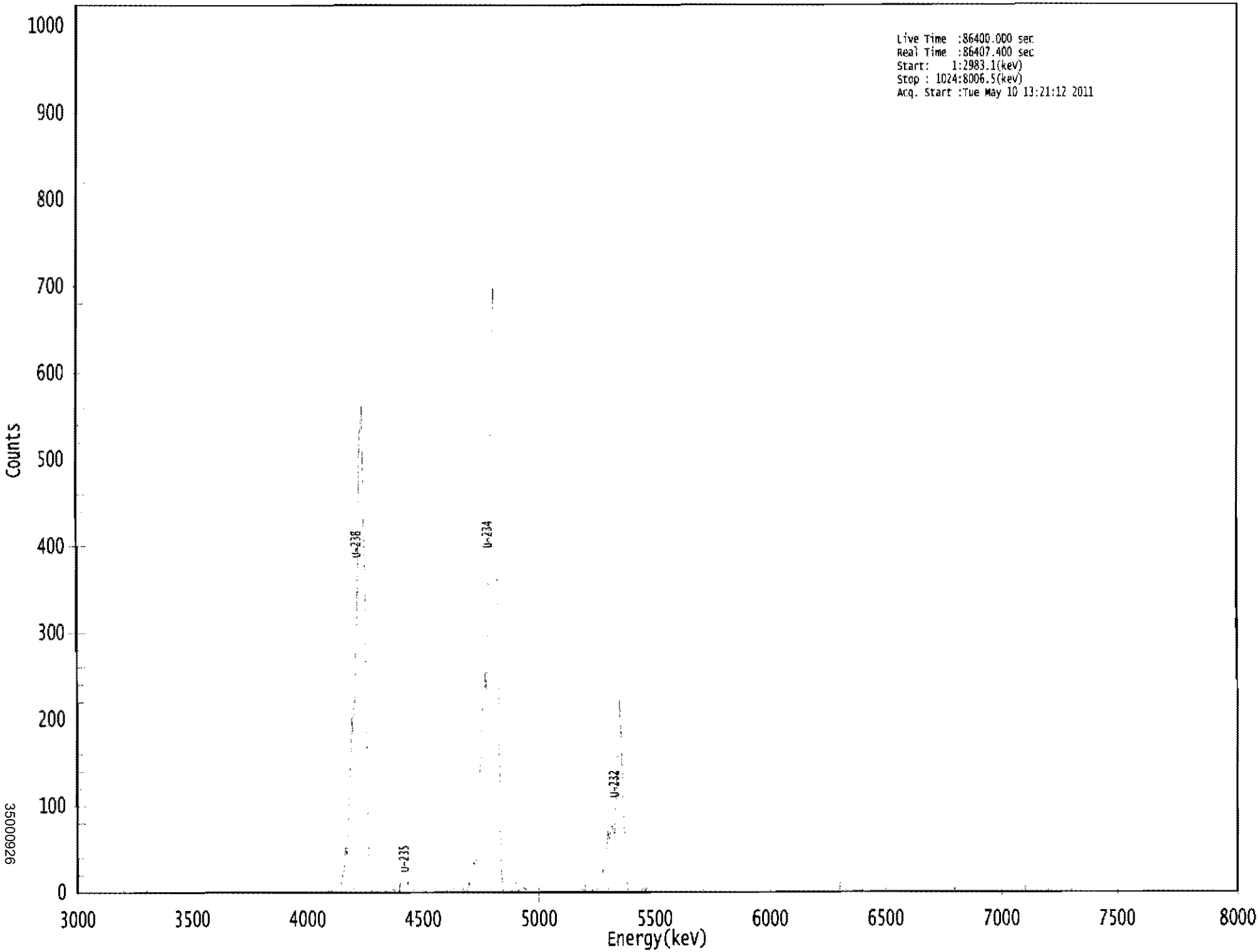
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5317.579 | 2012.00 | 44.86 | 0.00 | 0.00E+000 | 29.4 |
| U-234 | 4777.062 | 6874.00 | 82.91 | 0.00 | 0.00E+000 | 36.9 |
| U-235 | 4408.120 | 203.00 | 14.25 | 0.00 | 0.00E+000 | 20.2 |
| U-238 | 4207.106 | 5733.00 | 75.72 | 0.00 | 0.00E+000 | 42.4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.7913E+000 | 3.03 | 3.7542E-003 | 2.05 |
| U-234 | 9.5365E+000 | 2.38 | 3.7542E-003 | 2.05 |
| U-235 | 3.4742E-001 | 7.31 | 4.6312E-003 | 2.05 |
| U-238 | 7.9194E+000 | 2.44 | 3.7380E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012251.CNF




35000926

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-018
Batch Identification: B11-01664
Sample Identification: 11-01664-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:15
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/11/10 09:15:19
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

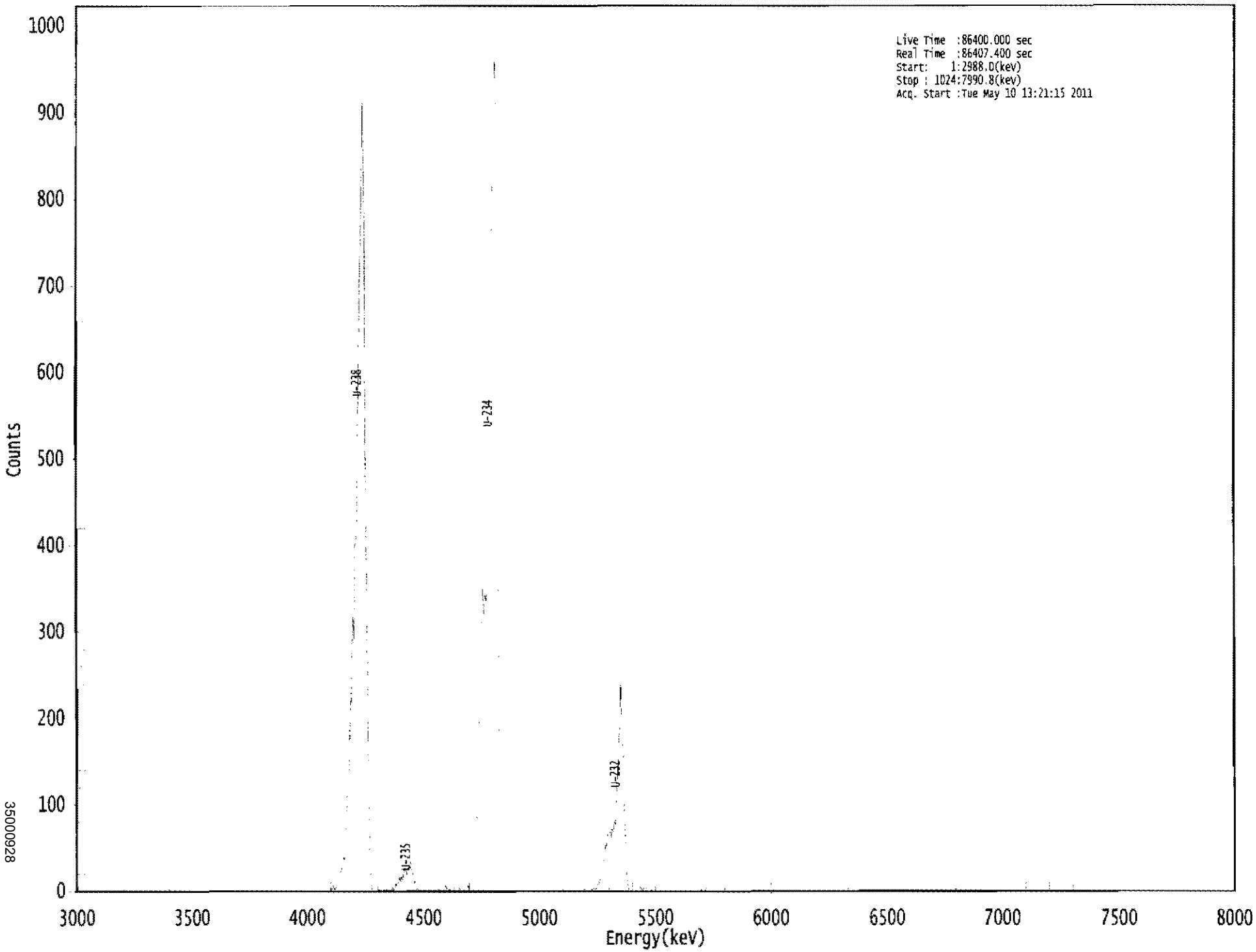
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5319.642 | 2192.00 | 46.82 | 0.00 | 0.00E+000 | 30.8 |
| U-234 | 4778.994 | 10041.00 | 100.20 | 0.00 | 0.00E+000 | 39.5 |
| U-235 | 4413.929 | 351.00 | 18.73 | 0.00 | 0.00E+000 | 42.8 |
| U-238 | 4212.021 | 8851.00 | 94.08 | 0.00 | 0.00E+000 | 36.8 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.1743E+000 | 2.96 | 3.9186E-003 | 2.05 |
| U-234 | 1.4540E+001 | 2.28 | 3.9186E-003 | 2.05 |
| U-235 | 6.2703E-001 | 5.72 | 4.8341E-003 | 2.05 |
| U-238 | 1.2762E+001 | 2.31 | 3.9018E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012253.CNF




35000928

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-019
Batch Identification: B11-01664
Sample Identification: 11-01664-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:16
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2092 +/- 0.0043 on 4/11/10 18:32:55
Effective Efficiency: 0.2092 +/- 0.0043

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

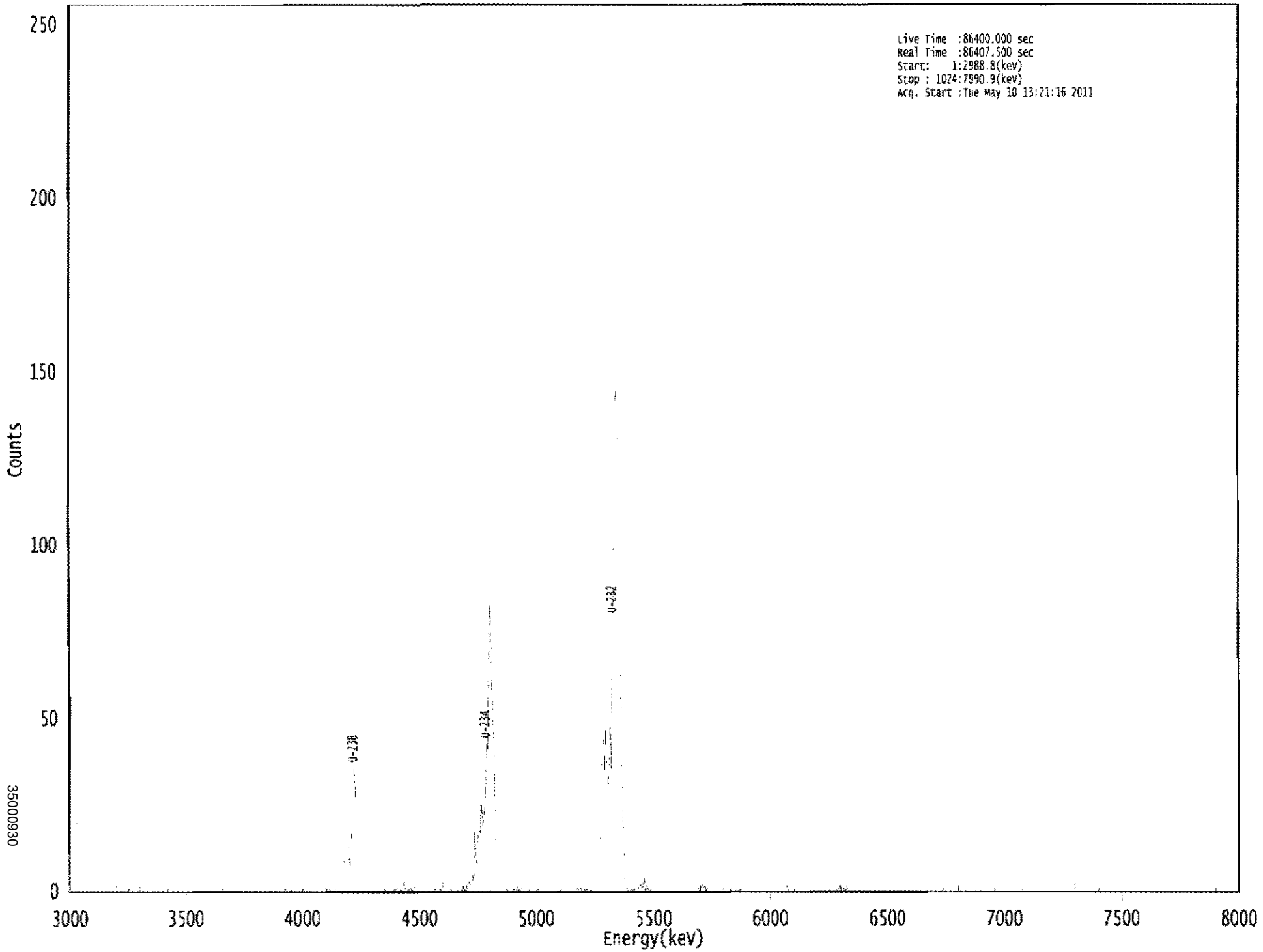
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5320.229 | 1358.00 | 36.85 | 0.00 | 0.00E+000 | 31.6 |
| U-234 | 4778.064 | 674.00 | 25.96 | 0.00 | 0.00E+000 | 25.0 |
| U-235 | 4425.989 | 14.00 | 3.74 | 0.00 | 0.00E+000 | 6.1 |
| U-238 | 4212.030 | 367.00 | 19.16 | 0.00 | 0.00E+000 | 35.0 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.0346E+000 | 3.41 | 4.0542E-003 | 2.06 |
| U-234 | 1.0098E+000 | 4.37 | 4.0542E-003 | 2.06 |
| U-235 | 2.5875E-002 | 26.81 | 5.0013E-003 | 2.06 |
| U-238 | 5.4748E-001 | 5.61 | 4.0368E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012254.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-020
Batch Identification: B11-01664
Sample Identification: 11-01664-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:19
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2047 +/- 0.0042 on 4/11/10 18:33:27
Effective Efficiency: 0.2047 +/- 0.0042

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

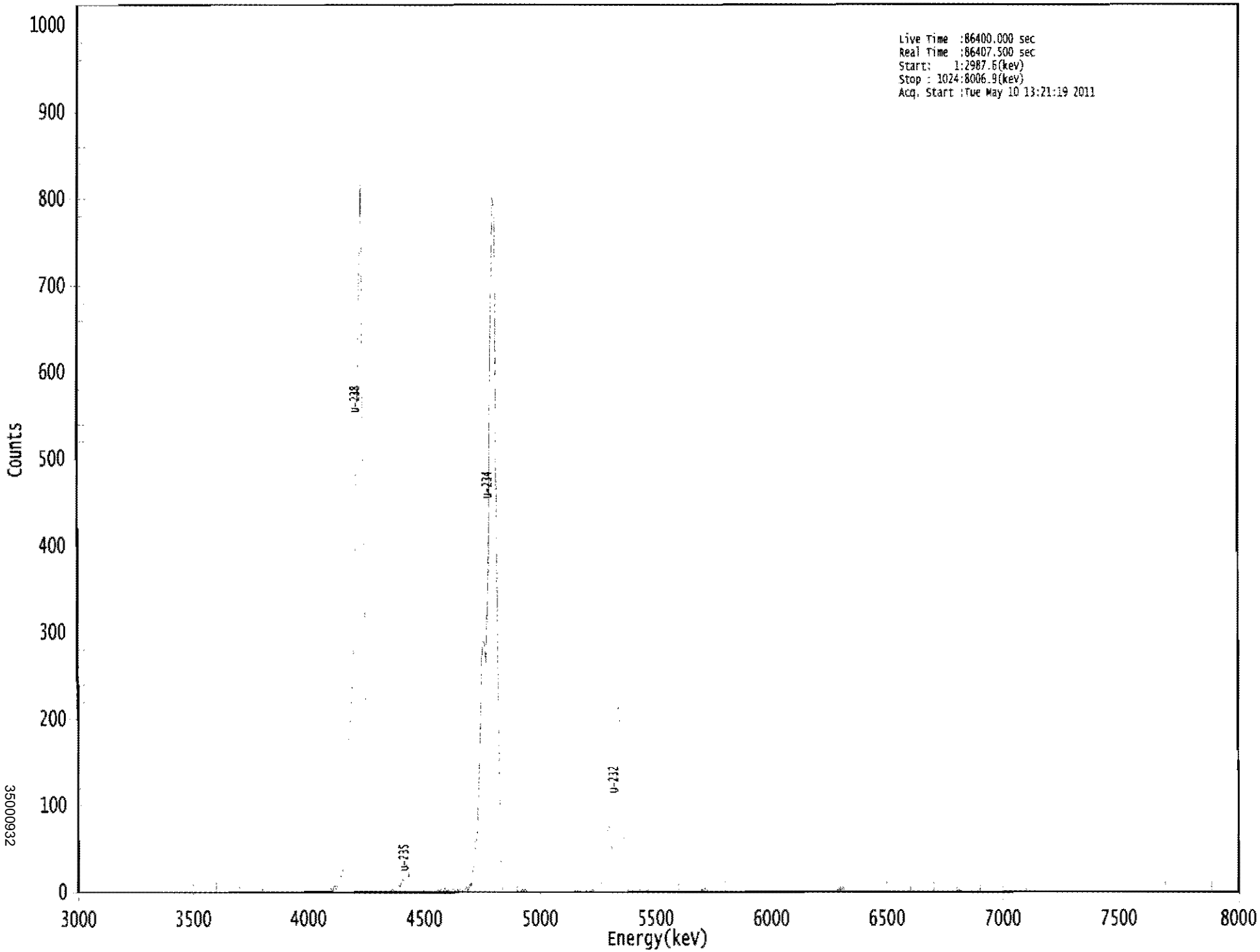
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5315.233 | 2083.00 | 45.64 | 0.00 | 0.00E+000 | 34.7 |
| U-234 | 4774.116 | 8125.00 | 90.14 | 0.00 | 0.00E+000 | 35.4 |
| U-235 | 4403.631 | 268.00 | 16.37 | 0.00 | 0.00E+000 | 31.4 |
| U-238 | 4204.225 | 7348.00 | 85.72 | 0.00 | 0.00E+000 | 34.7 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.1890E+000 | 3.01 | 4.1428E-003 | 2.06 |
| U-234 | 1.2439E+001 | 2.34 | 4.1428E-003 | 2.06 |
| U-235 | 5.0615E-001 | 6.45 | 5.1106E-003 | 2.06 |
| U-238 | 1.1201E+001 | 2.37 | 4.1250E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012255.CNF




35000932

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-021
Batch Identification: B11-01664
Sample Identification: 11-01664-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:21
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/11/10 18:33:56
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

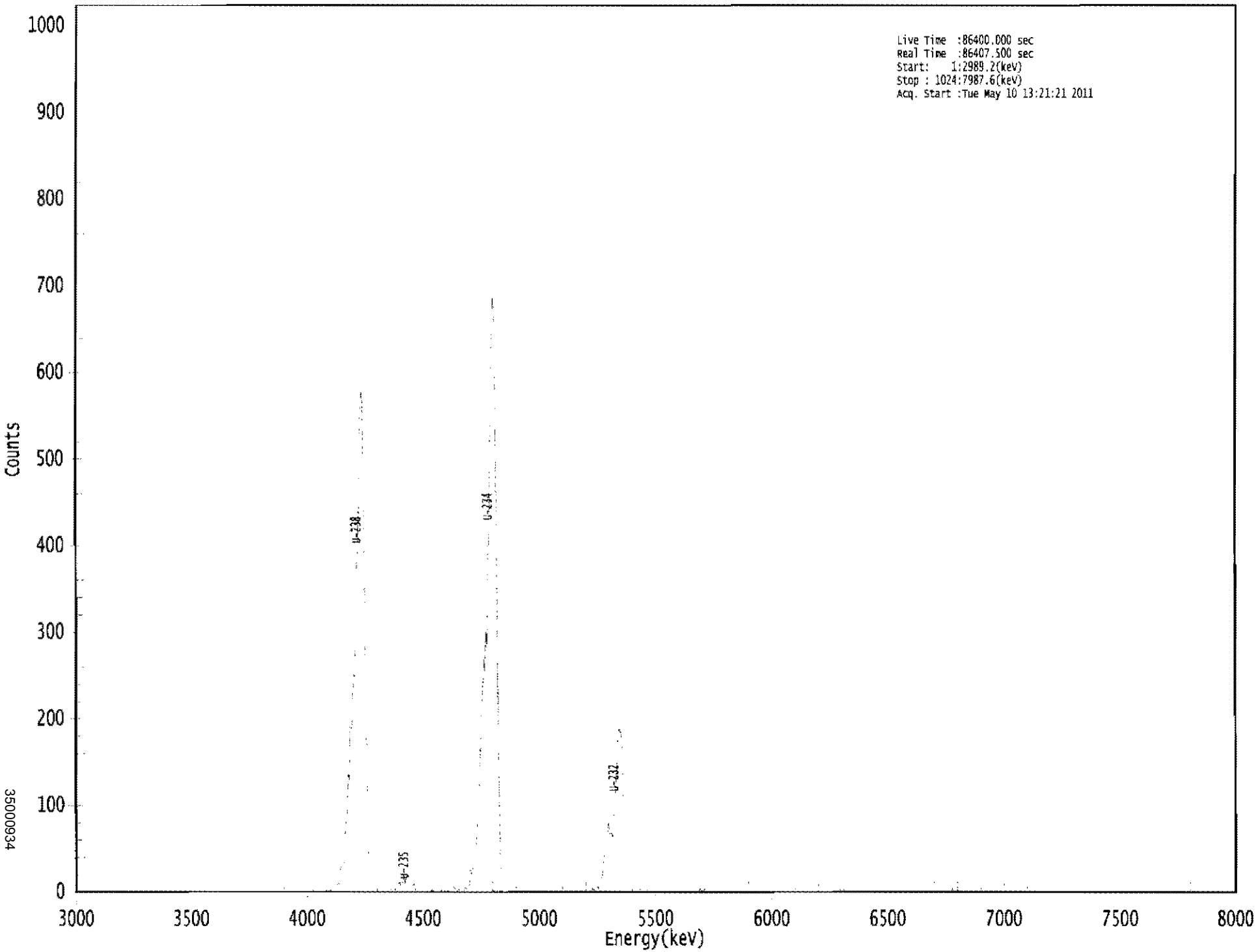
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5316.871 | 2076.00 | 45.56 | 0.00 | 0.00E+000 | 39.6 |
| U-234 | 4778.088 | 7157.00 | 84.60 | 0.00 | 0.00E+000 | 39.7 |
| U-235 | 4410.927 | 234.00 | 15.30 | 0.00 | 0.00E+000 | 29.9 |
| U-238 | 4209.464 | 6113.00 | 78.19 | 0.00 | 0.00E+000 | 42.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.8920E+000 | 3.00 | 3.7696E-003 | 2.05 |
| U-234 | 9.9700E+000 | 2.37 | 3.7696E-003 | 2.05 |
| U-235 | 4.0213E-001 | 6.85 | 4.6503E-003 | 2.05 |
| U-238 | 8.4792E+000 | 2.42 | 3.7534E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012256.CNF




35000934

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-022
Batch Identification: B11-01664
Sample Identification: 11-01664-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 1 6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:23
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86407.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2243 +/- 0.0046 on 4/11/10 18:34:27
Effective Efficiency: 0.2243 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

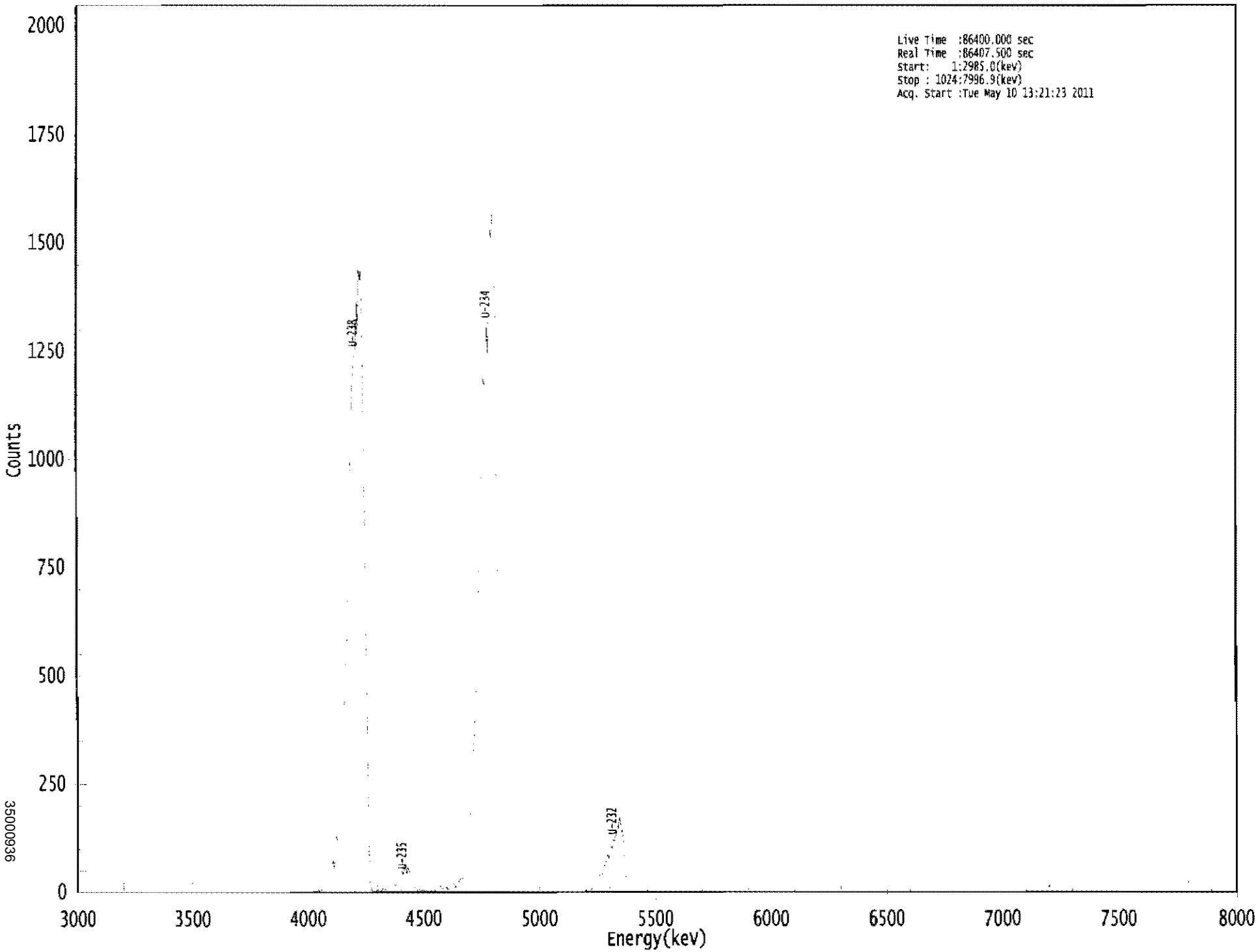
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5303.550 | 2481.00 | 49.81 | 0.00 | 0.00E+000 | 64.3 |
| U-234 | 4760.986 | 25365.00 | 159.26 | 0.00 | 0.00E+000 | 76.4 |
| U-235 | 4397.835 | 832.00 | 28.84 | 0.00 | 0.00E+000 | 68.0 |
| U-238 | 4190.700 | 23530.00 | 153.39 | 0.00 | 0.00E+000 | 76.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.4670E+000 | 2.87 | 3.7814E-003 | 2.05 |
| U-234 | 3.5445E+001 | 2.15 | 3.7814E-003 | 2.05 |
| U-235 | 1.4343E+000 | 4.03 | 4.6649E-003 | 2.05 |
| U-238 | 3.2740E+001 | 2.15 | 3.7652E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012257.CNF




3500936

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-023
Batch Identification: B11-01664
Sample Identification: 11-01664-13
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:25
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86428.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

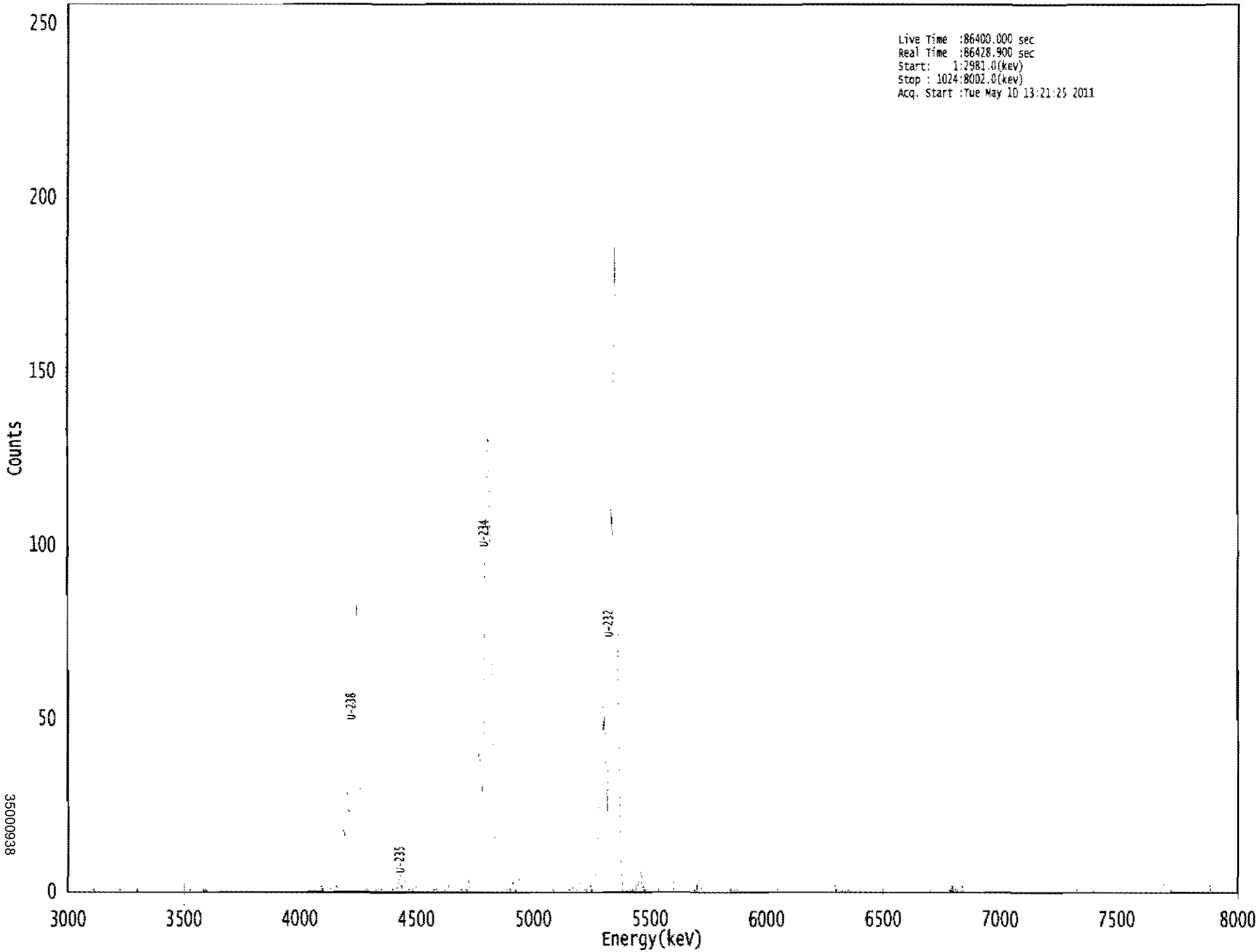
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5314.520 | 1473.00 | 38.38 | 0.00 | 0.00E+000 | 29.1 |
| U-234 | 4777.094 | 1110.00 | 33.32 | 0.00 | 0.00E+000 | 31.4 |
| U-235 | 4414.618 | 33.00 | 5.74 | 0.00 | 0.00E+000 | 11.5 |
| U-238 | 4209.434 | 675.00 | 25.98 | 0.00 | 0.00E+000 | 29.8 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.0937E+000 | 3.32 | 3.8462E-003 | 2.06 |
| U-234 | 1.5777E+000 | 3.64 | 3.8462E-003 | 2.06 |
| U-235 | 5.7863E-002 | 17.53 | 4.7448E-003 | 2.06 |
| U-238 | 9.5530E-001 | 4.36 | 3.8297E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012258.CNF




35000938

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-024
Batch Identification: B11-01664
Sample Identification: 11-01664-14
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:27
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86429.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

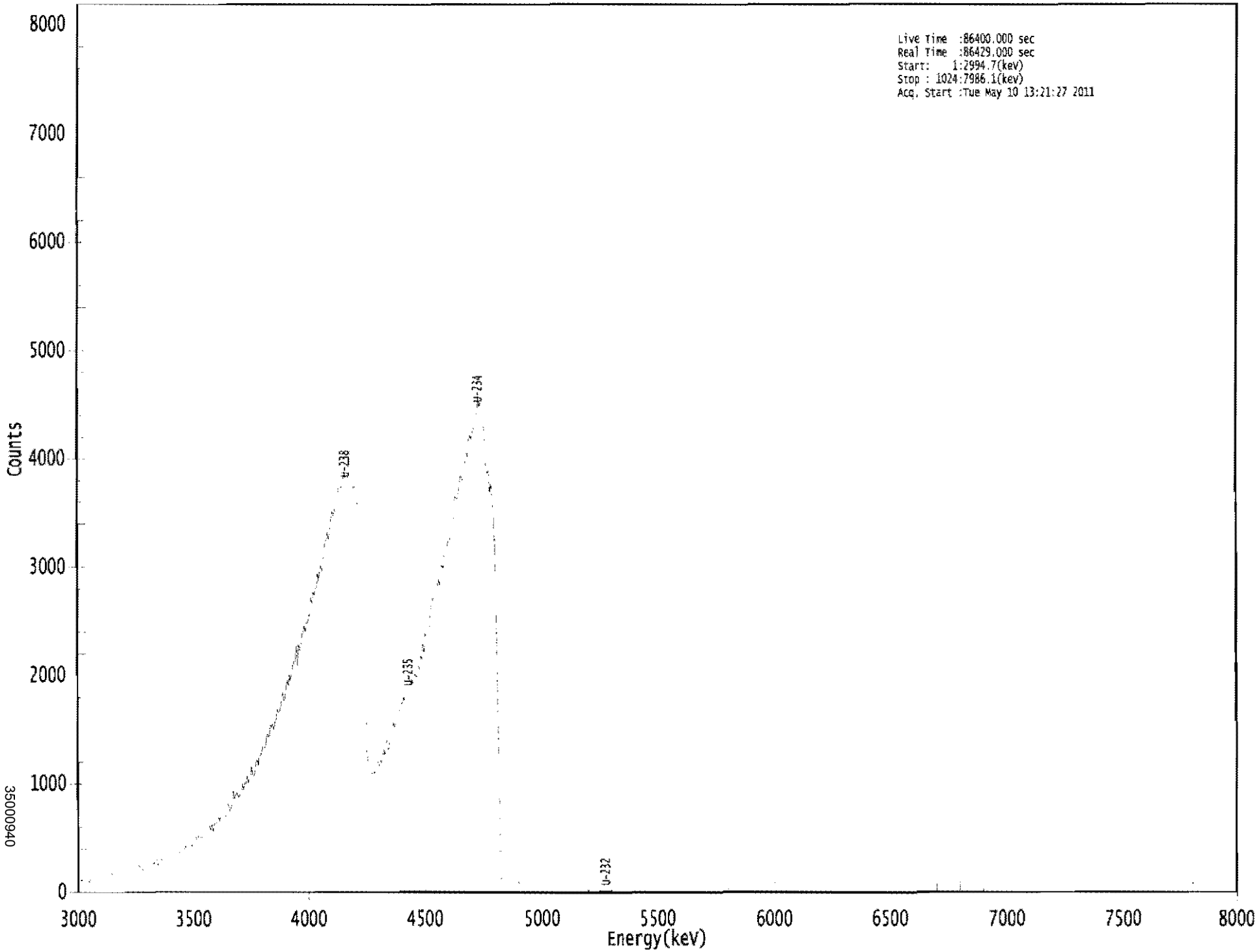
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5274.654 | 252.00 | 15.87 | 0.00 | 0.00E+000 | 10.0 |
| U-234 | 4730.023 | 124641.0 | 353.05 | 0.00 | 0.00E+000 | 4.9 |
| U-235 | 4427.907 | 59058.00 | 243.02 | 0.00 | 0.00E+000 | 137.5 |
| U-238 | 4160.958 | 119549.0 | 345.76 | 0.00 | 0.00E+000 | 227.4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.6777E-001 | 6.63 | 3.9492E-003 | 2.05 |
| U-234 | 1.8190E+002 | 2.07 | 3.9492E-003 | 2.05 |
| U-235 | 1.0633E+002 | 2.10 | 4.8718E-003 | 2.05 |
| U-238 | 1.7372E+002 | 2.08 | 3.9323E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012261.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-025
Batch Identification: B11-01664
Sample Identification: 11-01664-15
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/10/11 13:21:29
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86428.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

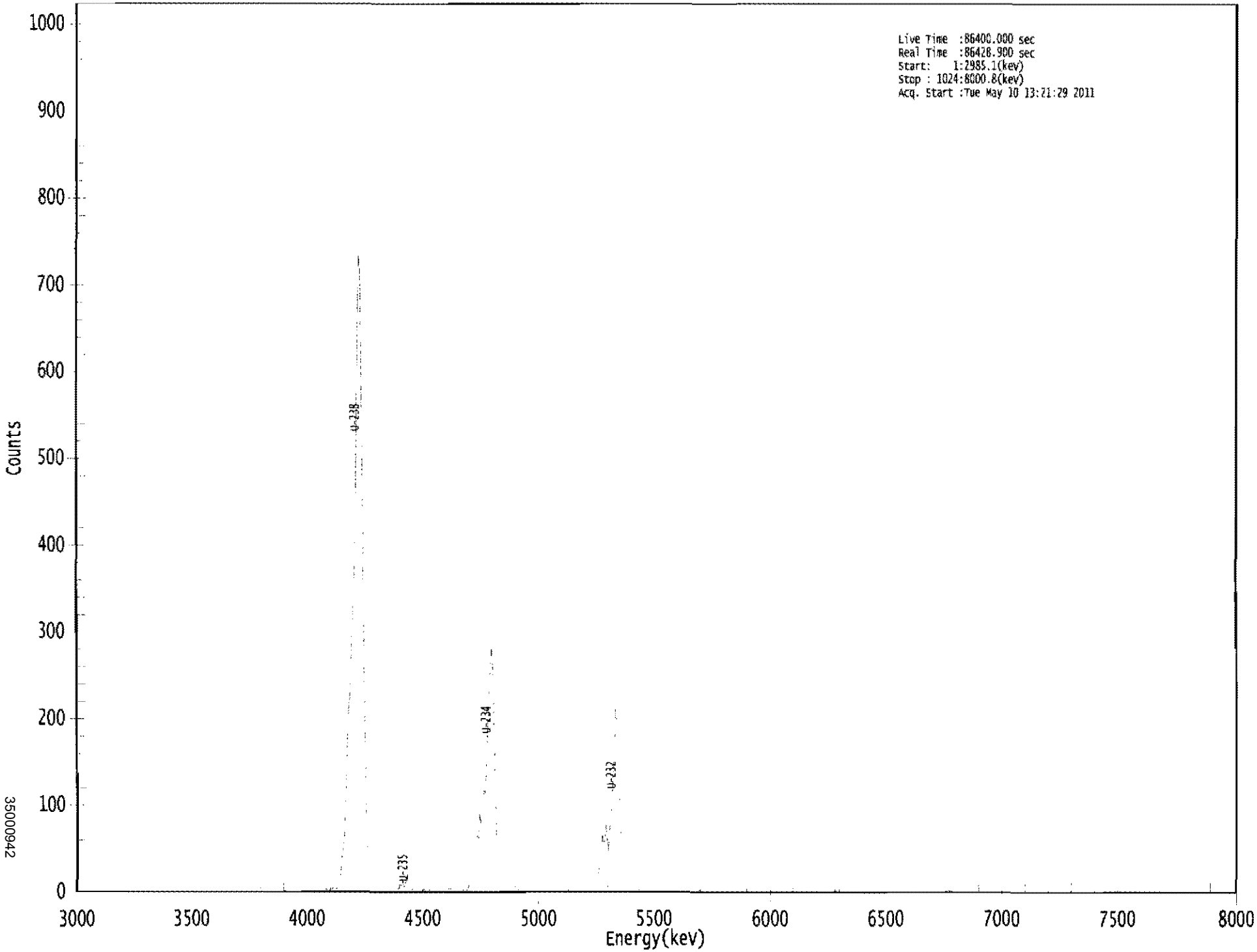
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5302.995 | 2020.00 | 44.94 | 0.00 | 0.00E+000 | 32.6 |
| U-234 | 4765.309 | 2837.00 | 53.26 | 0.00 | 0.00E+000 | 36.3 |
| U-235 | 4401.880 | 154.00 | 12.41 | 0.00 | 0.00E+000 | 11.5 |
| U-238 | 4200.495 | 7333.00 | 85.63 | 0.00 | 0.00E+000 | 38.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.8368E+000 | 3.03 | 3.8003E-003 | 2.05 |
| U-234 | 3.9842E+000 | 2.78 | 3.8003E-003 | 2.05 |
| U-235 | 2.6680E-001 | 8.32 | 4.6881E-003 | 2.05 |
| U-238 | 1.0254E+001 | 2.36 | 3.7840E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012260.CNF




35000942

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ApexAlpha | ARS1-B11-01664-01 | U-232 | 1737 | 1440 | 0 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 2 | ApexAlpha | ARS1-B11-01664-01 | U-234 | 5109 | 1440 | 14 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 3 | ApexAlpha | ARS1-B11-01664-01 | U-235 | 180 | 1440 | 1 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 4 | ApexAlpha | ARS1-B11-01664-01 | U-238 | 6118 | 1440 | 12 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 5 | ApexAlpha | ARS1-B11-01664-02 | U-232 | 1206 | 1440 | 3 | 1440 | 0.19 | 05/10/11 13:21 | A_1 |
| 6 | ApexAlpha | ARS1-B11-01664-02 | U-234 | 4549 | 1440 | 6 | 1440 | 0.19 | 05/10/11 13:21 | A_1 |
| 7 | ApexAlpha | ARS1-B11-01664-02 | U-235 | 180 | 1440 | 2 | 1440 | 0.19 | 05/10/11 13:21 | A_1 |
| 8 | ApexAlpha | ARS1-B11-01664-02 | U-238 | 4884 | 1440 | 0 | 1440 | 0.19 | 05/10/11 13:21 | A_1 |
| 9 | ApexAlpha | ARS1-B11-01664-03 | U-232 | 1174 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 10 | ApexAlpha | ARS1-B11-01664-03 | U-234 | 20 | 1440 | 5 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 11 | ApexAlpha | ARS1-B11-01664-03 | U-235 | 3 | 1440 | 1 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 12 | ApexAlpha | ARS1-B11-01664-03 | U-238 | 13 | 1440 | 2 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 13 | ApexAlpha | ARS1-B11-01664-04 | U-232 | 887 | 1440 | 2 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 14 | ApexAlpha | ARS1-B11-01664-04 | U-234 | 1869 | 1440 | 7 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 15 | ApexAlpha | ARS1-B11-01664-04 | U-235 | 52 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 16 | ApexAlpha | ARS1-B11-01664-04 | U-238 | 1567 | 1440 | 3 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 17 | ApexAlpha | ARS1-B11-01664-05 | U-232 | 1675 | 1440 | 1 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 18 | ApexAlpha | ARS1-B11-01664-05 | U-234 | 29 | 1440 | 4 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 19 | ApexAlpha | ARS1-B11-01664-05 | U-235 | 4 | 1440 | 3 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 20 | ApexAlpha | ARS1-B11-01664-05 | U-238 | 27 | 1440 | 14 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 21 | ApexAlpha | ARS1-B11-01664-06 | U-232 | 1866 | 1440 | 1 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 22 | ApexAlpha | ARS1-B11-01664-06 | U-234 | 32 | 1440 | 7 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 23 | ApexAlpha | ARS1-B11-01664-06 | U-235 | 2 | 1440 | 0 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 24 | ApexAlpha | ARS1-B11-01664-06 | U-238 | 31 | 1440 | 0 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 25 | ApexAlpha | ARS1-B11-01664-07 | U-232 | 2012 | 1440 | 1 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 26 | ApexAlpha | ARS1-B11-01664-07 | U-234 | 6874 | 1440 | 2 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 27 | ApexAlpha | ARS1-B11-01664-07 | U-235 | 203 | 1440 | 2 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 28 | ApexAlpha | ARS1-B11-01664-07 | U-238 | 5733 | 1440 | 0 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 29 | ApexAlpha | ARS1-B11-01664-08 | U-232 | 2192 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 30 | ApexAlpha | ARS1-B11-01664-08 | U-234 | 10041 | 1440 | 6 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 31 | ApexAlpha | ARS1-B11-01664-08 | U-235 | 351 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 32 | ApexAlpha | ARS1-B11-01664-08 | U-238 | 8851 | 1440 | 4 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 33 | ApexAlpha | ARS1-B11-01664-09 | U-232 | 1358 | 1440 | 2 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 34 | ApexAlpha | ARS1-B11-01664-09 | U-234 | 674 | 1440 | 3 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 35 | ApexAlpha | ARS1-B11-01664-09 | U-235 | 14 | 1440 | 0 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 36 | ApexAlpha | ARS1-B11-01664-09 | U-238 | 367 | 1440 | 3 | 1440 | 0.21 | 05/10/11 13:21 | A_1 |
| 37 | ApexAlpha | ARS1-B11-01664-10 | U-232 | 2083 | 1440 | 2 | 1440 | 0.20 | 05/10/11 13:21 | A_1 |
| 38 | ApexAlpha | ARS1-B11-01664-10 | U-234 | 8125 | 1440 | 10 | 1440 | 0.20 | 05/10/11 13:21 | A_1 |
| 39 | ApexAlpha | ARS1-B11-01664-10 | U-235 | 268 | 1440 | 1 | 1440 | 0.20 | 05/10/11 13:21 | A_1 |
| 40 | ApexAlpha | ARS1-B11-01664-10 | U-238 | 7348 | 1440 | 5 | 1440 | 0.20 | 05/10/11 13:21 | A_1 |
| 41 | ApexAlpha | ARS1-B11-01664-11 | U-232 | 2076 | 1440 | 2 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 42 | ApexAlpha | ARS1-B11-01664-11 | U-234 | 7157 | 1440 | 6 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 43 | ApexAlpha | ARS1-B11-01664-11 | U-235 | 234 | 1440 | 2 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 44 | ApexAlpha | ARS1-B11-01664-11 | U-238 | 6113 | 1440 | 12 | 1440 | 0.23 | 05/10/11 13:21 | A_1 |
| 45 | ApexAlpha | ARS1-B11-01664-12 | U-232 | 2481 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 46 | ApexAlpha | ARS1-B11-01664-12 | U-234 | 25365 | 1440 | 2 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 47 | ApexAlpha | ARS1-B11-01664-12 | U-235 | 832 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 48 | ApexAlpha | ARS1-B11-01664-12 | U-238 | 23530 | 1440 | 1 | 1440 | 0.22 | 05/10/11 13:21 | A_1 |
| 49 | ApexAlpha | ARS1-B11-01664-13 | U-232 | 1473 | 1440 | 1 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 50 | ApexAlpha | ARS1-B11-01664-13 | U-234 | 1110 | 1440 | 3 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 51 | ApexAlpha | ARS1-B11-01664-13 | U-235 | 33 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 52 | ApexAlpha | ARS1-B11-01664-13 | U-238 | 675 | 1440 | 1 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | ApexAlpha | ARS1-B11-01664-14 | U-232 | 252 | 1440 | 4 | 1440 | 0.21 | 05/10/11 13:21 | A_2 |
| 54 | ApexAlpha | ARS1-B11-01664-14 | U-234 | 124641 | 1440 | 2 | 1440 | 0.21 | 05/10/11 13:21 | A_2 |
| 55 | ApexAlpha | ARS1-B11-01664-14 | U-235 | 59058 | 1440 | 1 | 1440 | 0.21 | 05/10/11 13:21 | A_2 |
| 56 | ApexAlpha | ARS1-B11-01664-14 | U-238 | 119549 | 1440 | 3 | 1440 | 0.21 | 05/10/11 13:21 | A_2 |
| 57 | ApexAlpha | ARS1-B11-01664-15 | U-232 | 2020 | 1440 | 2 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 58 | ApexAlpha | ARS1-B11-01664-15 | U-234 | 2837 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 59 | ApexAlpha | ARS1-B11-01664-15 | U-235 | 154 | 1440 | 0 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |
| 60 | ApexAlpha | ARS1-B11-01664-15 | U-238 | 7333 | 1440 | 4 | 1440 | 0.22 | 05/10/11 13:21 | A_2 |

| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01664-01 | | | | 1 | U-232 | 4.212871913 | 0.560689336 | 0.286065988 | 0.560689336 | 0.009229493 | 0 | 0.234773717 | 0.11978251 | 0.23477372 | pCi |
| ARS1-B11-01664-01 | | | | 1 | U-234 | 17.33146645 | 2.148360578 | 1.096102336 | 2.148360578 | 0.06843818 | 0.029609839 | 0.47720982 | 0.2434744 | 0.47720982 | pCi |
| ARS1-B11-01664-01 | | | | 1 | U-235 | 0.705783531 | 0.13448557 | 0.068615087 | 0.13448557 | 0.029030819 | 0.009172746 | 0.10397139 | 0.05304663 | 0.10397139 | pCi |
| ARS1-B11-01664-01 | | | | 1 | U-238 | 20.72900425 | 2.558909876 | 1.305566263 | 2.558909876 | 0.063917177 | 0.027358556 | 0.520964283 | 0.2657981 | 0.52096428 | pCi |
| ARS1-B11-01664-02 | | | | 1 | U-232 | 4.216140239 | 0.562764456 | 0.287124722 | 0.562764456 | 0.037741364 | 0.014121829 | 0.238846369 | 0.12186039 | 0.23884637 | pCi |
| ARS1-B11-01664-02 | | | | 1 | U-234 | 15.89934077 | 1.976594802 | 1.008466736 | 1.976594802 | 0.0493814 | 0.019947502 | 0.463003818 | 0.23622644 | 0.46300382 | pCi |
| ARS1-B11-01664-02 | | | | 1 | U-235 | 0.722236374 | 0.136312073 | 0.070567384 | 0.136312073 | 0.037694247 | 0.0133492 | 0.107287993 | 0.05473877 | 0.10728799 | pCi |
| ARS1-B11-01664-02 | | | | 1 | U-238 | 17.06232308 | 2.116954101 | 1.080078623 | 2.116954101 | 0.009467423 | 0 | 0.478526954 | 0.2441464 | 0.47852695 | pCi |
| ARS1-B11-01664-03 | | | | 1 | U-232 | 4.220634187 | 0.564358749 | 0.287938137 | 0.564358749 | 0.009742691 | 0 | 0.241434726 | 0.12318098 | 0.24143473 | pCi |
| ARS1-B11-01664-03 | | | | 1 | U-234 | 0.05386212 | 0.035786979 | 0.018258663 | 0.035786979 | 0.047089474 | 0.018679192 | 0.035189918 | 0.01795404 | 0.03518992 | pCi |
| ARS1-B11-01664-03 | | | | 1 | U-235 | 0.008324335 | 0.016346686 | 0.008340146 | 0.016346686 | 0.030645051 | 0.009682789 | 0.016315696 | 0.00832433 | 0.0163157 | pCi |
| ARS1-B11-01664-03 | | | | 1 | U-238 | 0.039419888 | 0.027617526 | 0.014090574 | 0.027617526 | 0.033291887 | 0.01179013 | 0.027203476 | 0.01387932 | 0.02720348 | pCi |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | U-232 | 8.30456574 | 1.143730999 | 0.583536224 | 1.143730999 | 0.087174481 | 0.03087234 | 0.548378739 | 0.27978507 | 0.54837874 | pCi |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | U-234 | 17.44528511 | 2.253477615 | 1.149733477 | 2.253477615 | 0.140724545 | 0.057667127 | 0.795373072 | 0.40580259 | 0.79537307 | pCi |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | U-235 | 0.564714659 | 0.167981663 | 0.08570493 | 0.167981663 | 0.029430322 | 0 | 0.153491193 | 0.07831183 | 0.15349119 | pCi |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | U-238 | 14.62398112 | 1.910820331 | 0.974908332 | 1.910820331 | 0.10069248 | 0.037676487 | 0.726164087 | 0.37049188 | 0.72616409 | pCi |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | U-232 | 8.337260881 | 1.083999796 | 0.553061121 | 1.083999796 | 0.036669816 | 0.011566409 | 0.399632699 | 0.20389423 | 0.3996327 | pCi |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | U-234 | 0.124317619 | 0.057970379 | 0.029576724 | 0.057970379 | 0.05974966 | 0.023136815 | 0.055989388 | 0.02856601 | 0.05598939 | pCi |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | U-235 | 0.005763947 | 0.02989806 | 0.015254112 | 0.02989806 | 0.062070918 | 0.02322531 | 0.029889943 | 0.01524997 | 0.02986994 | pCi |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | U-238 | 0.064515862 | 0.062769426 | 0.032025217 | 0.062769426 | 0.099845957 | 0.04319844 | 0.062283233 | 0.03177716 | 0.06228323 | pCi |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | U-232 | 8.328857655 | 1.075336012 | 0.548640822 | 1.075336012 | 0.032881181 | 0.010389329 | 0.378211591 | 0.1929651 | 0.37821159 | pCi |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | U-234 | 0.111476496 | 0.056218106 | 0.028682707 | 0.056218106 | 0.066975314 | 0.027445631 | 0.054579767 | 0.02784682 | 0.05457977 | pCi |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | U-235 | 0.010337145 | 0.014380925 | 0.007337206 | 0.014380925 | 0.014006832 | 0 | 0.014326553 | 0.00730947 | 0.01432655 | pCi |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | U-238 | 0.137954374 | 0.051346061 | 0.02619697 | 0.051346061 | 0.012059882 | 0 | 0.04856358 | 0.02477734 | 0.04856358 | pCi |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | U-232 | 8.30456574 | 1.067369343 | 0.544576196 | 1.067369343 | 0.030405045 | 0.009606955 | 0.363147297 | 0.18527923 | 0.3631473 | pCi |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | U-234 | 28.33431683 | 3.489449598 | 1.780331427 | 3.489449598 | 0.036304104 | 0.013565178 | 0.670121575 | 0.34189876 | 0.67012157 | pCi |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | U-235 | 0.960622987 | 0.17739053 | 0.090505373 | 0.17739053 | 0.044398943 | 0.01572363 | 0.13411888 | 0.068428 | 0.13411888 | pCi |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | U-238 | 23.59076426 | 2.915854981 | 1.487681113 | 2.915854981 | 0.011151399 | 0 | 0.61067074 | 0.3115667 | 0.61067074 | pCi |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | U-232 | 8.312739525 | 1.063244943 | 0.54247191 | 1.063244943 | 0.010277155 | 0 | 0.348000581 | 0.17755132 | 0.34800058 | pCi |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | U-234 | 37.99668754 | 4.652156387 | 2.373549177 | 4.652156387 | 0.053414575 | 0.021576693 | 0.743879573 | 0.37953039 | 0.74387957 | pCi |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | U-235 | 1.540503892 | 0.246249374 | 0.125637436 | 0.246249374 | 0.011893919 | 0 | 0.161162989 | 0.08222601 | 0.16116299 | pCi |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | U-238 | 33.43142295 | 4.100207788 | 2.091942749 | 4.100207788 | 0.045404782 | 0.017582059 | 0.696962143 | 0.35559293 | 0.69696214 | pCi |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | U-232 | 8.337490553 | 1.101327041 | 0.561901552 | 1.101327041 | 0.057120418 | 0.020228867 | 0.444427773 | 0.22674886 | 0.44442777 | pCi |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | U-234 | 4.119181833 | 0.588100849 | 0.300051453 | 0.588100849 | 0.066108395 | 0.024736028 | 0.313068123 | 0.15972863 | 0.31306812 | pCi |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | U-235 | 0.099619372 | 0.053554772 | 0.027323863 | 0.053554772 | 0.019283464 | 0 | 0.052183818 | 0.0266244 | 0.05218382 | pCi |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | U-238 | 2.230079254 | 0.354961567 | 0.18110284 | 0.354961567 | 0.065976167 | 0.024686552 | 0.230980782 | 0.11784734 | 0.23098078 | pCi |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | U-232 | 8.320913311 | 1.067441874 | 0.544613201 | 1.067441874 | 0.03714622 | 0.01315512 | 0.357855765 | 0.18257947 | 0.35785577 | pCi |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | U-234 | 32.3975508 | 3.978680266 | 2.029938911 | 3.978660266 | 0.069559227 | 0.029370041 | 0.705762381 | 0.36008285 | 0.70576238 | pCi |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | U-235 | 1.235555446 | 0.210781006 | 0.10754133 | 0.210781006 | 0.034071541 | 0.010765442 | 0.148758979 | 0.07589744 | 0.14875898 | pCi |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | U-238 | 29.25685624 | 3.598847175 | 1.836146518 | 3.598847175 | 0.052249938 | 0.020726217 | 0.66964169 | 0.34165392 | 0.66964169 | pCi |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | U-232 | 8.2718706 | 1.0613521 | 0.541506173 | 1.0613521 | 0.037051918 | 0.013131723 | 0.356347587 | 0.18180999 | 0.35634759 | pCi |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | U-234 | 26.47649254 | 3.504503061 | 1.788011766 | 3.504503061 | 0.056176041 | 0.022692181 | 0.660576721 | 0.33702894 | 0.66057672 | pCi |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | U-235 | 1.070865743 | 0.189913054 | 0.096894416 | 0.189913054 | 0.042880786 | 0.015185984 | 0.138982178 | 0.07090927 | 0.13898218 | pCi |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | U-238 | 24.24662061 | 2.993196108 | 1.527140871 | 2.993196108 | 0.074824898 | 0.032027402 | 0.609620145 | 0.31103069 | 0.60962015 | pCi |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | U-232 | 8.337490553 | 1.059736214 | 0.540681742 | 1.059736214 | 0.009107053 | 0 | 0.328078707 | 0.1673871 | 0.32807871 | pCi |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | U-234 | 85.09851669 | 10.33824254 | 5.274613542 | 10.33824254 | 0.03117002 | 0.011038683 | 1.047396613 | 0.53438705 | 1.04739861 | pCi |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | U-235 | 3.235728052 | 0.448642357 | 0.228699162 | 0.448642357 | 0.010539451 | 0 | 0.219870226 | 0.11217869 | 0.21987023 | pCi |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | U-238 | 78.78713513 | 9.575325008 | 4.885369902 | 9.575325008 | 0.024654298 | 0.007789915 | 1.006764985 | 0.5136556 | 1.00676498 | pCi |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | U-232 | 8.312968522 | 1.090887826 | 0.556575422 | 1.090887826 | 0.041580444 | 0.013137999 | 0.424964977 | 0.21681887 | 0.42496498 | pCi |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | U-234 | 6.241783844 | 0.839661373 | 0.428398659 | 0.839661373 | 0.060719652 | 0.022719702 | 0.368692886 | 0.18810862 | 0.36869289 | pCi |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | U-235 | 0.215676269 | 0.078067475 | 0.039830344 | 0.078067475 | 0.017711597 | 0 | 0.073587062 | 0.03754442 | 0.07358706 | pCi |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | U-238 | 3.79272602 | 0.540697938 | 0.275866295 | 0.540697938 | 0.041431664 | 0.01309099 | 0.286761599 | 0.14630694 | 0.2867616 | pCi |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | U-232 | 8.328857655 | 1.45689 | 0.743311224 | 1.45689 | 0.403530643 | 0.156258861 | 1.053197484 | 0.53734566 | 1.05319748 | pCi |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | U-234 | 4179.500807 | 505.6691648 | 257.9944718 | 505.6691648 | 0.31152017 | 0.110323074 | 23.20387277 | 11.8387106 | 23.2038728 | pCi |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | U-235 | 2295.457018 | 278.0471122 | 141.8607716 | 278.0471122 | 0.286179541 | 0.090422952 | 18.51385676 | 9.44584529 | 18.5138568 | pCi |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | U-238 | 4000.69998 | 484.0581422 | 246.9684399 | 484.0581422 | 0.360386989 | 0.134847364 | 22.67960201 | 11.5712255 | 22.679602 | pCi |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | U-232 | 8.296391955 | 1.066165375 | 0.543961926 | 1.066165375 | 0.038193004 | 0.013525832 | 0.362338721 | 0.18486669 | 0.36233872 | pCi |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | U-234 | 11.64534003 | 1.471252351 | 0.750638955 | 1.471252351 | 0.011124029 | 0 | 0.428527382 | 0.21863642 | 0.42852738 | pCi |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | U-235 | 0.732724784 | 0.145723305 | 0.074348625 | 0.145723305 | 0.012894053 | 0 | 0.115727506 | 0.05904465 | 0.11572751 | pCi |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | U-238 | 30.02396421 | 3.693312948 | 1.884343341 | 3.693312948 | 0.049222773 | 0.019060496 | 0.687762738 | 0.35089936 | 0.68776274 | pCi |

| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01664-01 | | | L | | 0.43371112 | 1237 | 1440 | 0 | 1440 | 0.212452739 | 1 | 5/3/2011 | 5/10/2011 | 0.08942 |
| ARS1-B11-01664-01 | | | L | | 0.43371112 | 5109 | 1440 | 14 | 1440 | 0.212452739 | 1 | 5/3/2011 | 5/10/2011 | 0.20822 |
| ARS1-B11-01664-01 | | | L | | 0.43371112 | 180 | 1440 | 1 | 1440 | 0.212452739 | 1 | 5/3/2011 | 5/10/2011 | 0.0763 |
| ARS1-B11-01664-01 | | | L | | 0.43371112 | 6118 | 1440 | 12 | 1440 | 0.212452739 | 1 | 5/3/2011 | 5/10/2011 | 0.17113 |
| ARS1-B11-01664-02 | | | L | | 0.465872184 | 1206 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/3/2011 | 5/10/2011 | 0.08942 |
| ARS1-B11-01664-02 | | | L | | 0.465872184 | 4548 | 1440 | 6 | 1440 | 0.192200825 | 1 | 5/3/2011 | 5/10/2011 | 0.20822 |
| ARS1-B11-01664-02 | | | L | | 0.465872184 | 180 | 1440 | 2 | 1440 | 0.192200825 | 1 | 5/3/2011 | 5/10/2011 | 0.0763 |
| ARS1-B11-01664-02 | | | L | | 0.465872184 | 4884 | 1440 | 0 | 1440 | 0.192200825 | 1 | 5/3/2011 | 5/10/2011 | 0.17113 |
| ARS1-B11-01664-03 | | | L | | 0.403387443 | 1174 | 1440 | 0 | 1440 | 0.216391131 | 1 | 5/3/2011 | 5/10/2011 | 0.08942 |
| ARS1-B11-01664-03 | | | L | | 0.403387443 | 20 | 1440 | 5 | 1440 | 0.216391131 | 1 | 5/3/2011 | 5/10/2011 | 0.20822 |
| ARS1-B11-01664-03 | | | L | | 0.403387443 | 3 | 1440 | 1 | 1440 | 0.216391131 | 1 | 5/3/2011 | 5/10/2011 | 0.0763 |
| ARS1-B11-01664-03 | | | L | | 0.403387443 | 13 | 1440 | 2 | 1440 | 0.216391131 | 1 | 5/3/2011 | 5/10/2011 | 0.17113 |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | L | | 0.304736528 | 887 | 1440 | 2 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | L | | 0.304736528 | 1869 | 1440 | 7 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | L | | 0.304736528 | 52 | 1440 | 0 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | L | | 0.304736528 | 1567 | 1440 | 3 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | L | | 0.594164196 | 1675 | 1440 | 1 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | L | | 0.594164196 | 29 | 1440 | 4 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | L | | 0.594164196 | 4 | 1440 | 3 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | L | | 0.594164196 | 27 | 1440 | 14 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | L | | 0.682078859 | 1866 | 1440 | 1 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | L | | 0.682078859 | 32 | 1440 | 7 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | L | | 0.682078859 | 2 | 1440 | 0 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | L | | 0.682078859 | 31 | 1440 | 0 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | L | | 0.672946381 | 2012 | 1440 | 1 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | L | | 0.672946381 | 6874 | 1440 | 2 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | L | | 0.672946381 | 203 | 1440 | 2 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | L | | 0.672946381 | 5733 | 1440 | 0 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | L | | 0.764898331 | 2192 | 1440 | 0 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | L | | 0.764898331 | 10041 | 1440 | 6 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | L | | 0.764898331 | 351 | 1440 | 0 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | L | | 0.764898331 | 8851 | 1440 | 4 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | L | | 0.488104681 | 1358 | 1440 | 2 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/10/2011 | 0.1789 |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | L | | 0.488104681 | 674 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | L | | 0.488104681 | 14 | 1440 | 0 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | L | | 0.488104681 | 367 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | L | | 0.766951841 | 2083 | 1440 | 2 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | L | | 0.766951841 | 8125 | 1440 | 10 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | L | | 0.766951841 | 268 | 1440 | 1 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | L | | 0.766951841 | 7348 | 1440 | 5 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | L | | 0.699641497 | 2076 | 1440 | 2 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | L | | 0.699641497 | 7157 | 1440 | 6 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | L | | 0.699641497 | 234 | 1440 | 2 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | L | | 0.699641497 | 6113 | 1440 | 12 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | L | | 0.832977624 | 2481 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/10/2011 | 0.1789 |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | L | | 0.832977624 | 25365 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | L | | 0.832977624 | 832 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | L | | 0.832977624 | 23530 | 1440 | 1 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | L | | 0.504166714 | 1473 | 1440 | 1 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/10/2011 | 0.1789 |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | L | | 0.504166714 | 1110 | 1440 | 3 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | L | | 0.504166714 | 33 | 1440 | 0 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | L | | 0.504166714 | 675 | 1440 | 1 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | L | | 0.087043538 | 252 | 1440 | 4 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | L | | 0.087043538 | 124641 | 1440 | 2 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | L | | 0.087043538 | 59058 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | L | | 0.087043538 | 119549 | 1440 | 3 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/10/2011 | 0.34226 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | L | | 0.684257641 | 2020 | 1440 | 2 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/10/2011 | 0.17891 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | L | | 0.684257641 | 2837 | 1440 | 0 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/10/2011 | 0.41644 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | L | | 0.684257641 | 154 | 1440 | 0 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/10/2011 | 0.15263 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | L | | 0.684257641 | 7333 | 1440 | 4 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/10/2011 | 0.34226 |

35000946

| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01664-01 | | | 0.187699509 | 0.085188939 | 2.22 | 1.96 | 0.859027778 | 0 | 0.859027778 | 0.98 | ApexAlpha | A_1_1A | 48.96336365 | | |
| ARS1-B11-01664-01 | | | 0.424772588 | 0.198393553 | 2.22 | 1.96 | 3.547916667 | 0.009722222 | 3.538194444 | 0.98 | ApexAlpha | A_1_1A | 59.44017029 | | |
| ARS1-B11-01664-01 | | | 0.162992066 | 0.072714185 | 2.22 | 1.96 | 0.125 | 0.000694444 | 0.124305556 | 0.98 | ApexAlpha | A_1_1A | 55.66129303 | | |
| ARS1-B11-01664-01 | | | 0.350734066 | 0.163054942 | 2.22 | 1.96 | 4.248611111 | 0.008333333 | 4.240277778 | 0.98 | ApexAlpha | A_1_1A | 54.32730484 | | |
| ARS1-B11-01664-02 | | | 0.187967722 | 0.085188939 | 2.22 | 1.96 | 0.8375 | 0.002083333 | 0.835416667 | 0.98 | ApexAlpha | A_1_1B | 37.7613678 | | |
| ARS1-B11-01664-02 | | | 0.425040481 | 0.198393553 | 2.22 | 1.96 | 3.158333333 | 0.004166667 | 3.154166667 | 0.98 | ApexAlpha | A_1_1B | 35.82033157 | | |
| ARS1-B11-01664-02 | | | 0.163302586 | 0.072714185 | 2.22 | 1.96 | 0.125 | 0.001388889 | 0.123611111 | 0.98 | ApexAlpha | A_1_1B | 12.16941738 | | |
| ARS1-B11-01664-02 | | | 0.351001423 | 0.163054942 | 2.22 | 1.96 | 3.391666667 | 0 | 3.391666667 | 0.98 | ApexAlpha | A_1_1B | 38.64440918 | | |
| ARS1-B11-01664-03 | | | 0.188212707 | 0.085188939 | 2.22 | 1.96 | 0.815277778 | 0 | 0.815277778 | 0.98 | ApexAlpha | A_1_2A | 28.96851158 | | |
| ARS1-B11-01664-03 | | | 0.425285174 | 0.198393553 | 2.22 | 1.96 | 0.013888889 | 0.003472222 | 0.010416667 | 0.98 | ApexAlpha | A_1_2A | 8.187438965 | | |
| ARS1-B11-01664-03 | | | 0.163586213 | 0.072714185 | 2.22 | 1.96 | 0.002083333 | 0.000694444 | 0.001388889 | 0.98 | ApexAlpha | A_1_2A | 4.912463665 | | |
| ARS1-B11-01664-03 | | | 0.351245627 | 0.163054942 | 2.22 | 1.96 | 0.009027778 | 0.001388889 | 0.007638889 | 0.98 | ApexAlpha | A_1_2A | 7.368695259 | | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | 0.38249961 | 0.085188939 | 2.22 | 1.96 | 0.615972222 | 0.001388889 | 0.614583333 | 0.98 | ApexAlpha | A_1_2B | 33.09716034 | | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | 0.856498546 | 0.198393553 | 2.22 | 1.96 | 1.297916667 | 0.004861111 | 1.293055556 | 0.98 | ApexAlpha | A_1_2B | 34.36228943 | | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | 0.334043801 | 0.072714185 | 2.22 | 1.96 | 0.036111111 | 0 | 0.036111111 | 0.98 | ApexAlpha | A_1_2B | 11.08153439 | | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | 0.708407507 | 0.163054942 | 2.22 | 1.96 | 1.088194444 | 0.002083333 | 1.086111111 | 0.98 | ApexAlpha | A_1_2B | 38.09555817 | | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | 0.370566809 | 0.085188939 | 2.22 | 1.96 | 1.163194444 | 0.000694444 | 1.1625 | 0.98 | ApexAlpha | A_1_3A | 27.50323486 | | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | 0.844584284 | 0.198393553 | 2.22 | 1.96 | 0.020138889 | 0.002777778 | 0.017361111 | 0.98 | ApexAlpha | A_1_3A | 13.09677887 | | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | 0.320233776 | 0.072714185 | 2.22 | 1.96 | 0.002777778 | 0.002083333 | 0.000694444 | 0.98 | ApexAlpha | A_1_3A | 4.911292076 | | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | 0.696517076 | 0.163054942 | 2.22 | 1.96 | 0.01875 | 0.009722222 | 0.009027778 | 0.98 | ApexAlpha | A_1_3A | 8.185486794 | | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | 0.369162496 | 0.085188939 | 2.22 | 1.96 | 1.295833333 | 0.000694444 | 1.295138889 | 0.98 | ApexAlpha | A_1_3B | 27.29480934 | | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | 0.8431923 | 0.198393553 | 2.22 | 1.96 | 0.022222222 | 0.004861111 | 0.017361111 | 0.98 | ApexAlpha | A_1_3B | 13.51308155 | | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | 0.318620311 | 0.072714185 | 2.22 | 1.96 | 0.001388889 | 0 | 0.001388889 | 0.98 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | 0.695127883 | 0.163054942 | 2.22 | 1.96 | 0.021527778 | 0 | 0.021527778 | 0.98 | ApexAlpha | A_1_3B | 10.23718262 | | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | 0.368260945 | 0.085188939 | 2.22 | 1.96 | 1.397222222 | 0.000694444 | 1.396527778 | 0.98 | ApexAlpha | A_1_4A | 29.44181824 | | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | 0.842282002 | 0.198393553 | 2.22 | 1.96 | 4.773611111 | 0.001388889 | 4.772222222 | 0.98 | ApexAlpha | A_1_4A | 36.94655609 | | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | 0.317565162 | 0.072714185 | 2.22 | 1.96 | 0.140972222 | 0.001388889 | 0.139583333 | 0.98 | ApexAlpha | A_1_4A | 20.18749237 | | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | 0.694219399 | 0.163054942 | 2.22 | 1.96 | 3.98125 | 0 | 3.98125 | 0.98 | ApexAlpha | A_1_4A | 42.40550995 | | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | 0.367346965 | 0.085188939 | 2.22 | 1.96 | 1.522222222 | 0 | 1.522222222 | 0.98 | ApexAlpha | A_1_4B | 30.84774017 | | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | 0.841369442 | 0.198393553 | 2.22 | 1.96 | 6.972916667 | 0.004166667 | 6.96875 | 0.98 | ApexAlpha | A_1_4B | 39.53868103 | | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | 0.316507398 | 0.072714185 | 2.22 | 1.96 | 0.24375 | 0 | 0.24375 | 0.98 | ApexAlpha | A_1_4B | 42.83360672 | | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | 0.693308664 | 0.163054942 | 2.22 | 1.96 | 6.146527778 | 0.002777778 | 6.14375 | 0.98 | ApexAlpha | A_1_4B | 36.84606552 | | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | 0.37374233 | 0.085188939 | 2.22 | 1.96 | 0.943055556 | 0.001388889 | 0.941666667 | 0.98 | ApexAlpha | A_1_5A | 31.55294228 | | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | 0.847744598 | 0.198393553 | 2.22 | 1.96 | 0.468055556 | 0.002083333 | 0.465972222 | 0.98 | ApexAlpha | A_1_5A | 24.95882797 | | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | 0.323896943 | 0.072714185 | 2.22 | 1.96 | 0.009722222 | 0 | 0.009722222 | 0.98 | ApexAlpha | A_1_5A | 6.112156391 | | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | 0.699671063 | 0.163054942 | 2.22 | 1.96 | 0.254861111 | 0.002083333 | 0.252777778 | 0.98 | ApexAlpha | A_1_5A | 35.00598907 | | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | 0.36790579 | 0.085188939 | 2.22 | 1.96 | 1.446527778 | 0.001388889 | 1.445138889 | 0.98 | ApexAlpha | A_1_5B | 34.6806488 | | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | 0.841927399 | 0.198393553 | 2.22 | 1.96 | 5.642361111 | 0.006944444 | 5.635416667 | 0.98 | ApexAlpha | A_1_5B | 35.38989639 | | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | 0.317154136 | 0.072714185 | 2.22 | 1.96 | 0.186111111 | 0.000694444 | 0.185416667 | 0.98 | ApexAlpha | A_1_5B | 31.37195396 | | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | 0.693865505 | 0.163054942 | 2.22 | 1.96 | 5.102777778 | 0.003472222 | 5.099305556 | 0.98 | ApexAlpha | A_1_5B | 34.7035675 | | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | 0.367878281 | 0.085188939 | 2.22 | 1.96 | 1.441666667 | 0.001388889 | 1.440277778 | 0.98 | ApexAlpha | A_1_6A | 39.60801315 | | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | 0.841899933 | 0.198393553 | 2.22 | 1.96 | 4.970138889 | 0.004166667 | 4.965972222 | 0.98 | ApexAlpha | A_1_6A | 39.67454147 | | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | 0.317122299 | 0.072714185 | 2.22 | 1.96 | 0.1625 | 0.001388889 | 0.161111111 | 0.98 | ApexAlpha | A_1_6A | 29.86603737 | | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | 0.693836094 | 0.163054942 | 2.22 | 1.96 | 4.245138889 | 0.008333333 | 4.236805556 | 0.98 | ApexAlpha | A_1_6A | 42.12785339 | | |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | 0.366186699 | 0.085188939 | 2.22 | 1.96 | 1.722916667 | 0 | 1.722916667 | 0.98 | ApexAlpha | A_1_6B | 64.28845215 | | |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | 0.840200914 | 0.198393553 | 2.22 | 1.96 | 17.61458333 | 0.001388889 | 17.61319444 | 0.98 | ApexAlpha | A_1_6B | 76.40910339 | | |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | 0.31515293 | 0.072714185 | 2.22 | 1.96 | 0.577777778 | 0 | 0.577777778 | 0.98 | ApexAlpha | A_1_6B | 67.9863205 | | |
| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | 0.692142467 | 0.163054942 | 2.22 | 1.96 | 16.34027778 | 0.000694444 | 16.33958333 | 0.98 | ApexAlpha | A_1_6B | 76.08847046 | | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | 0.372384092 | 0.085188939 | 2.22 | 1.96 | 1.022916667 | 0.000694444 | 1.022222222 | 0.98 | ApexAlpha | A_2_1A | 29.11910248 | | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | 0.846388508 | 0.198393553 | 2.22 | 1.96 | 0.770833333 | 0.002083333 | 0.76875 | 0.98 | ApexAlpha | A_2_1A | 31.36332893 | | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | 0.322325076 | 0.072714185 | 2.22 | 1.96 | 0.022916667 | 0 | 0.022916667 | 0.98 | ApexAlpha | A_2_1A | 11.45227432 | | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | 0.698317685 | 0.163054942 | 2.22 | 1.96 | 0.46875 | 0.000694444 | 0.468055556 | 0.98 | ApexAlpha | A_2_1A | 29.78630257 | | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | 0.448072894 | 0.085188939 | 2.22 | 1.96 | 0.175 | 0.002777778 | 0.172222222 | 0.98 | ApexAlpha | A_2_1B | 10.00212955 | | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | 0.921982269 | 0.198393553 | 2.22 | 1.96 | 86.55625 | 0.001388889 | 86.55486111 | 0.98 | ApexAlpha | A_2_1B | 4.879087925 | | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | 0.409947115 | 0.072714185 | 2.22 | 1.96 | 41.0125 | 0.000694444 | 41.01180556 | 0.98 | ApexAlpha | A_2_1B | 137.4632874 | | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | 0.77376026 | 0.163054942 | 2.22 | 1.96 | 83.02013889 | 0.002083333 | 83.01805556 | 0.98 | ApexAlpha | A_2_1B | 227.3585358 | | |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | 0.368211149 | 0.085188939 | 2.22 | 1.96 | 1.402777778 | 0.001388889 | 1.401388889 | 0.98 | ApexAlpha | A_2_2A | 32.61607742 | | |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | 0.842232284 | 0.198393553 | 2.22 | 1.96 | 1.970138889 | 0 | 1.970138889 | 0.98 | ApexAlpha | A_2_2A | 36.27605438 | | |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | 0.317507532 | 0.072714185 | 2.22 | 1.96 | 0.106944444 | 0 | 0.106944444 | 0.98 | ApexAlpha | A_2_2A | 11.46146107 | | |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | 0.69416978 | 0.163054942 | 2.22 | 1.96 | 5.092361111 | 0.002777778 | 5.089583333 | 0.98 | ApexAlpha | A_2_2A | 38.88392258 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | Delta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01664-01 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-01 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-01 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-01 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-02 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-02 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-02 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-02 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-03 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-03 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-03 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-03 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 6.860208333 | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
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| ARS1-B11-01664-06 | ARS1-11-00897 | 016 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-08 | ARS1-11-00897 | 018 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
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| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-09 | ARS1-11-00897 | 019 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
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| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 21.05625 | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 19.05625 | |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |
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| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 20.05625 | |

3500094

| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| ARS1-B11-01664-04 | ARS1-11-00897 | 014 | | | | | 0.999447656 | | | | | 0.061663514 | 0.074005475 | 106.5678842 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-05 | ARS1-11-00897 | 015 | | | | | 0.999447656 | | | | | 0.061663514 | 0.139434284 | 200.7653687 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-07 | ARS1-11-00897 | 017 | | | | | 1 | | | | | 0.061663514 | 0.145305011 | 209.2392152 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-10 | ARS1-11-00897 | 020 | | | | | 0.999447656 | | | | | 0.061663514 | 0.173675513 | 250.0927389 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-11 | ARS1-11-00897 | 021 | | | | | 0.999447656 | | | | | 0.061663514 | 0.174117542 | 250.7292607 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | | | | | 0.999420125 | | | | | 0.061663514 | 0.206646911 | 297.5715515 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-12 | ARS1-11-00897 | 022 | | | | | 1 | | | | | 0.061663514 | 0.178561909 | 257.1291489 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-13 | ARS1-11-00897 | 023 | | | | | 0.999420125 | | | | | 0.061663514 | 0.122967171 | 177.0727263 | ASP-A-024 | ABAILEY | 5/11/2011 |
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| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | | | | 1 | | | | | 0.061663514 | 0.01786651 | 25.72777427 | ASP-A-024 | ABAILEY | 5/11/2011 |
| ARS1-B11-01664-14 | ARS1-11-00897 | 024 | | | | | 1 | | | | | 0.061663514 | 0.020750883 | 29.88127093 | ASP-A-024 | ABAILEY | 5/11/2011 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | | | | 0.999447656 | | | | | 0.061663514 | 0.168915463 | 243.2362668 | ASP-A-024 | ABAILEY | 5/11/2011 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | | | | 0.999999845 | | | | | 0.061663514 | 0.169178305 | 243.6167595 | ASP-A-024 | ABAILEY | 5/11/2011 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | | | | 1 | | | | | 0.061663514 | 0.145954452 | 210.1744112 | ASP-A-024 | ABAILEY | 5/11/2011 |
| ARS1-B11-01664-15 | ARS1-11-00897 | 025 | | | | | 1 | | | | | 0.061663514 | 0.169517366 | 244.1050072 | ASP-A-024 | ABAILEY | 5/11/2011 |

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## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01663-11 | B11-01663 | A32B | 12215 | U | 5-9-11 1105 | | 86400 |
| 11-01663-12 | ↓ | A33A | 12216 | ↓ | ↓ | | ↓ |
| 11-01663-13 | ↓ | A33B | 12219 | ↓ | ↓ | | ↓ |
| 11-01663-14 | ↓ | A34B | 12218 | ↓ | ↓ | | ↓ |
| 11-01663-15 | ↓ | A36A | 12220 | ↓ | ↓ | | ↓ |
| 11-01663-16 | ↓ | A36B | 12217 | ↓ | ↓ | | ↓ LSW 5-10-11 |
| N-01664-01 | B11-01664 | A11A | 12245 | ↓ | 5-10-11 1322 | | ↓ |
| 11-01664-02 | ↓ | A11B | 12246 | ↓ | ↓ | | ↓ |
| 11-01664-03 | ↓ | A12A | 12247 | ↓ | ↓ | | ↓ |
| 11-01664-04 | ↓ | A12B | 12248 | ↓ | ↓ | | ↓ |
| 11-01664-05 | ↓ | A13A | 12249 | ↓ | ↓ | | ↓ |
| 11-01664-06 | ↓ | A13B | 12250 | ↓ | ↓ | | ↓ |
| 11-01664-07 | ↓ | A14A | 12251 | ↓ | ↓ | | ↓ |
| 11-01664-08 | ↓ | A14B | 12253 | ↓ | ↓ | | ↓ |
| 11-01664-09 | ↓ | A15A | 12254 | ↓ | ↓ | | ↓ |

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Reviewed By: LSW Initials Date: 5-17-11

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01664-10 | B11-01664 | A15B | 12255 | U | 5-10-11 1322 | @S | 86400 |
| 11-01664-11 | ↓ | A16A | 12256 | ↓ | ↓ | @S | ↓ |
| 11-01664-12 | ↓ | A16B | 12257 | ↓ | ↓ | @S | ↓ |
| 11-01664-13 | ↓ | A21A | 12258 | ↓ | ↓ | @S | ↓ |
| 11-01664-14 | ↓ | A21B | ~~12259~~ 12261 @S 5-11-11 | ↓ | ↓ | @S | ↓ |
| 11-01664-15 | ↓ | A22A | 12260 | ↓ | ↓ | @S | ↓ |
| A25A | Source Check | A25A | N/A | Source | 5-10-11 1330 ~~1430~~ @S 5-11 | @S | 7200 |
| A36B | ↓ | A36B | N/A | ↓ | ↓ | @S | ↓ |
| 11-01664-14 | B11-01664 | A11A | 12262 | U | 5-11-11 1633 | @S | 36000 |
| 11-01786-04 | B11-01786A | A11A | 12408 | Th | 5-11-11 1835 | @S | 86400 |
| 11-01786-05 | ↓ | A11B | 12409 | ↓ | ↓ | @S | ↓ |
| 11-01786-06 | ↓ | A12A | 12410 | ↓ | ↓ | @S | ↓ |
| 11-01786-07 | ↓ | A12B | 12411 | ↓ | ↓ | @S | ↓ |
| 11-01786-08 | ↓ | A13A | 12412 | ↓ | ↓ | @S | ↓ |
| 11-01786-09 | ↓ | A13B | 12413 | ↓ | ↓ | @S | ↓ |

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Reviewed By: LSW Initials Date: 5-17-11

ARS
AMERICAN RADIATION
SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767
1 (800) 401-4277 • Fax (225) 381-2996

# American Radiation Services Analytical Reports

for

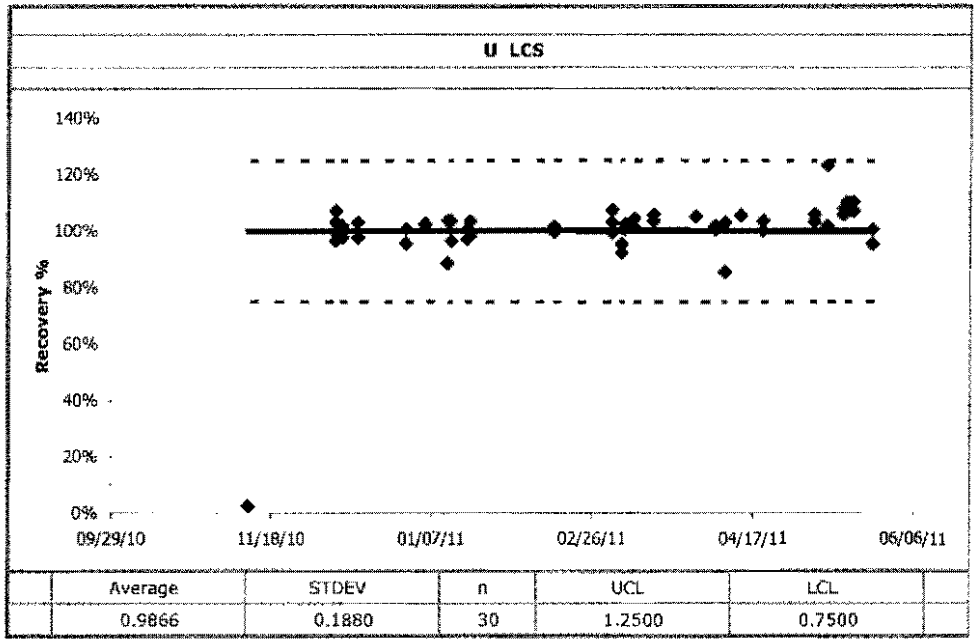
# Summit Environmental Technologies

# Uranium Alpha Spectroscopy Control Charts

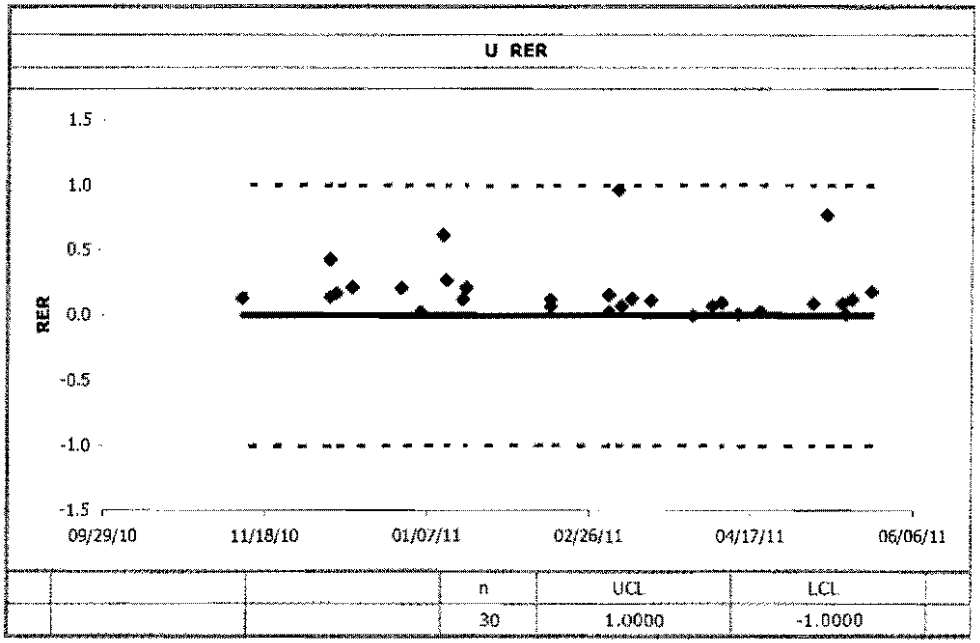
American Radiation Services
Baton Rouge Laboratory

# QC Chart

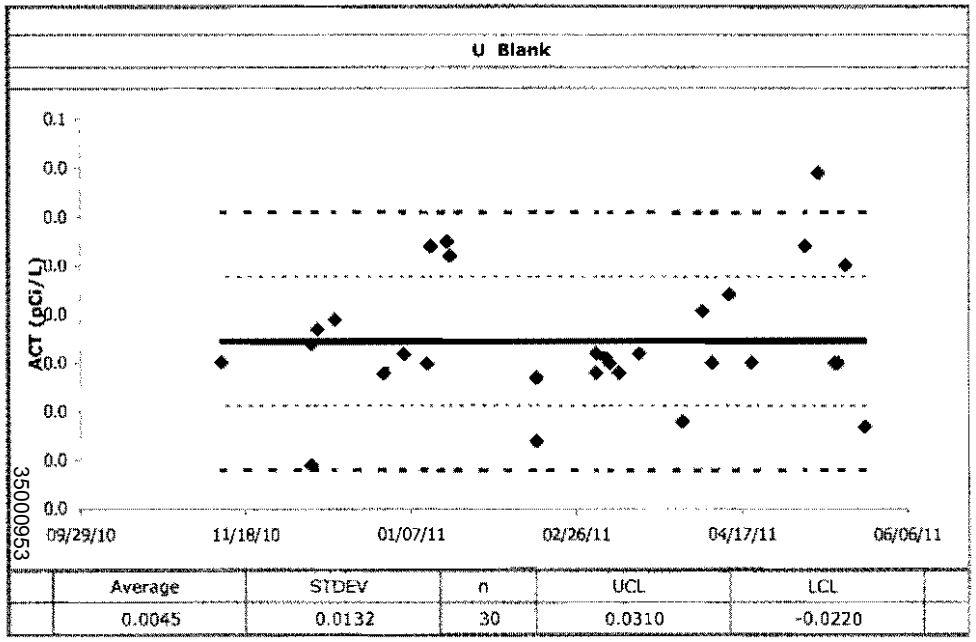
Printed: 6/2/2011 4:48 PM
Page 1 of 1




| Average | STDEV | n | UCL | LCL |
|---|---|---|---|---|
| 0.9866 | 0.1880 | 30 | 1.2500 | 0.7500 |

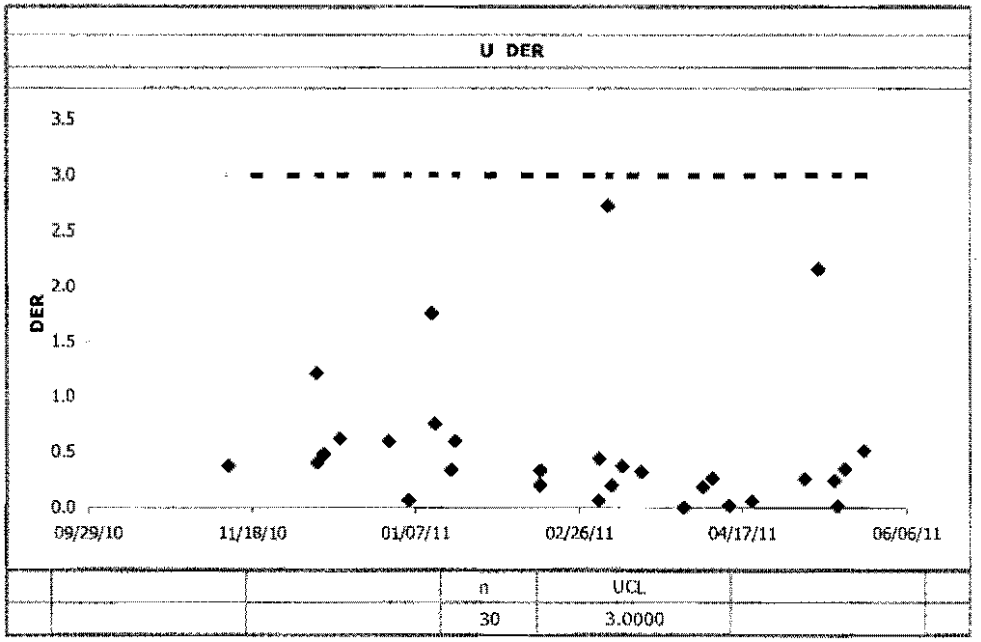



| n | UCL | LCL |
|---|---|---|
| 30 | 1.0000 | -1.0000 |




| Average | STDEV | n | UCL | LCL |
|---|---|---|---|---|
| 0.0045 | 0.0132 | 30 | 0.0310 | -0.0220 |

35000953




| n | UCL |
|---|---|
| 30 | 3.0000 |

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01984**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | **Method** | **ARS-026** | **Analysis** | **ASP-A-024** | | **Matrix** | **AQ** |
| | | | | | **Description** | **Uranium in Water** | | | | | |
| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | | Isotope Group | Lab Deadline |
| ARS1-B11-01984-01 | LCS | B-11798 | | | | | | | | | |
| ARS1-B11-01984-02 | LCSD | B-11799 | | | | | | | | | |
| ARS1-B11-01984-03 | MBL | | | | | | | | | | |
| ARS1-B11-01984-04 | TRG | | | | **ARS1-11-00897** | 001 | 2 | MW-1-110419 | | STD | 05/03/11 |
| ARS1-B11-01984-05 | TRG | | | | **ARS1-11-00897** | 002 | 2 | MW-2-110421 | | STD | 05/03/11 |
| ARS1-B11-01984-06 | TRG | | | | **ARS1-11-00897** | 003 | 2 | MW-2-2-110421 | | STD | 05/03/11 |
| ARS1-B11-01984-07 | TRG | | | | **ARS1-11-00897** | 004 | 2 | JPOP41S-110421 | | STD | 05/03/11 |
| ARS1-B11-01984-08 | TRG | | | | **ARS1-11-00897** | 005 | 2 | MD-SW-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-09 | TRG | | | | **ARS1-11-00897** | 006 | 2 | MW-3-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-10 | TRG | | | | **ARS1-11-00897** | 007 | 2 | MW-4-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-11 | TRG | | | | **ARS1-11-00897** | 008 | 2 | MW-6-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-12 | TRG | | | | **ARS1-11-00897** | 009 | 2 | MW-7-110419 | | STD | 05/03/11 |
| ARS1-B11-01984-13 | TRG | | | | **ARS1-11-00897** | 010 | 2 | MW-8-110419 | | STD | 05/03/11 |
| ARS1-B11-01984-14 | TRG | | | | **ARS1-11-00897** | 011 | 2 | MW-MD-02-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-15 | TRG | | | | **ARS1-11-00897** | 012 | 2 | MW-MD-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-16 | TRG | | | | **ARS1-11-00897** | 013 | 2 | NPOP20E-110420 | | STD | 05/03/11 |
| ARS1-B11-01984-17 | TRG | | | | **ARS1-11-00897** | 024 | 2 | SPOP35-110421 | | STD | 05/03/11 |

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| ABatch | ABatchSampleID | ClientID | SampleType | EmptyWt | FilledWt | NetWt | Exp Val | StdID | Isotope | TracerDate | UserID | ModDate | HL days | Ref Date | Cert dpm/g | Curr ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984 | ARS1-B11-01984-01 | | LCS | 81.675 | 82.720 | 1.045 | 9.467 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-02 | | LCSD | 73.488 | 74.535 | 1.047 | 9.488 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-03 | | MBL | 63.405 | 64.451 | 1.047 | 9.486 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-04 | MW-1-110419 | TRG | 1.778 | 2.825 | 1.047 | 9.492 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-05 | MW-2-110421 | TRG | 1.784 | 2.827 | 1.042 | 9.448 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-06 | MW-2-2-110421 | TRG | 1.857 | 2.898 | 1.041 | 9.437 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-07 | JPOP41S-110421 | TRG | 1.768 | 2.808 | 1.040 | 9.425 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-08 | MD-SW-110420 | TRG | 1.744 | 2.783 | 1.039 | 9.418 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-09 | MW-3-110420 | TRG | 1.827 | 2.866 | 1.039 | 9.417 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-10 | MW-4-110420 | TRG | 1.736 | 2.774 | 1.038 | 9.409 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-11 | MW-6-110420 | TRG | 1.745 | 2.783 | 1.038 | 9.408 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-12 | MW-7-110419 | TRG | 1.744 | 2.781 | 1.037 | 9.397 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-13 | MW-8-110419 | TRG | 1.800 | 2.837 | 1.037 | 9.401 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-14 | MW-MD-02-110420 | TRG | 1.764 | 2.802 | 1.037 | 9.401 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-15 | MW-MD-110420 | TRG | 1.802 | 2.839 | 1.037 | 9.396 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-16 | NPOP20E-110420 | TRG | 1.811 | 2.848 | 1.037 | 9.399 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |
| ARS1-B11-01984 | ARS1-B11-01984-17 | SPOP35-110421 | TRG | 1.868 | 2.905 | 1.037 | 9.395 | S-0241 | U-232 | 5/26/2011 | JBROWN | 5/26/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.064 |

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| ID_31001_026 | ABatch | ABatchSampleID | ClientID | Aliquot | AliquotUnits | UserID | ModDate | IC_ID | BalanceSerialNumber |
|---|---|---|---|---|---|---|---|---|---|
| 9154 | ARS1-B11-01984 | ARS1-B11-01984-01 | | 1 | L | JBROWN | 05/26/2011 15:21:24 | | |
| 9155 | ARS1-B11-01984 | ARS1-B11-01984-02 | | 1 | L | JBROWN | 05/26/2011 15:21:24 | | |
| 9156 | ARS1-B11-01984 | ARS1-B11-01984-03 | | 1 | L | JBROWN | 05/26/2011 15:21:24 | | |
| 9157 | ARS1-B11-01984 | ARS1-B11-01984-04 | MW-1-110419 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87939 | |
| 9158 | ARS1-B11-01984 | ARS1-B11-01984-05 | MW-2-110421 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87940 | |
| 9159 | ARS1-B11-01984 | ARS1-B11-01984-06 | MW-2-2-110421 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87941 | |
| 9160 | ARS1-B11-01984 | ARS1-B11-01984-07 | JPOP41S-110421 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87942 | |
| 9161 | ARS1-B11-01984 | ARS1-B11-01984-08 | MD-SW-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87942 | |
| 9162 | ARS1-B11-01984 | ARS1-B11-01984-09 | MW-3-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87942 | |
| 9163 | ARS1-B11-01984 | ARS1-B11-01984-10 | MW-4-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:24 | 87942 | |
| 9164 | ARS1-B11-01984 | ARS1-B11-01984-11 | MW-6-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9165 | ARS1-B11-01984 | ARS1-B11-01984-12 | MW-7-110419 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9166 | ARS1-B11-01984 | ARS1-B11-01984-13 | MW-8-110419 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9167 | ARS1-B11-01984 | ARS1-B11-01984-14 | MW-MD-02-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9168 | ARS1-B11-01984 | ARS1-B11-01984-15 | MW-MD-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9169 | ARS1-B11-01984 | ARS1-B11-01984-16 | NPOP20E-110420 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |
| 9170 | ARS1-B11-01984 | ARS1-B11-01984-17 | SPOP35-110421 | 0.5 | L | JBROWN | 05/26/2011 15:21:25 | 87942 | |

# Standards Activity as of: 05/29/11 16:(

| Active | Std ID | Isotope | PSCLT | Verification Date | Exp Date | Status | Ref Date | Ref ACT (dpm) | ACT at Date Above (dpm/g) | Halflife (days) | Parent ID |
|---|---|---|---|---|---|---|---|---|---|---|---|
| [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] |

35000957

**USEPA**

DateShipped 4/22/2011
CarrierName hand delivered
AirbillNo

**CHAIN OF CUSTODY RECORD**

Site # 0603
Contact Name [redacted]
Contact Phone [redacted]

**No: 6-042211-001353-0001**

Cooler #
Lab Summit Environmental
Lab Phone: 505-345-3335

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Numb Cont | Container | Preservative | MS/MSD |
|---|---|---|---|---|---|---|---|---|---|
| | MW-8-110419 | MW-8 | Gross Alpha/Beta | Ground Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-8-110419 | MW-8 | Total Dissolved Solids | Ground Water | 4/19/2011 | 1 | 500 ml poly | None | |
| | MW-8-110419 | MW-8 | Total Radium (226+228) | Ground Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-8-110419 | MW-8 | TAL Metals/Hg | Ground Water | 4/19/2011 | 1 | 500 ml poly | HNO3 pH<2 | |
| | MW-MD-02-110420 | MW-MD | Alkalinity | Ground Water | 4/20/2011 | 1 | NA | NA | |
| | MW-MD-02-110420 | MW-MD | Alpha Spec -Uranium isotopes | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-02-110420 | MW-MD | Anions (NO2 NO3 Cl SO4) | Ground Water | 4/20/2011 | 1 | 500 ml poly | None | |
| | MW-MD-02-110420 | MW-MD | Gamma Spec - Thorium | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-02-110420 | MW-MD | Gross Alpha/Beta | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-02-110420 | MW-MD | Total Dissolved Solids | Ground Water | 4/20/2011 | 1 | 500 ml poly | None | |
| | MW-MD-02-110420 | MW-MD | Total Radium (226+228) | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-02-110420 | MW-MD | TAL Metals/Hg | Ground Water | 4/20/2011 | 1 | 500 ml poly | HNO3 pH<2 | |
| | MW-MD-110420 | MW-MD | Alkalinity | Ground Water | 4/20/2011 | 1 | NA | NA | |
| | MW-MD-110420 | MW-MD | Alpha Spec -Uranium isotopes | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-110420 | MW-MD | Anions (NO2 NO3 Cl SO4) | Ground Water | 4/20/2011 | 1 | 500 ml poly | None | |
| | MW-MD-110420 | MW-MD | Gamma Spec - Thorium | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-110420 | MW-MD | Gross Alpha/Beta | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | MW-MD-110420 | MW-MD | Total Dissolved Solids | Ground Water | 4/20/2011 | 1 | 500 ml poly | None | |
| | MW-MD-110420 | MW-MD | Total Radium (226+228) | Ground Water | 4/20/2011 | 1 | 1 L poly | HNO3 pH<2 | |

Special Instructions 5-7 day TAT
Level IV Deliverable

**SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

35000958

[redacted]

**USEPA**

DateShipped 4/22/2011

CarrierName hand delivered

AirbillNo

## CHAIN OF CUSTODY RECORD

Site # 0603

Contact Name [redacted]

Contact Phone [redacted]

**No: 6-042211-001353-0001**

Cooler #

Lab Summit Environmental

Lab Phone 505-345-3335

| Lab # | Sample # | Location | Analyses | Matrix | Collected | Numb Cont | Container | Preservative | MS/MSD |
|---|---|---|---|---|---|---|---|---|---|
| | RP-SW-01-110419 | RP-01 | Gross Alpha/Beta | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-01-110419 | RP-01 | Total Dissolved Solids | Surface Water | 4/19/2011 | 1 | 500 ml poly | None | |
| | RP-SW-01-110419 | RP-01 | Total Radium (226+228) | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-01-110419 | RP-01 | TAL Metals/Hg | Surface Water | 4/19/2011 | 1 | 500 ml poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | Alkalinity | Surface Water | 4/19/2011 | 1 | NA | NA | |
| | RP-SW-BG-041911 | RP-BG | Alpha Spec -Uranium isotopes | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | Anions (NO2 NO3 Cl SO4) | Surface Water | 4/19/2011 | 1 | 500 ml poly | None | |
| | RP-SW-BG-041911 | RP-BG | Gamma Spec - Thorium | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | Gross Alpha/Beta | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | Total Dissolved Solids | Surface Water | 4/19/2011 | 1 | 500 ml poly | None | |
| | RP-SW-BG-041911 | RP-BG | Total Radium (226+228) | Surface Water | 4/19/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | TAL Metals/Hg | Surface Water | 4/19/2011 | 1 | 500 ml poly | HNO3 pH<2 | |
| | RP-SW-BG-041911 | RP-BG | Alkalinity | Surface Water | 4/19/2011 | 1 | NA | NA | |
| | SPOP35-110421 | SPOP35 | Alpha Spec -Uranium isotopes | Ground Water | 4/21/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | SPOP35-110421 | SPOP35 | Anions (NO2 NO3 Cl SO4) | Ground Water | 4/21/2011 | 1 | 500 ml poly | None | |
| | SPOP35-110421 | SPOP35 | Gamma Spec - Thorium | Ground Water | 4/21/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | SPOP35-110421 | SPOP35 | Gross Alpha/Beta | Ground Water | 4/21/2011 | 1 | 1 L poly | HNO3 pH<2 | |
| | SPOP35-110421 | SPOP35 | Total Dissolved Solids | Ground Water | 4/21/2011 | 1 | 500 ml poly | None | |
| | SPOP35-110421 | SPOP35 | Total Radium (226+228) | Ground Water | 4/21/2011 | 1 | 1 L poly | HNO3 pH<2 | |

Special Instructions 5-7 day TAT

Level IV Deliverable

**SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #**

| Items/Reason | Relinquished by | Date | Received by | Date | Time | Items/Reason | Relinquished By | Date | Received by | Date | Time |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | |

35000959

| | | | | |
|---|---|---|---|---|
| ARS INTERNATIONAL | | | **ARS1-B11-01984** | |
| | | | **ASP-A-024** | |
| | | | **ARS-026** | |
| | | | **AQ** | |
| | | | | |
| 1 | 05/27/11 12:27 | **CHEMISTRY** | B11-01984-07,16,17 did not plate well, there is a black film covering the entire plate. Tracer recovery/activity could be affected as a result. | JBROWN |

5/28/2011 14:07:38

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/28/2011
Time : 14:07:38
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01985-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-12 | A_1_6B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-13 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-14 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-15 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-01 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-02 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-03 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-04 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-05 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-06 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-07 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-08 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-09 | A_3_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-10 | A_3_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-11 | A_3_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-12 | A_3_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-13 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-14 | A_3_6B | Shelf 2 | Alpha Analyst10139 | |

5/29/2011 16:04:17

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/29/2011
Time : 16:04:17
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01946-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01946-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-01 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-02 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-03 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-04 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-05 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-06 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-07 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-08 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-09 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-10 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01947-11 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-15 | A_3_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-16 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-17 | A_3_6B | Shelf 2 | Alpha Analyst10139 | |

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCS
Batch Identification: B11-01984 A
Sample Identification: 11-01984-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:29
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2134 +/- 0.0044 on 5/24/10 08:35:23
Effective Efficiency: 0.2134 +/- 0.0044

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

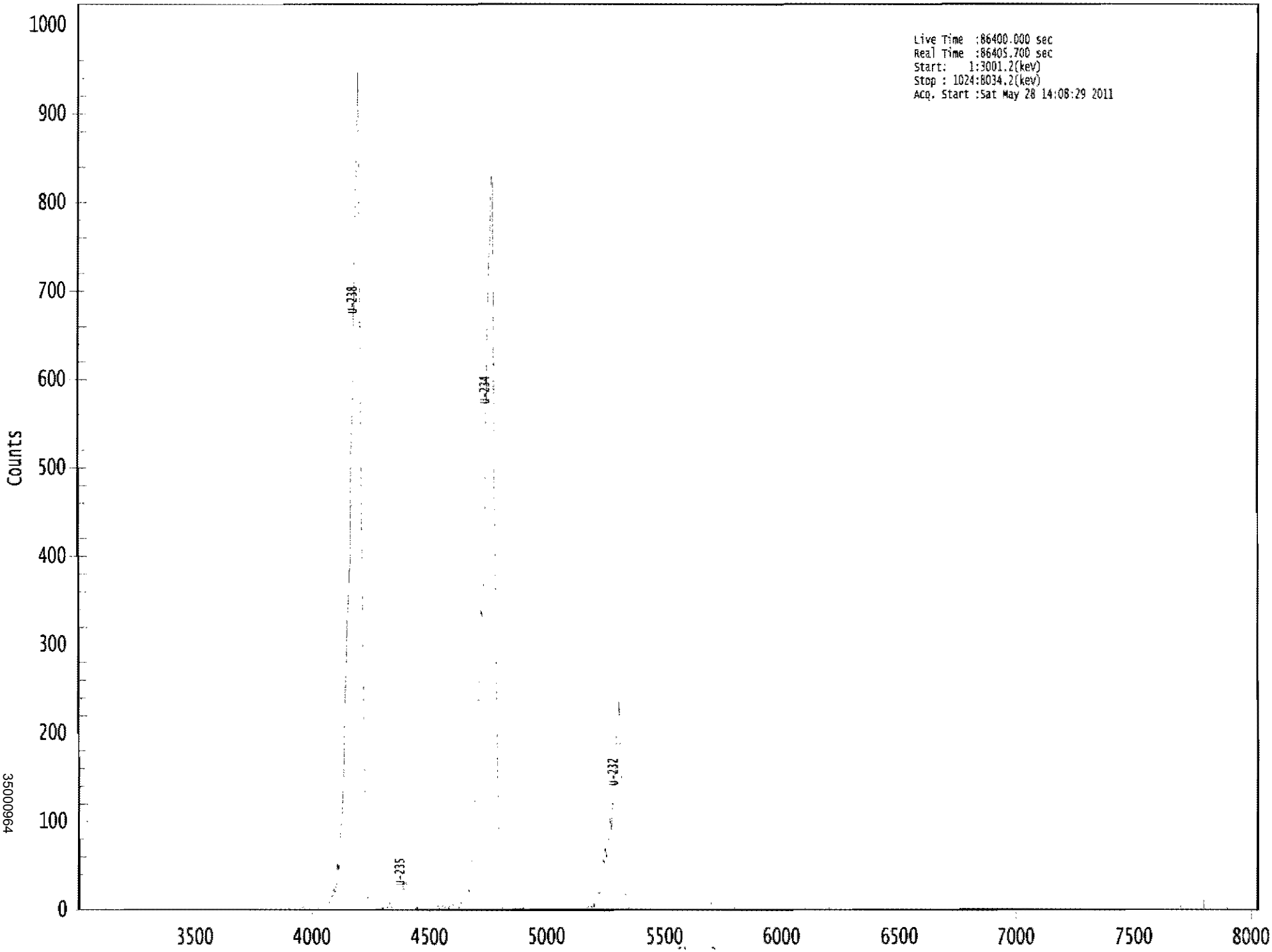
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5287.604 | 2423.00 | 49.22 | 0.00 | 0.00E+000 | 39 |
| U-234 | 4748.538 | 9650.00 | 98.23 | 0.00 | 0.00E+000 | 44 |
| U-235 | 4380.521 | 348.00 | 18.65 | 0.00 | 0.00E+000 | 47 |
| U-238 | 4181.897 | 10054.00 | 100.27 | 0.00 | 0.00E+000 | 44 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.5587E+000 | 2.89 | 3.9743E-003 | 2.06 |
| U-234 | 1.4173E+001 | 2.29 | 3.9743E-003 | 2.06 |
| U-235 | 6.3051E-001 | 5.74 | 4.9028E-003 | 2.06 |
| U-238 | 1.4703E+001 | 2.28 | 3.9573E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012945.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCSD
Batch Identification: B11-01984 A
Sample Identification: 11-01984-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:32
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/13/10 09:49:41
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

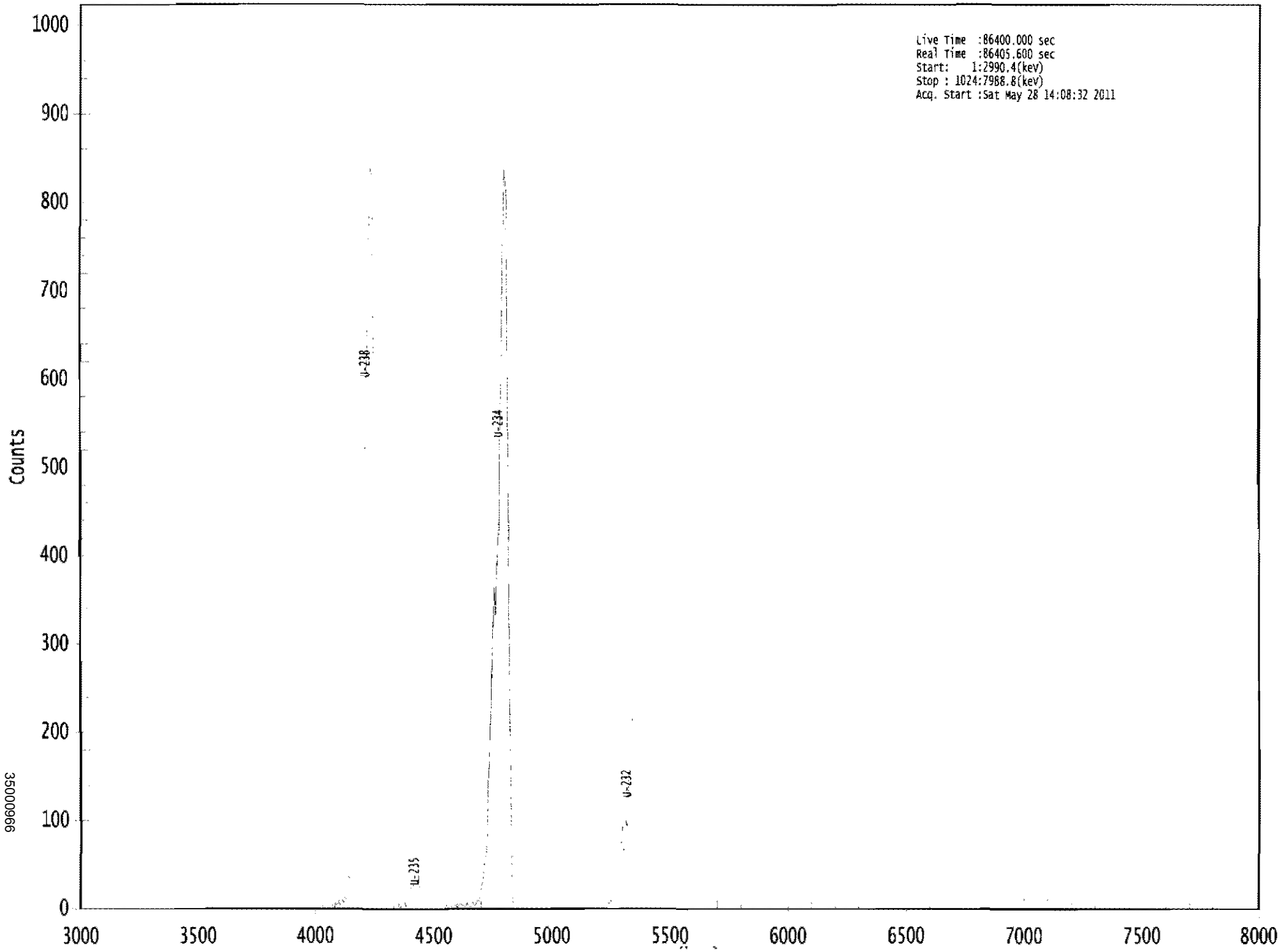
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5313.184 | 2366.00 | 48.64 | 0.00 | 0.00E+000 | 38 |
| U-234 | 4775.059 | 9438.00 | 97.15 | 0.00 | 0.00E+000 | 43 |
| U-235 | 4410.339 | 343.00 | 18.52 | 0.00 | 0.00E+000 | 14 |
| U-238 | 4208.217 | 9439.00 | 97.15 | 0.00 | 0.00E+000 | 46 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.2967E+000 | 2.90 | 3.7704E-003 | 2.05 |
| U-234 | 1.3150E+001 | 2.30 | 3.7704E-003 | 2.05 |
| U-235 | 5.8957E-001 | 5.78 | 4.6513E-003 | 2.05 |
| U-238 | 1.3095E+001 | 2.30 | 3.7543E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012946.CNF




3500096

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: MBL
Batch Identification: B11-01984 A
Sample Identification: 11-01984-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:34
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2158 +/- 0.0044 on 4/13/10 09:50:10
Effective Efficiency: 0.2158 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

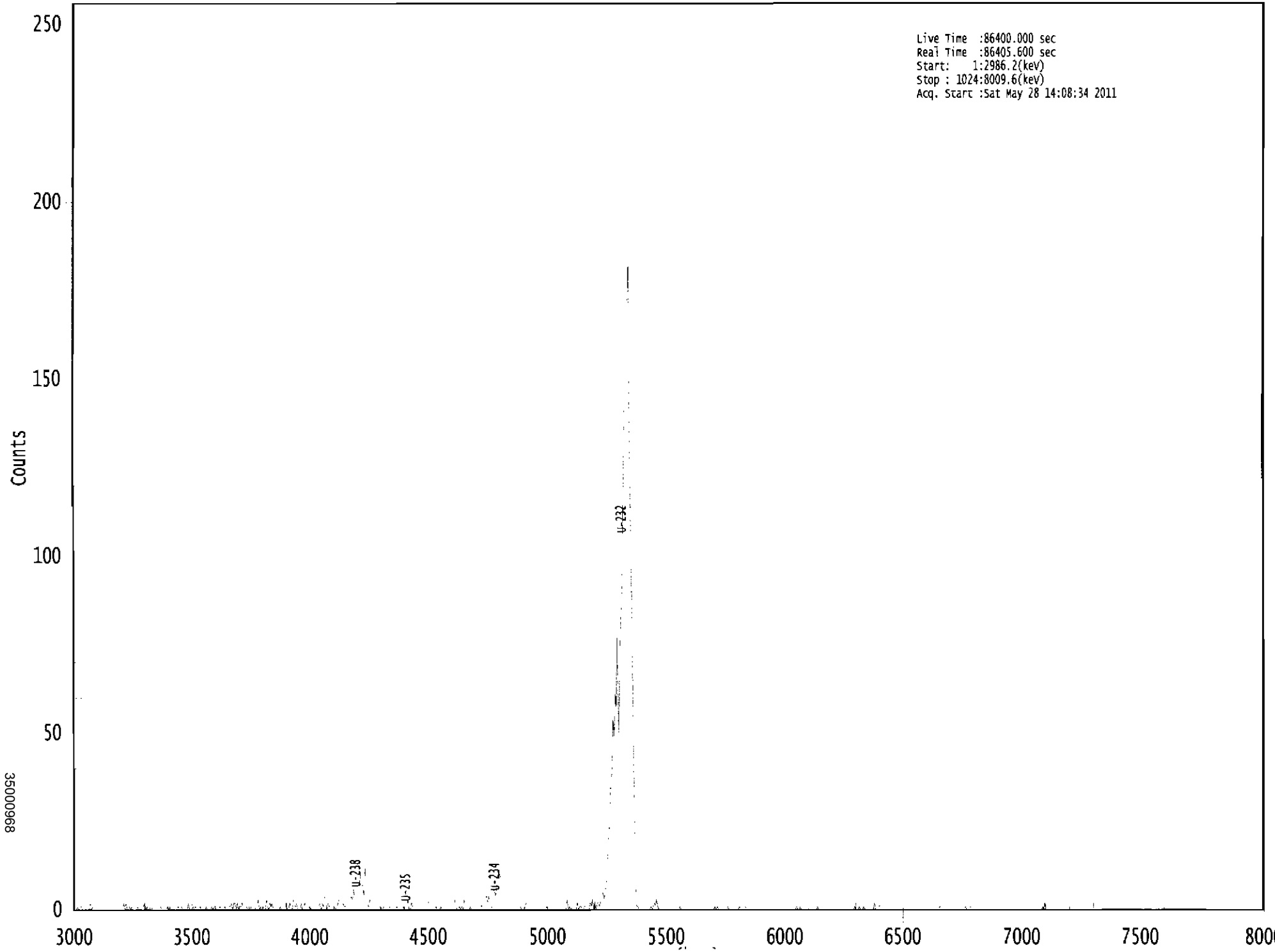
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5310.375 | 1986.00 | 44.56 | 0.00 | 0.00E+000 | 40 |
| U-234 | 4767.426 | 91.00 | 9.54 | 0.00 | 0.00E+000 | 25 |
| U-235 | 4397.654 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 6 |
| U-238 | 4185.897 | 109.00 | 10.44 | 0.00 | 0.00E+000 | 8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.8844E+000 | 3.04 | 3.9301E-003 | 2.05 |
| U-234 | 1.3216E-001 | 10.68 | 3.9301E-003 | 2.05 |
| U-235 | 1.6125E-002 | 33.40 | 4.8482E-003 | 2.05 |
| U-238 | 1.5763E-001 | 9.80 | 3.9132E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012947.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-001
Batch Identification: B11-01984 A
Sample Identification: 11-01984-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:36
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/13/10 20:11:11
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

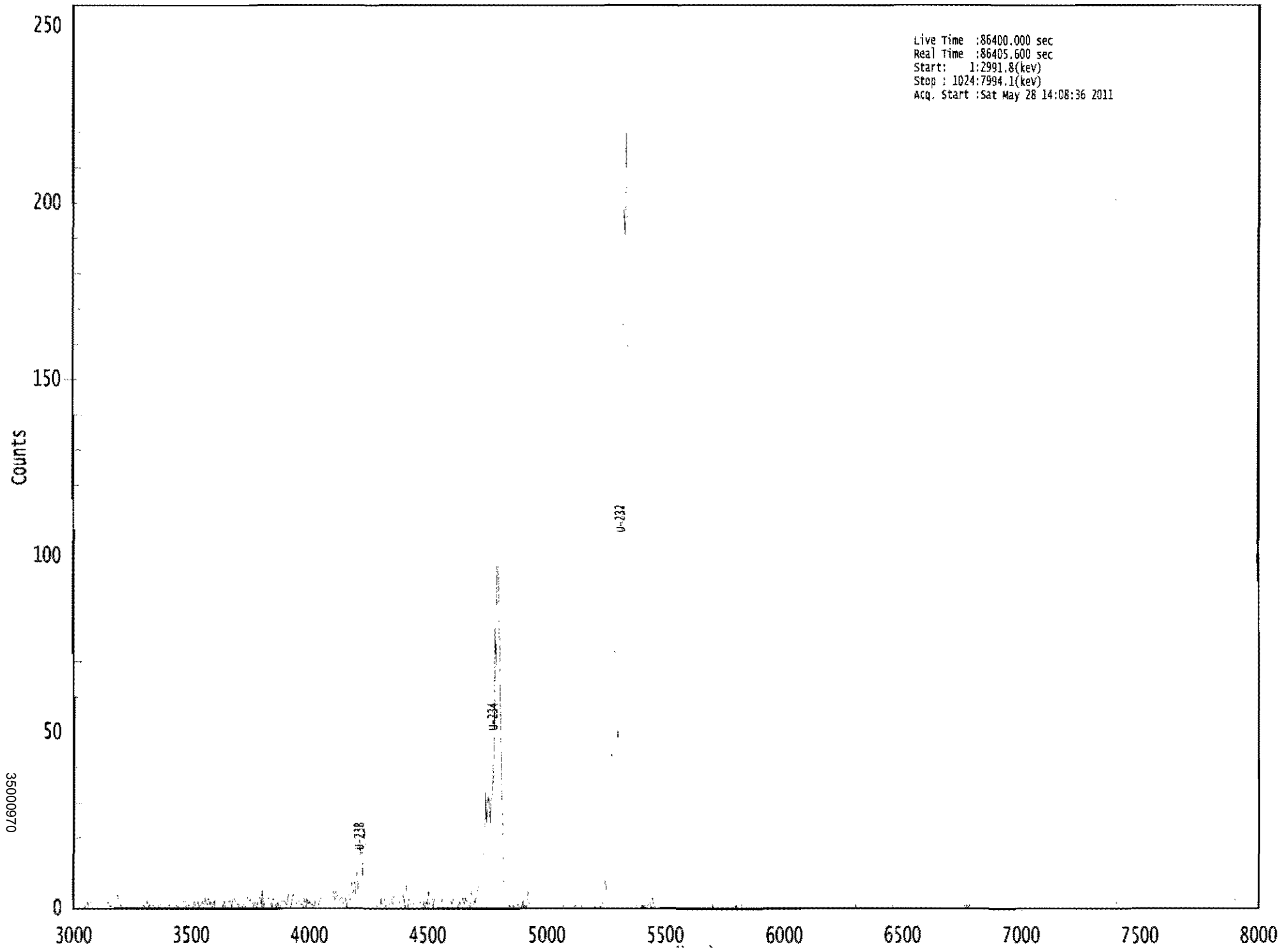
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5310.789 | 1910.00 | 43.70 | 0.00 | 0.00E+000 | 29 |
| U-234 | 4770.362 | 846.00 | 29.09 | 0.00 | 0.00E+000 | 27 |
| U-235 | 4406.175 | 32.00 | 5.66 | 0.00 | 0.00E+000 | 4 |
| U-238 | 4205.097 | 187.00 | 13.67 | 0.00 | 0.00E+000 | 16 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.7340E+000 | 3.08 | 3.8734E-003 | 2.06 |
| U-234 | 1.2110E+000 | 4.01 | 3.8734E-003 | 2.06 |
| U-235 | 5.6506E-002 | 17.80 | 4.7783E-003 | 2.06 |
| U-238 | 2.6652E-001 | 7.60 | 3.8568E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012948.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-002
Batch Identification: B11-01984 A
Sample Identification: 11-01984-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:38
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2130 +/- 0.0044 on 4/13/10 20:11:42
Effective Efficiency: 0.2130 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

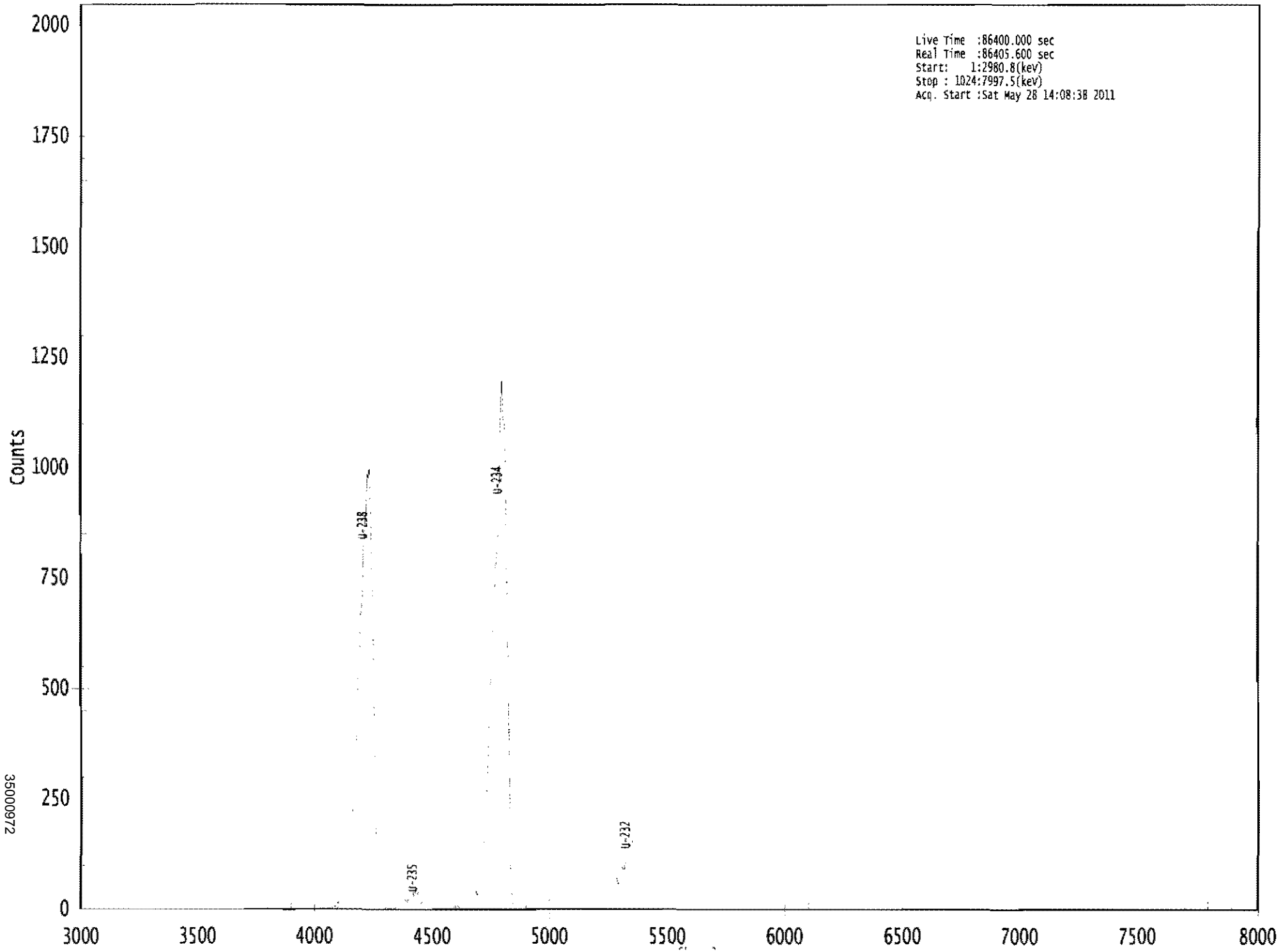
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5304.102 | 2184.00 | 46.73 | 0.00 | 0.00E+000 | 63 |
| U-234 | 4763.822 | 16307.00 | 127.70 | 0.00 | 0.00E+000 | 65 |
| U-235 | 4400.724 | 494.00 | 22.23 | 0.00 | 0.00E+000 | 50 |
| U-238 | 4192.753 | 13978.00 | 118.23 | 0.00 | 0.00E+000 | 67 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.2132E+000 | 2.97 | 3.9812E-003 | 2.06 |
| U-234 | 2.3991E+001 | 2.20 | 3.9812E-003 | 2.06 |
| U-235 | 8.9658E-001 | 4.95 | 4.9113E-003 | 2.06 |
| U-238 | 2.0477E+001 | 2.22 | 3.9641E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012949.CNF




35000972

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-003
Batch Identification: B11-01984 A
Sample Identification: 11-01984-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:40
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2230 +/- 0.0046 on 5/28/10 09:42:00
Effective Efficiency: 0.2230 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

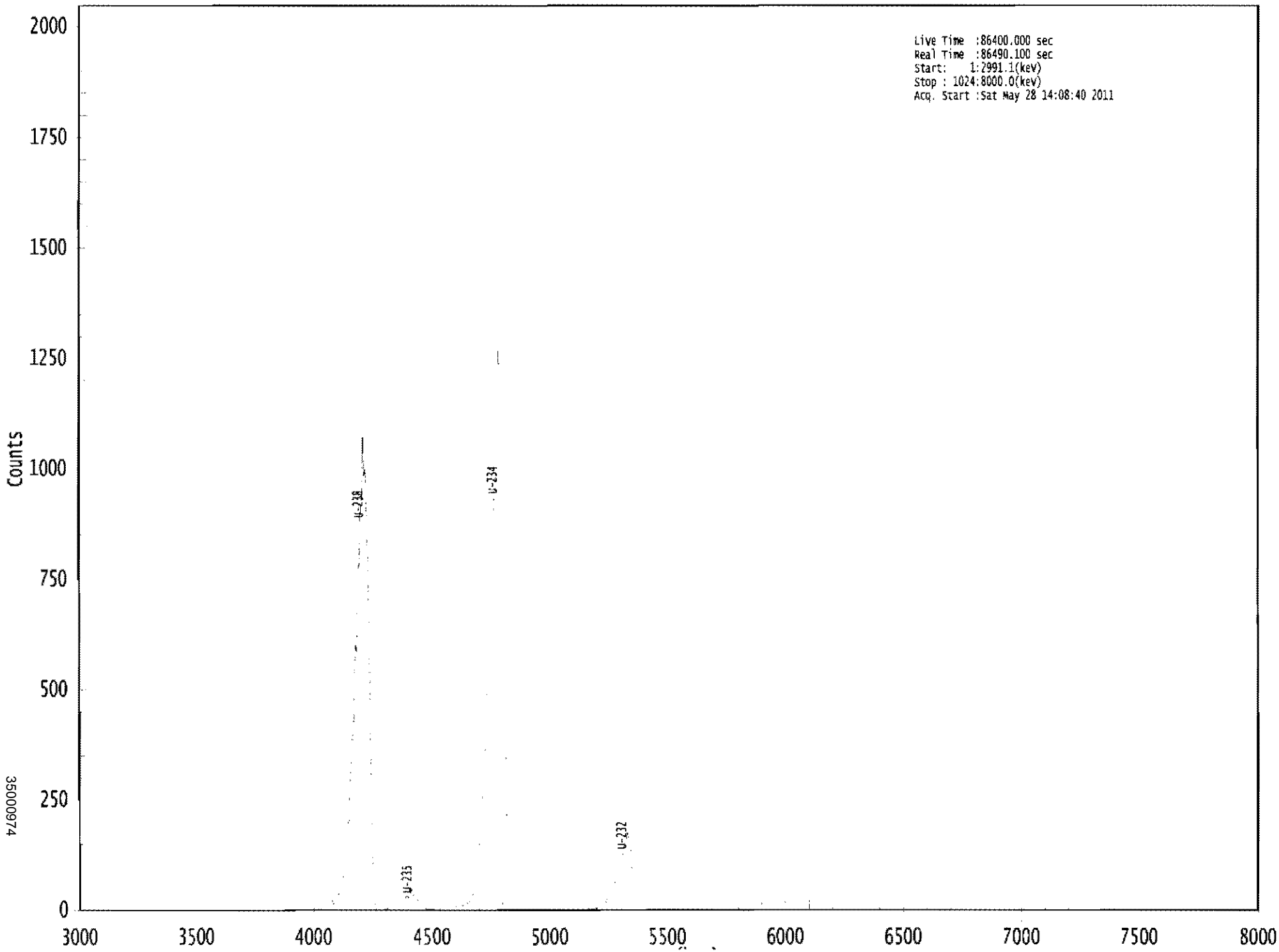
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5300.980 | 2231.00 | 47.23 | 0.00 | 0.00E+000 | 48 |
| U-234 | 4759.832 | 16471.00 | 128.34 | 0.00 | 0.00E+000 | 58 |
| U-235 | 4391.997 | 565.00 | 23.77 | 0.00 | 0.00E+000 | 47 |
| U-238 | 4190.832 | 14317.00 | 119.65 | 0.00 | 0.00E+000 | 63 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.1354E+000 | 2.95 | 3.8030E-003 | 2.06 |
| U-234 | 2.3148E+001 | 2.20 | 3.8030E-003 | 2.06 |
| U-235 | 9.7955E-001 | 4.68 | 4.6915E-003 | 2.06 |
| U-238 | 2.0035E+001 | 2.22 | 3.7867E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012950.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S
**********

Sample Description: ARS1-11-00897-004
Batch Identification: B11-01984 A
Sample Identification: 11-01984-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:42
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2098 +/- 0.0043 on 4/18/10 15:12:35
Effective Efficiency: 0.2098 +/- 0.0043

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

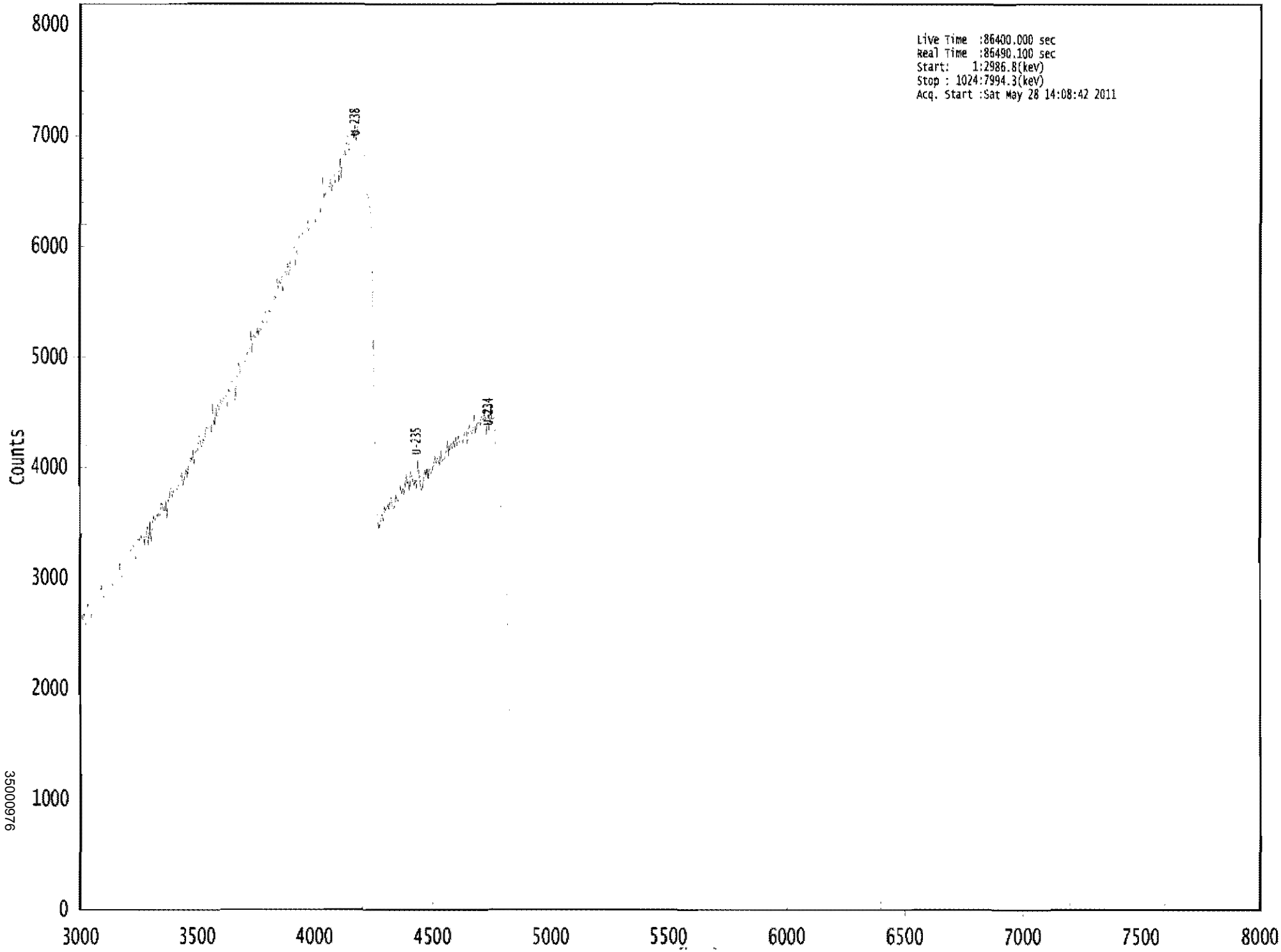
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5271.308 | 17.00 | 4.12 | 0.00 | 0.00E+000 | 4 |
| U-234 | 4730.237 | 126807.0 | 356.10 | 0.00 | 0.00E+000 | 223 |
| U-235 | 4424.233 | 124711.0 | 353.14 | 0.00 | 0.00E+000 | 91 |
| U-238 | 4162.931 | 229215.0 | 478.76 | 0.00 | 0.00E+000 | 103 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.5396E-002 | 24.34 | 4.0424E-003 | 2.06 |
| U-234 | 1.8943E+002 | 2.08 | 4.0424E-003 | 2.06 |
| U-235 | 2.2983E+002 | 2.08 | 4.9868E-003 | 2.06 |
| U-238 | 3.4095E+002 | 2.07 | 4.0251E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012872.CNF




35000976

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-005
Batch Identification: B11-01984 A
Sample Identification: 11-01984-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:44
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2206 +/- 0.0045 on 4/18/10 15:13:08
Effective Efficiency: 0.2206 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

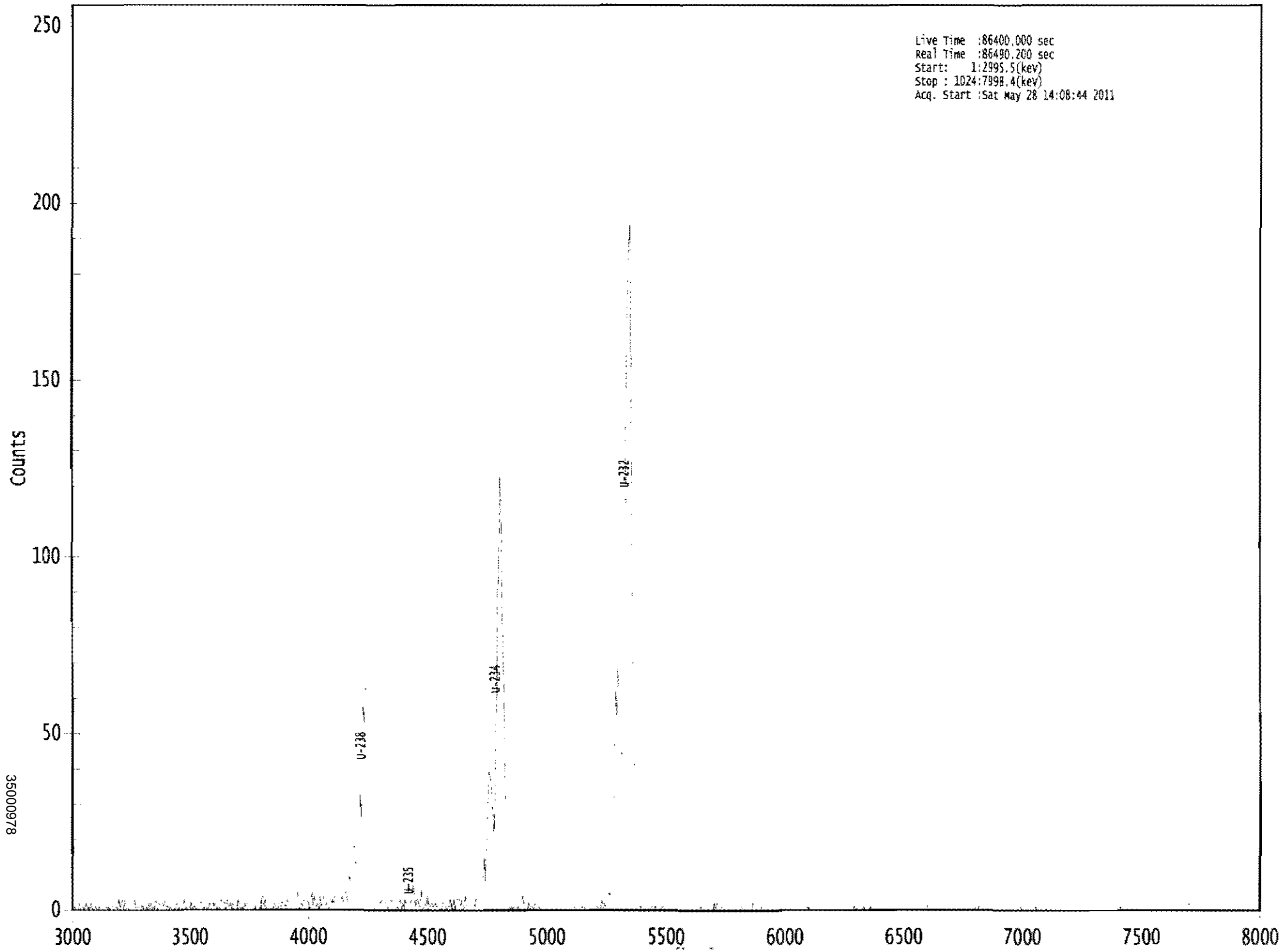
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5326.463 | 1705.00 | 41.29 | 0.00 | 0.00E+000 | 30 |
| U-234 | 4786.485 | 979.00 | 31.29 | 0.00 | 0.00E+000 | 29 |
| U-235 | 4419.855 | 53.00 | 7.28 | 0.00 | 0.00E+000 | 8 |
| U-238 | 4216.234 | 572.00 | 23.92 | 0.00 | 0.00E+000 | 30 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.4229E+000 | 3.18 | 3.8454E-003 | 2.05 |
| U-234 | 1.3912E+000 | 3.80 | 3.8454E-003 | 2.05 |
| U-235 | 9.2911E-002 | 13.89 | 4.7438E-003 | 2.05 |
| U-238 | 8.0935E-001 | 4.66 | 3.8289E-003 | 2.05 |

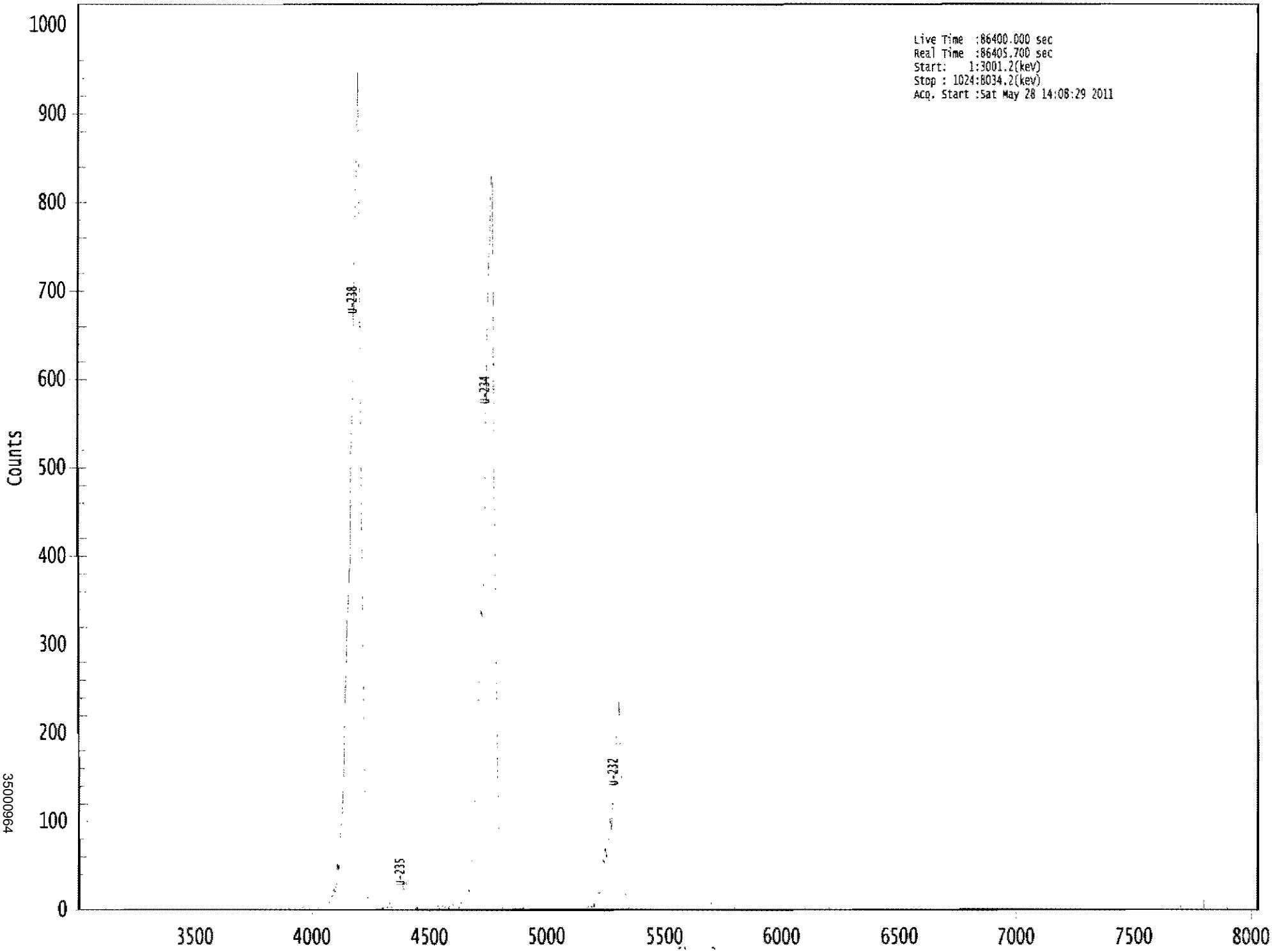
Errors quoted at 1.000 sigma

# 0000012951.CNF

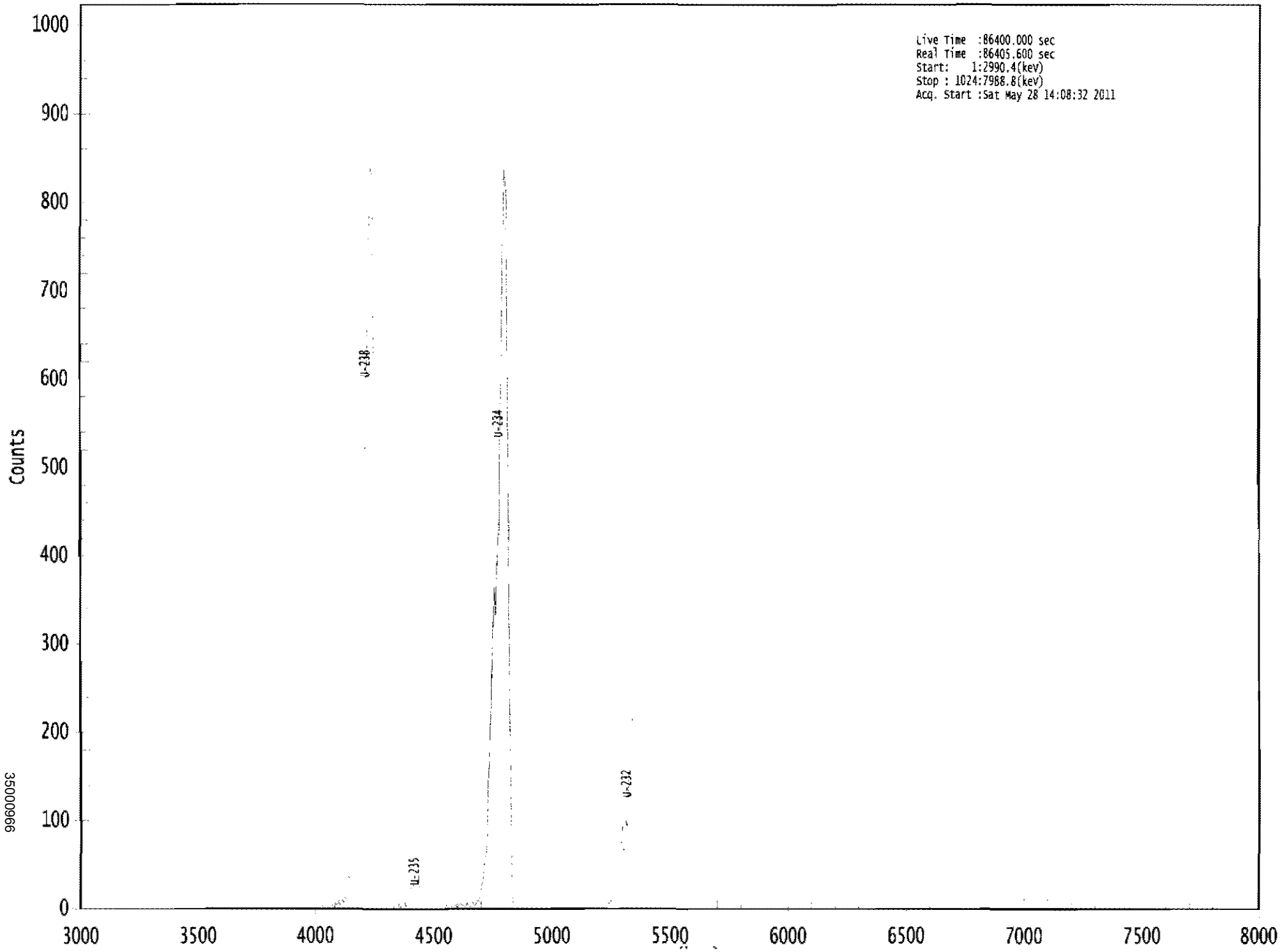



3500978

# 0000012945.CNF

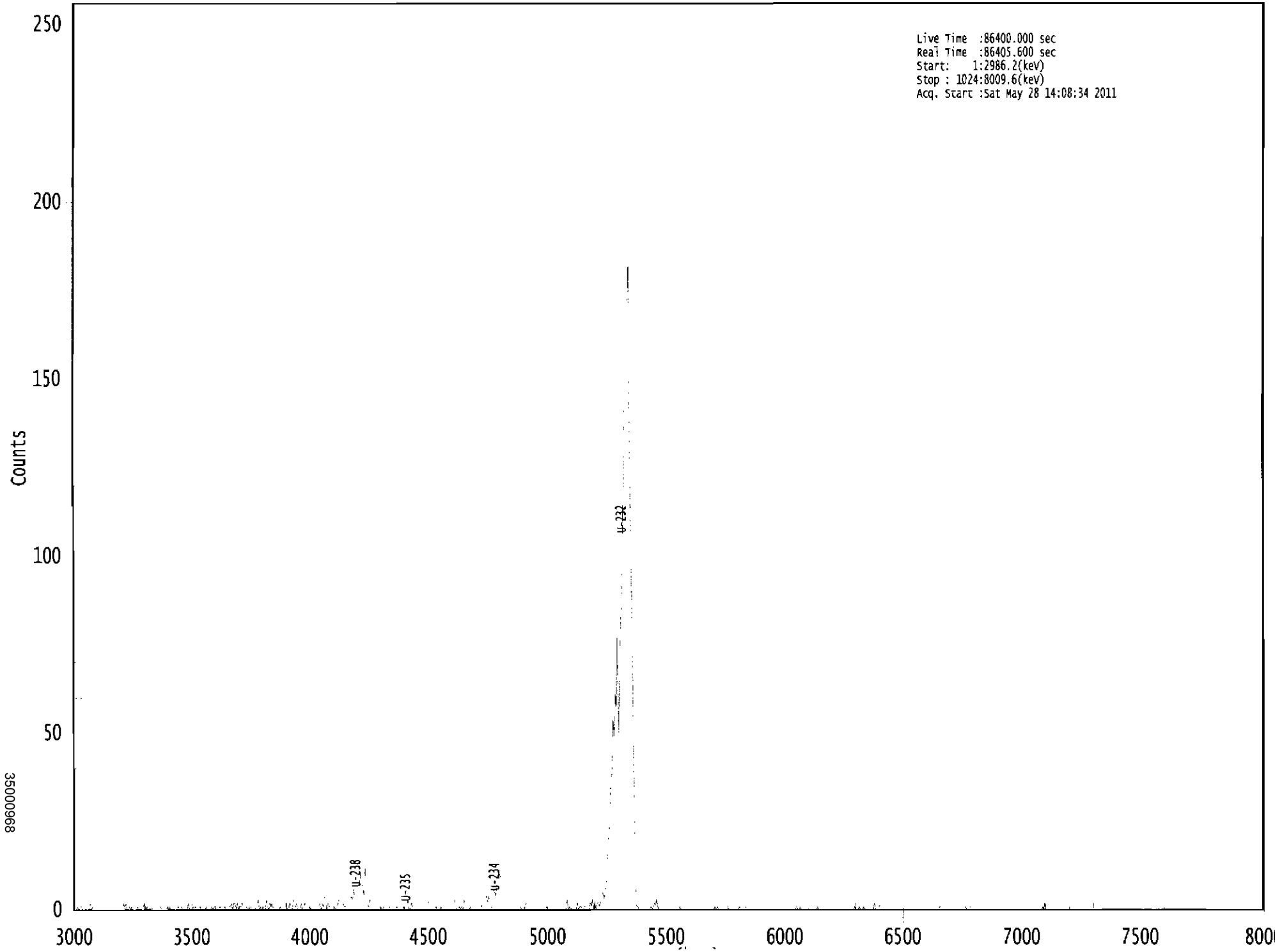


# 0000012946.CNF

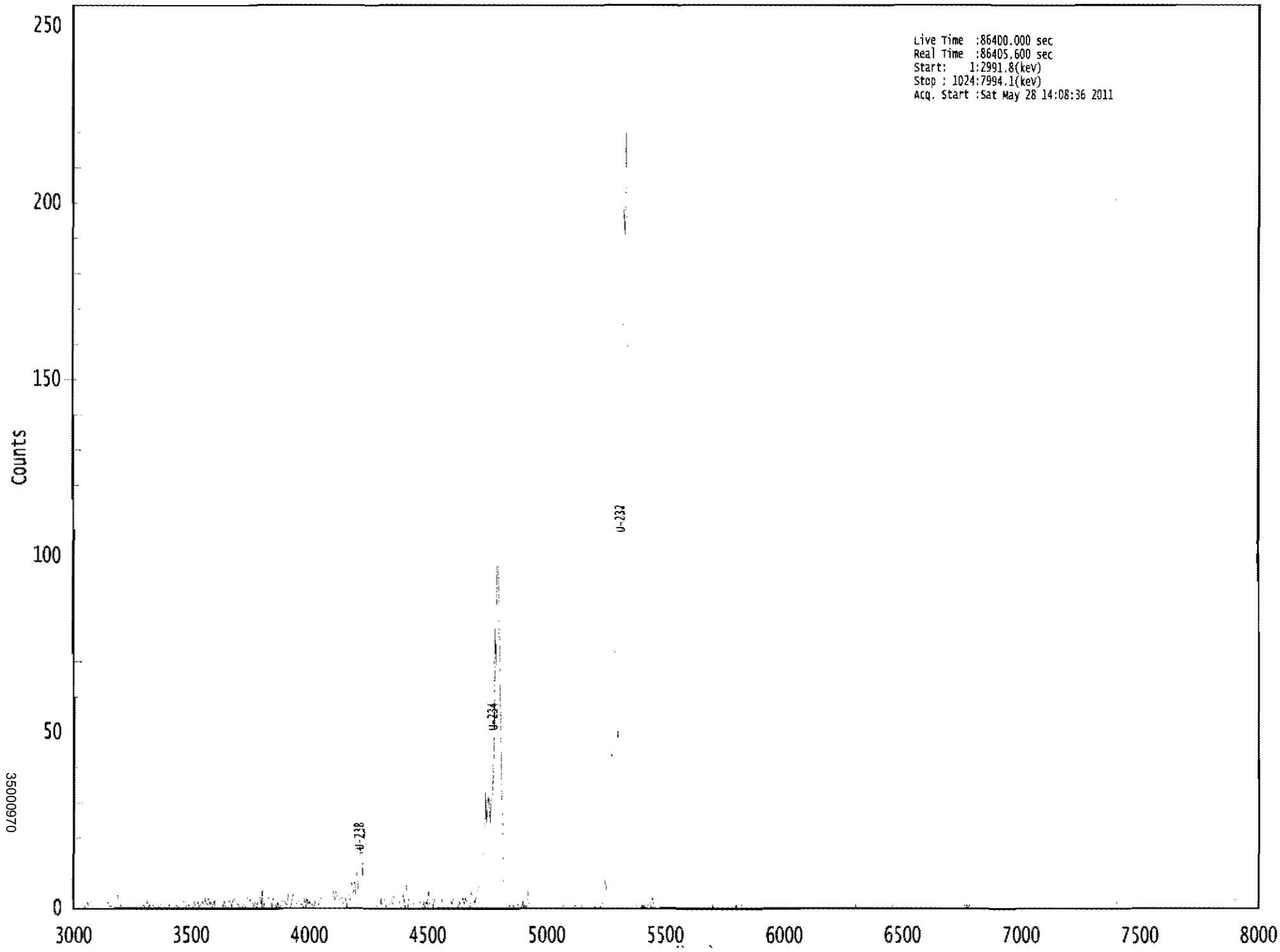



3500096

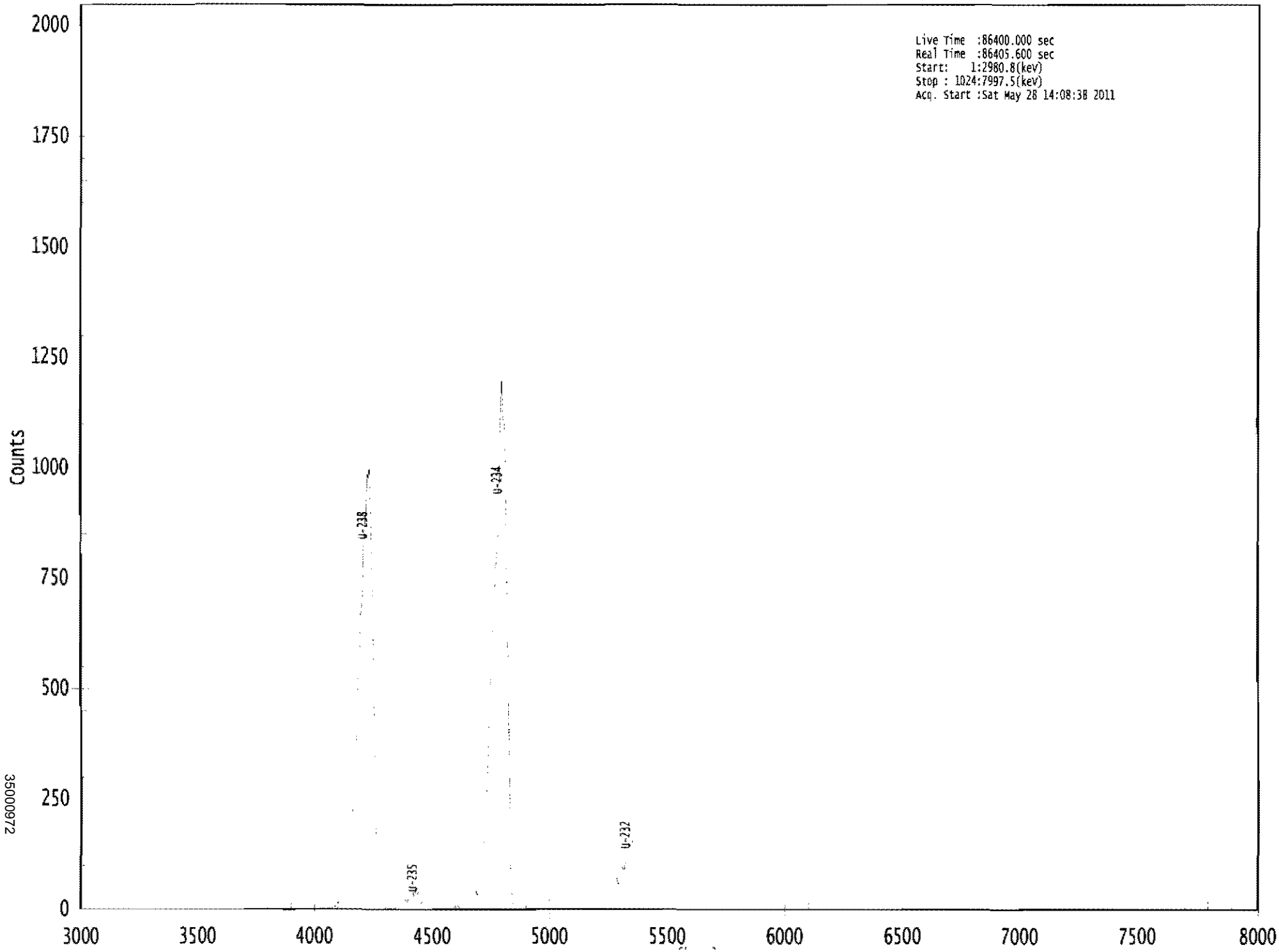
# 0000012947.CNF



# 0000012948.CNF

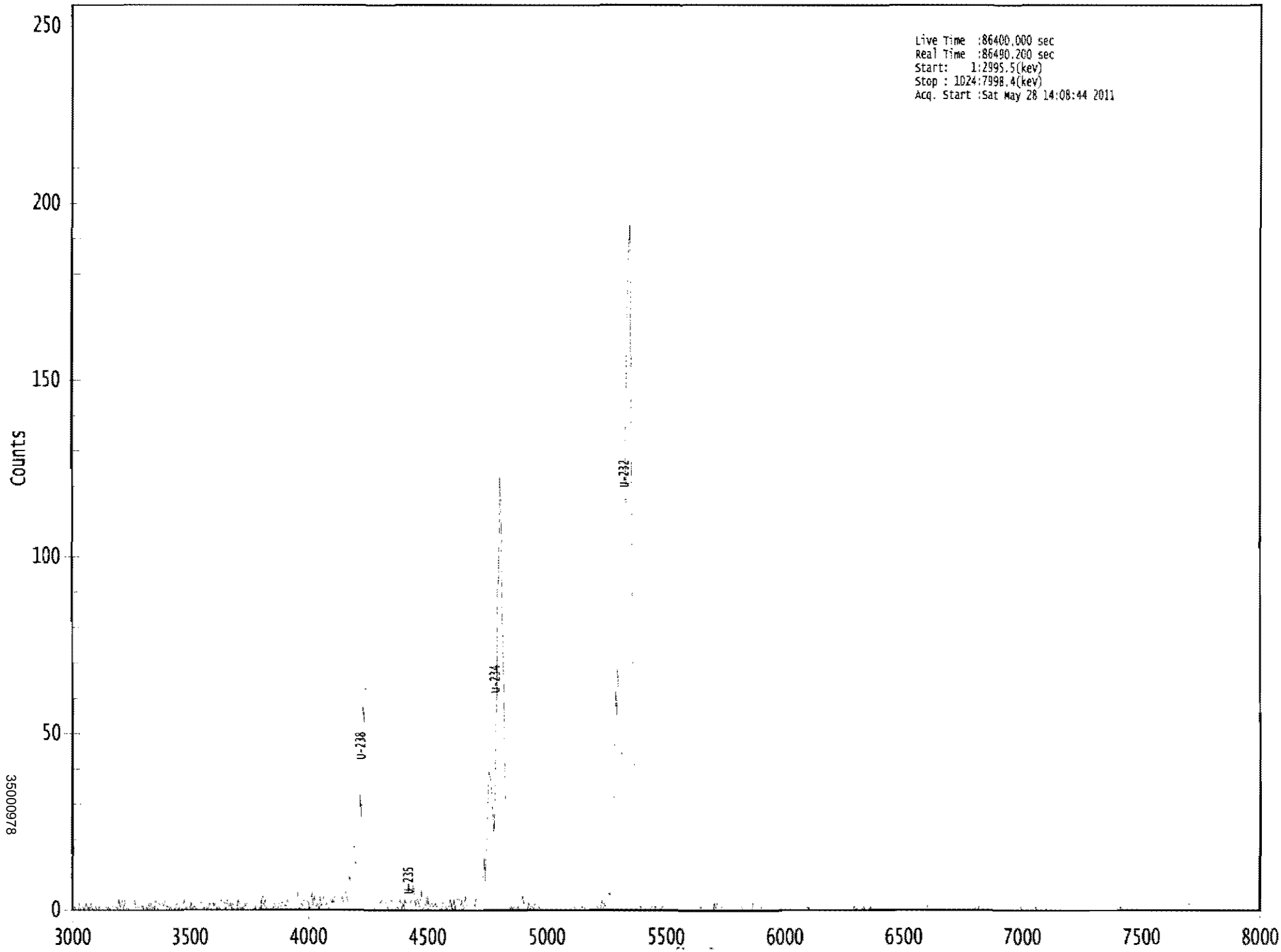


# 0000012949.CNF




35000972

# 0000012951.CNF




3500978

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-006
Batch Identification: B11-01984 A
Sample Identification: 11-01984-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:46
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2191 +/- 0.0045 on 4/18/10 15:15:02
Effective Efficiency: 0.2191 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

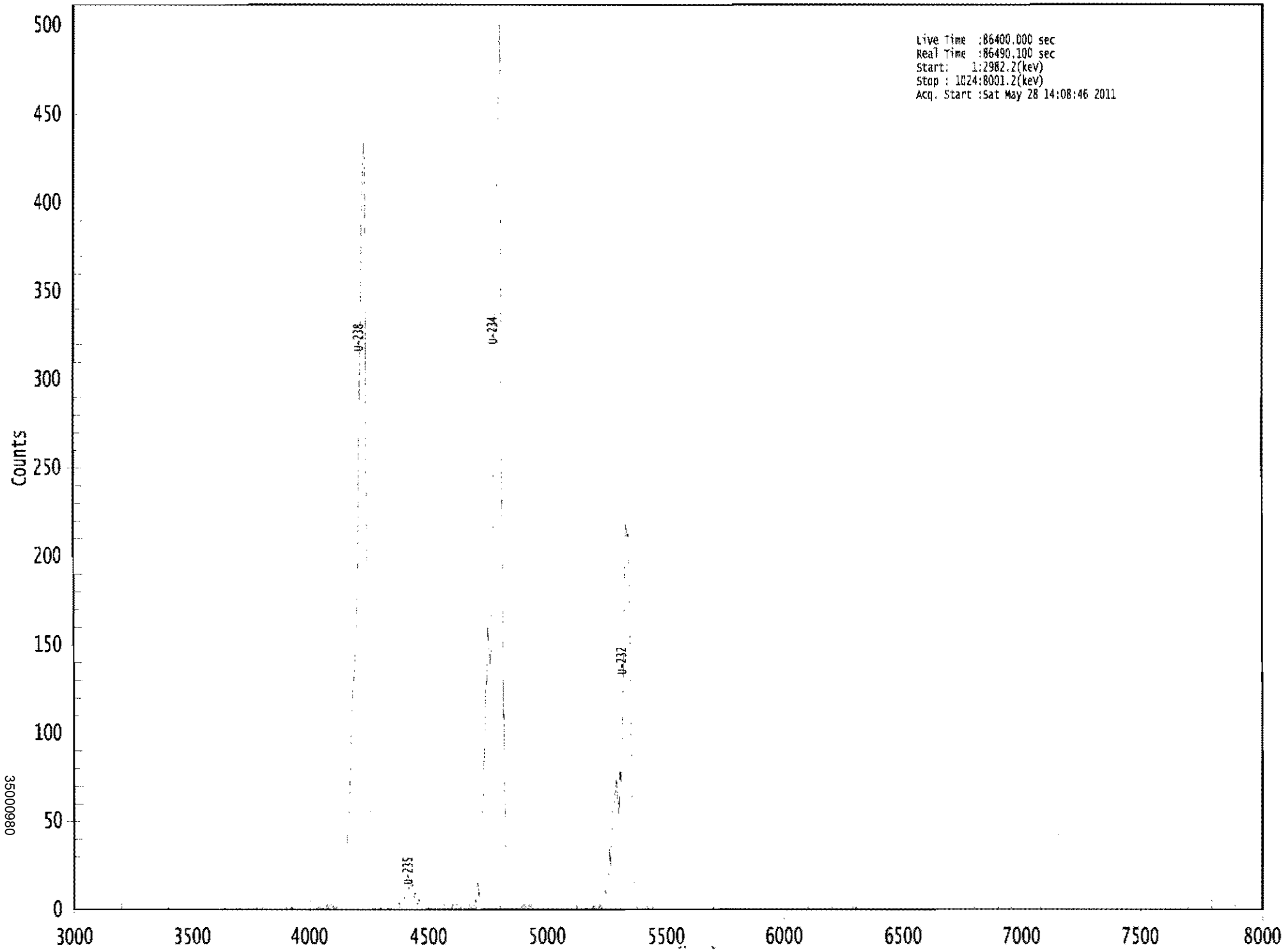
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5303.421 | 2223.00 | 47.15 | 0.00 | 0.00E+000 | 35 |
| U-234 | 4765.245 | 4650.00 | 68.19 | 0.00 | 0.00E+000 | 34 |
| U-235 | 4399.003 | 148.00 | 12.17 | 0.00 | 0.00E+000 | 33 |
| U-238 | 4197.465 | 4073.00 | 63.82 | 0.00 | 0.00E+000 | 35 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.1804E+000 | 2.95 | 3.8714E-003 | 2.06 |
| U-234 | 6.6526E+000 | 2.53 | 3.8714E-003 | 2.06 |
| U-235 | 2.6120E-001 | 8.47 | 4.7758E-003 | 2.06 |
| U-238 | 5.8021E+000 | 2.59 | 3.8548E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012952.CNF




3500980

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-007
Batch Identification: B11-01984 A
Sample Identification: 11-01984-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:48
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2124 +/- 0.0044 on 4/18/10 15:15:32
Effective Efficiency: 0.2124 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

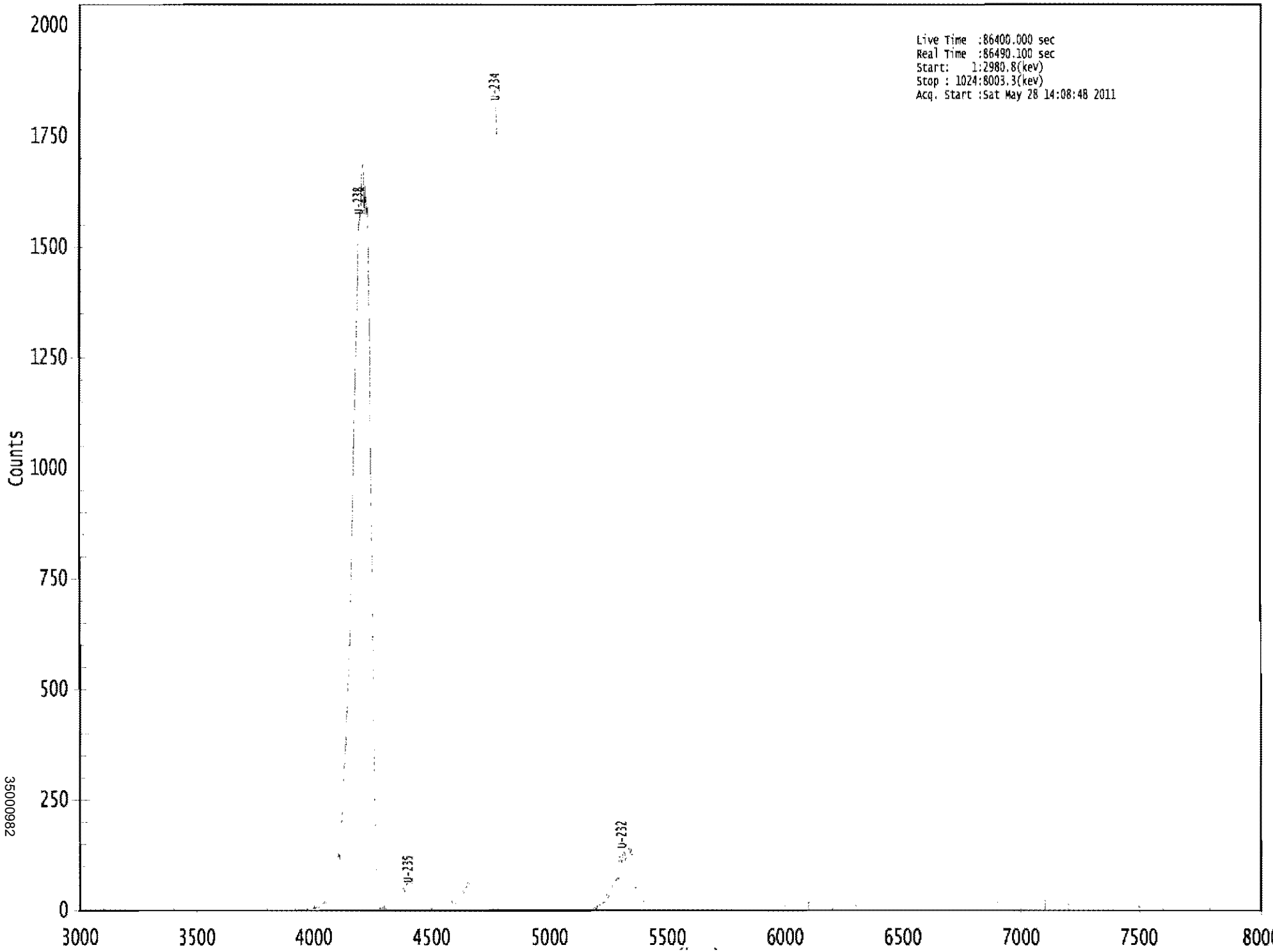
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5294.104 | 2408.00 | 49.07 | 0.00 | 0.00E+000 | 67 |
| U-234 | 4750.711 | 33815.00 | 183.89 | 0.00 | 0.00E+000 | 82 |
| U-235 | 4383.236 | 1123.00 | 33.51 | 0.00 | 0.00E+000 | 88 |
| U-238 | 4178.813 | 30828.00 | 175.58 | 0.00 | 0.00E+000 | 84 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.5536E+000 | 2.89 | 3.9934E-003 | 2.06 |
| U-234 | 4.9902E+001 | 2.13 | 3.9934E-003 | 2.06 |
| U-235 | 2.0444E+000 | 3.62 | 4.9263E-003 | 2.06 |
| U-238 | 4.5299E+001 | 2.13 | 3.9762E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012953.CNF




35000982

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-008
Batch Identification: B11-01984 A
Sample Identification: 11-01984-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:50
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2157 +/- 0.0044 on 4/18/10 15:16:34
Effective Efficiency: 0.2157 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

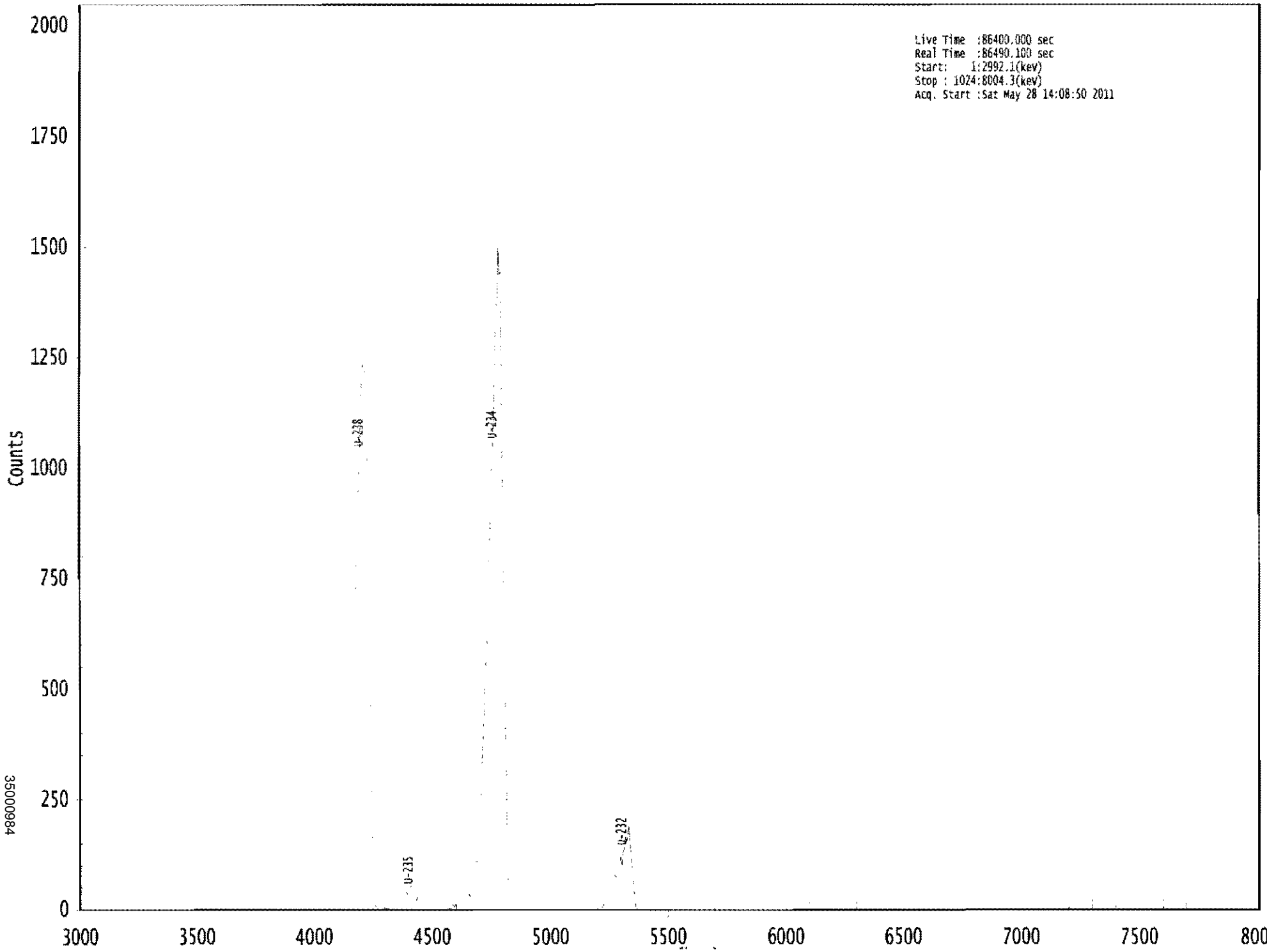
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5299.331 | 2382.00 | 48.81 | 0.00 | 0.00E+000 | 57 |
| U-234 | 4757.238 | 20560.00 | 143.39 | 0.00 | 0.00E+000 | 66 |
| U-235 | 4392.632 | 637.00 | 25.24 | 0.00 | 0.00E+000 | 51 |
| U-238 | 4186.939 | 17397.00 | 131.90 | 0.00 | 0.00E+000 | 65 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.4607E+000 | 2.90 | 3.9314E-003 | 2.05 |
| U-234 | 2.9870E+001 | 2.17 | 3.9314E-003 | 2.05 |
| U-235 | 1.1417E+000 | 4.46 | 4.8499E-003 | 2.05 |
| U-238 | 2.5167E+001 | 2.19 | 3.9145E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012954.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-009
Batch Identification: B11-01984 A
Sample Identification: 11-01984-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:52
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2132 +/- 0.0044 on 4/19/10 14:24:55
Effective Efficiency: 0.2132 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

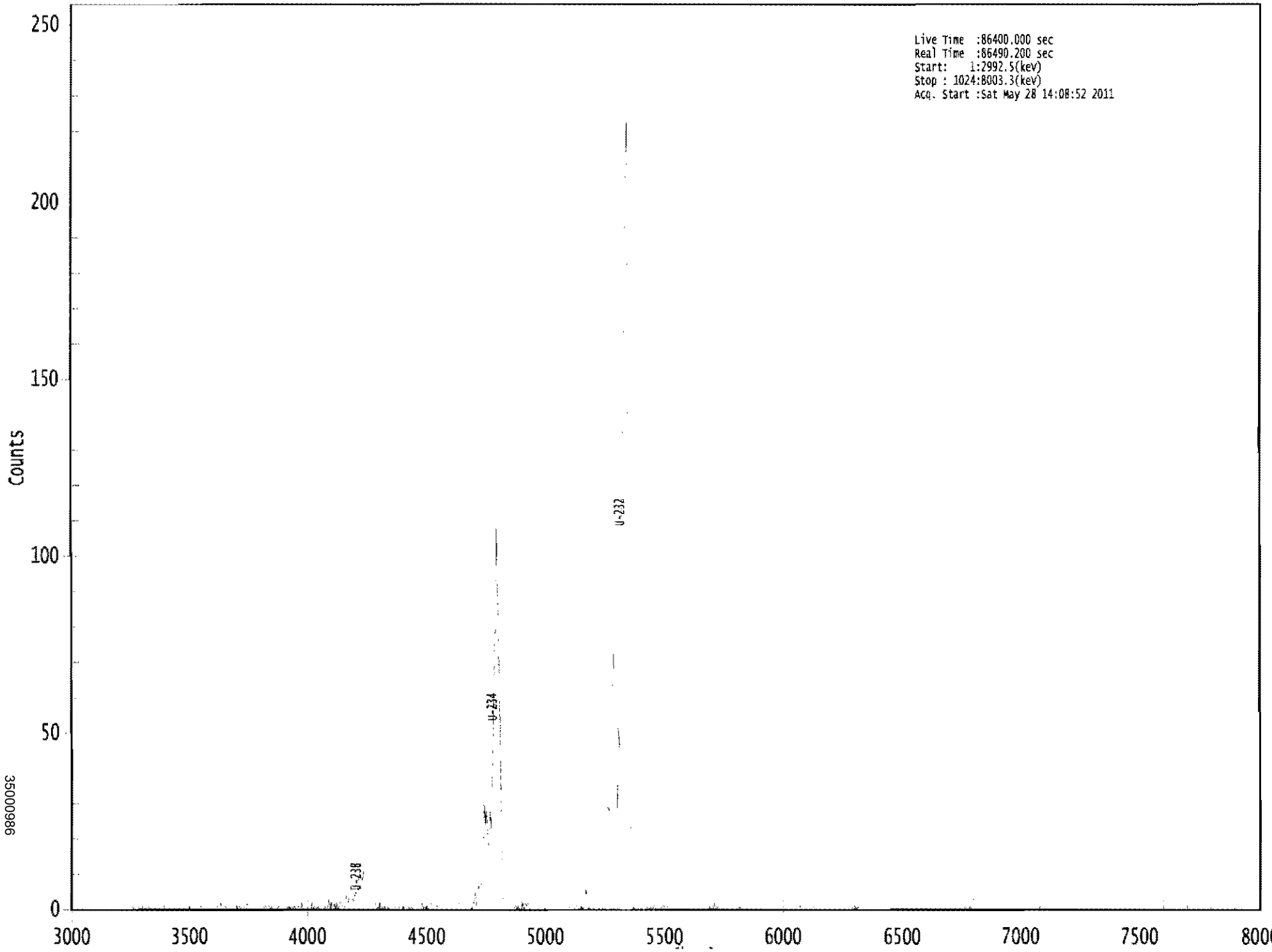
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5313.767 | 1753.00 | 41.87 | 0.00 | 0.00E+000 | 27 |
| U-234 | 4774.800 | 790.00 | 28.11 | 0.00 | 0.00E+000 | 26 |
| U-235 | 4439.090 | 12.00 | 3.46 | 0.00 | 0.00E+000 | 4 |
| U-238 | 4202.151 | 102.00 | 10.10 | 0.00 | 0.00E+000 | 29 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.5768E+000 | 3.15 | 3.9777E-003 | 2.06 |
| U-234 | 1.1613E+000 | 4.11 | 3.9777E-003 | 2.06 |
| U-235 | 2.1760E-002 | 28.94 | 4.9070E-003 | 2.06 |
| U-238 | 1.4929E-001 | 10.11 | 3.9606E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012955.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-010
Batch Identification: B11-01984 A
Sample Identification: 11-01984-13
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:54
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/19/10 14:26:08
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

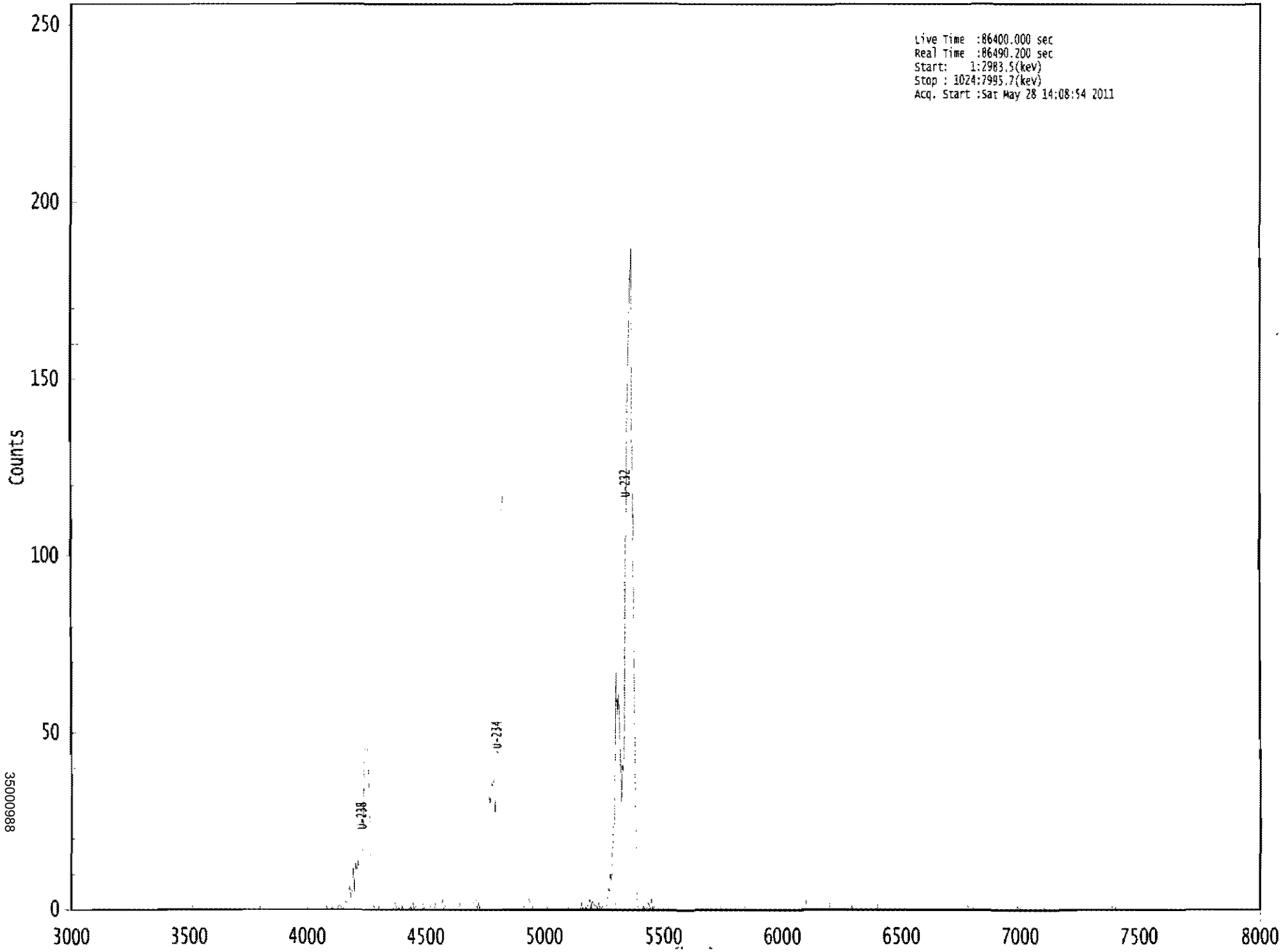
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5328.673 | 1677.00 | 40.95 | 0.00 | 0.00E+000 | 34 |
| U-234 | 4788.438 | 1035.00 | 32.17 | 0.00 | 0.00E+000 | 29 |
| U-235 | 4407.052 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 7 |
| U-238 | 4220.586 | 394.00 | 19.85 | 0.00 | 0.00E+000 | 29 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.3997E+000 | 3.19 | 3.8722E-003 | 2.05 |
| U-234 | 1.4811E+000 | 3.73 | 3.8722E-003 | 2.05 |
| U-235 | 1.9418E-002 | 30.22 | 4.7769E-003 | 2.05 |
| U-238 | 5.6138E-001 | 5.44 | 3.8556E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012956.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-011
Batch Identification: B11-01984 A
Sample Identification: 11-01984-14
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:56
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86490.1 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2172 +/- 0.0045 on 4/19/10 14:26:42
Effective Efficiency: 0.2172 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

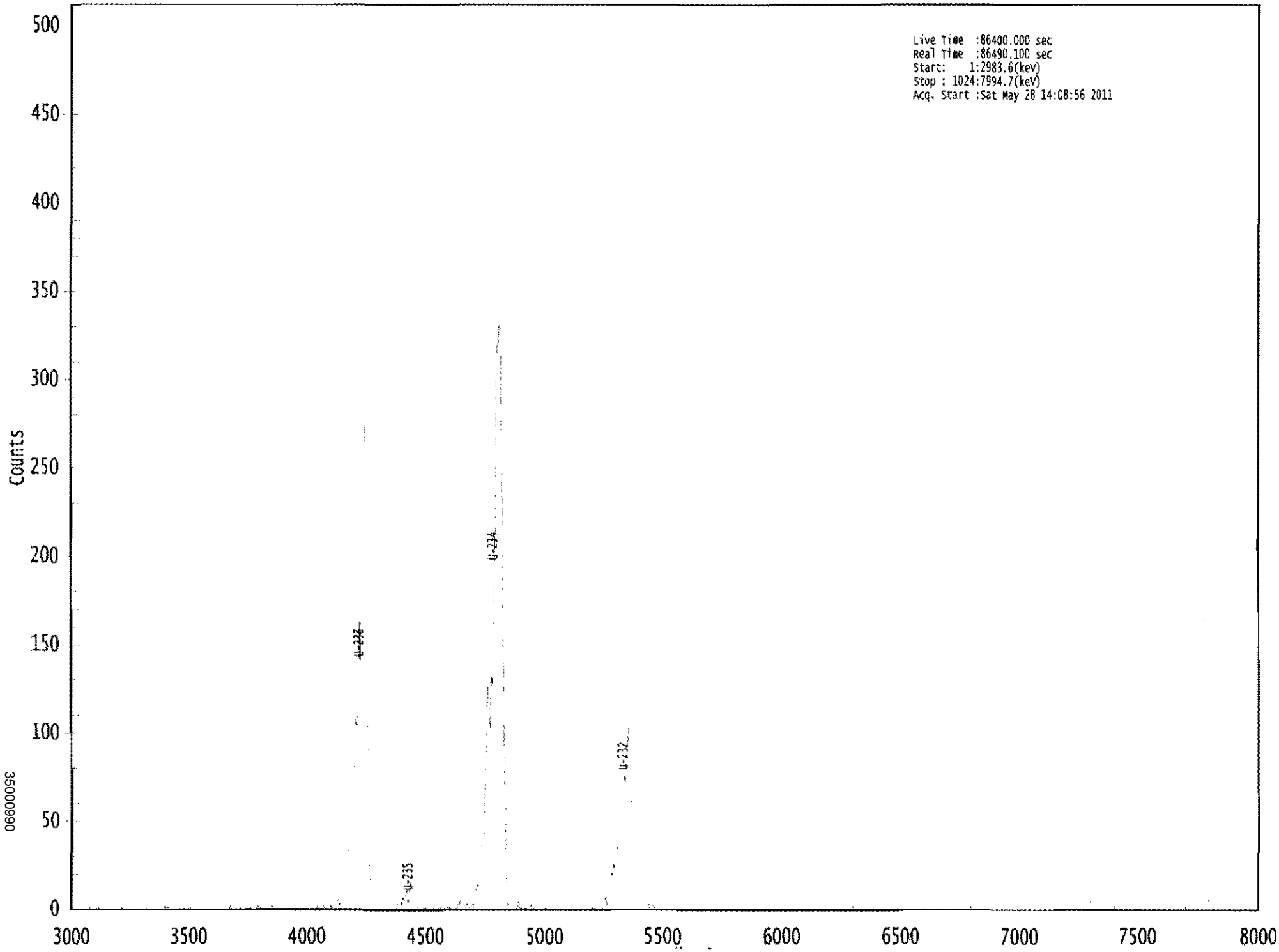
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5319.211 | 1003.00 | 31.67 | 0.00 | 0.00E+000 | 36 |
| U-234 | 4778.203 | 3462.00 | 58.84 | 0.00 | 0.00E+000 | 38 |
| U-235 | 4411.621 | 111.00 | 10.54 | 0.00 | 0.00E+000 | 19 |
| U-238 | 4208.378 | 2551.00 | 50.51 | 0.00 | 0.00E+000 | 36 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.4473E+000 | 3.77 | 3.9046E-003 | 2.05 |
| U-234 | 4.9954E+000 | 2.67 | 3.9046E-003 | 2.05 |
| U-235 | 1.9758E-001 | 9.71 | 4.8168E-003 | 2.05 |
| U-238 | 3.6651E+000 | 2.85 | 3.8878E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012957.CNF



# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ApexAlpha | ARS1-B11-01984-01 | U-232 | 2423 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:08 | A_2 |
| 2 | ApexAlpha | ARS1-B11-01984-01 | U-234 | 9650 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_2 |
| 3 | ApexAlpha | ARS1-B11-01984-01 | U-235 | 348 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:08 | A_2 |
| 4 | ApexAlpha | ARS1-B11-01984-01 | U-238 | 10054 | 1440 | 4 | 1440 | 0.21 | 05/28/11 14:08 | A_2 |
| 5 | ApexAlpha | ARS1-B11-01984-02 | U-232 | 2366 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 6 | ApexAlpha | ARS1-B11-01984-02 | U-234 | 9438 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 7 | ApexAlpha | ARS1-B11-01984-02 | U-235 | 343 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 8 | ApexAlpha | ARS1-B11-01984-02 | U-238 | 9439 | 1440 | 4 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 9 | ApexAlpha | ARS1-B11-01984-03 | U-232 | 1986 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 10 | ApexAlpha | ARS1-B11-01984-03 | U-234 | 91 | 1440 | 10 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 11 | ApexAlpha | ARS1-B11-01984-03 | U-235 | 9 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 12 | ApexAlpha | ARS1-B11-01984-03 | U-238 | 109 | 1440 | 53 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 13 | ApexAlpha | ARS1-B11-01984-04 | U-232 | 1910 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 14 | ApexAlpha | ARS1-B11-01984-04 | U-234 | 846 | 1440 | 9 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 15 | ApexAlpha | ARS1-B11-01984-04 | U-235 | 32 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 16 | ApexAlpha | ARS1-B11-01984-04 | U-238 | 187 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:09 | A_2 |
| 17 | ApexAlpha | ARS1-B11-01984-05 | U-232 | 2184 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:09 | A_2 |
| 18 | ApexAlpha | ARS1-B11-01984-05 | U-234 | 16307 | 1440 | 5 | 1440 | 0.21 | 05/28/11 14:09 | A_2 |
| 19 | ApexAlpha | ARS1-B11-01984-05 | U-235 | 494 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:09 | A_2 |
| 20 | ApexAlpha | ARS1-B11-01984-05 | U-238 | 13978 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:09 | A_2 |
| 21 | ApexAlpha | ARS1-B11-01984-06 | U-232 | 2231 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 22 | ApexAlpha | ARS1-B11-01984-06 | U-234 | 16471 | 1440 | 6 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 23 | ApexAlpha | ARS1-B11-01984-06 | U-235 | 565 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 24 | ApexAlpha | ARS1-B11-01984-06 | U-238 | 14317 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 25 | ApexAlpha | ARS1-B11-01984-07 | U-232 | 17 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 26 | ApexAlpha | ARS1-B11-01984-07 | U-234 | 126807 | 1440 | 11 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 27 | ApexAlpha | ARS1-B11-01984-07 | U-235 | 124711 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 28 | ApexAlpha | ARS1-B11-01984-07 | U-238 | 229215 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 29 | ApexAlpha | ARS1-B11-01984-08 | U-232 | 1705 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 30 | ApexAlpha | ARS1-B11-01984-08 | U-234 | 979 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 31 | ApexAlpha | ARS1-B11-01984-08 | U-235 | 53 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 32 | ApexAlpha | ARS1-B11-01984-08 | U-238 | 572 | 1440 | 6 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 33 | ApexAlpha | ARS1-B11-01984-09 | U-232 | 2223 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 34 | ApexAlpha | ARS1-B11-01984-09 | U-234 | 4650 | 1440 | 4 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 35 | ApexAlpha | ARS1-B11-01984-09 | U-235 | 148 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 36 | ApexAlpha | ARS1-B11-01984-09 | U-238 | 4073 | 1440 | 16 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 37 | ApexAlpha | ARS1-B11-01984-10 | U-232 | 2408 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 38 | ApexAlpha | ARS1-B11-01984-10 | U-234 | 33815 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 39 | ApexAlpha | ARS1-B11-01984-10 | U-235 | 1123 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 40 | ApexAlpha | ARS1-B11-01984-10 | U-238 | 30828 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 41 | ApexAlpha | ARS1-B11-01984-11 | U-232 | 2382 | 1440 | 4 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 42 | ApexAlpha | ARS1-B11-01984-11 | U-234 | 20560 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 43 | ApexAlpha | ARS1-B11-01984-11 | U-235 | 637 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 44 | ApexAlpha | ARS1-B11-01984-11 | U-238 | 17397 | 1440 | 6 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 45 | ApexAlpha | ARS1-B11-01984-12 | U-232 | 1753 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 46 | ApexAlpha | ARS1-B11-01984-12 | U-234 | 790 | 1440 | 2 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 47 | ApexAlpha | ARS1-B11-01984-12 | U-235 | 12 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 48 | ApexAlpha | ARS1-B11-01984-12 | U-238 | 102 | 1440 | 10 | 1440 | 0.21 | 05/28/11 14:09 | A_3 |
| 49 | ApexAlpha | ARS1-B11-01984-13 | U-232 | 1677 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 50 | ApexAlpha | ARS1-B11-01984-13 | U-234 | 1035 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 51 | ApexAlpha | ARS1-B11-01984-13 | U-235 | 11 | 1440 | 1 | 1440 | 0.22 | 05/28/11 | 35000991 |
| 52 | ApexAlpha | ARS1-B11-01984-13 | U-238 | 394 | 1440 | 6 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |

35000991

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Det# |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | ApexAlpha | ARS1-B11-01984-14 | U-232 | 1003 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 54 | ApexAlpha | ARS1-B11-01984-14 | U-234 | 3462 | 1440 | 17 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 55 | ApexAlpha | ARS1-B11-01984-14 | U-235 | 111 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |
| 56 | ApexAlpha | ARS1-B11-01984-14 | U-238 | 2551 | 1440 | 14 | 1440 | 0.22 | 05/28/11 14:09 | A_3 |

| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984-01 | | | | 2 | U-232 | 4.26451163 | 0.542661908 | 0.27686832 | 0.542661908 | 0.004769635 | 0 | 0.169804294 | 0.08663484 | 0.16980429 | pCi |
| ARS1-B11-01984-01 | | | | 2 | U-234 | 16.96092265 | 2.077676467 | 1.060039014 | 2.077676467 | 0.018933258 | 0.007084329 | 0.33856684 | 0.17273818 | 0.33856684 | pCi |
| ARS1-B11-01984-01 | | | | 2 | U-235 | 0.707154083 | 0.11345793 | 0.057886699 | 0.11345793 | 0.015004633 | 0.004740951 | 0.074619677 | 0.03807126 | 0.07461968 | pCi |
| ARS1-B11-01984-01 | | | | 2 | U-238 | 17.63411999 | 2.158996106 | 1.101528625 | 2.158996106 | 0.021082907 | 0.008163918 | 0.344905101 | 0.17597199 | 0.3449051 | pCi |
| ARS1-B11-01984-02 | | | | 2 | U-232 | 4.27390213 | 0.544497913 | 0.277805058 | 0.544497913 | 0.004895298 | 0 | 0.172215911 | 0.08786526 | 0.17221591 | pCi |
| ARS1-B11-01984-02 | | | | 2 | U-234 | 17.0288408 | 2.086600919 | 1.064592305 | 2.086600919 | 0.013285929 | 0.004197899 | 0.343613481 | 0.175313 | 0.34361348 | pCi |
| ARS1-B11-01984-02 | | | | 2 | U-235 | 0.715327003 | 0.115133641 | 0.058741653 | 0.115133641 | 0.01539995 | 0.004865858 | 0.076035045 | 0.03879339 | 0.07603504 | pCi |
| ARS1-B11-01984-02 | | | | 2 | U-238 | 16.99118113 | 2.08201029 | 1.062250148 | 2.08201029 | 0.021638364 | 0.008379007 | 0.342998903 | 0.17499944 | 0.3429989 | pCi |
| ARS1-B11-01984-03 | | | | 2 | U-232 | 4.273085565 | 0.549676469 | 0.280447178 | 0.549676469 | 0.020008551 | 0.007085913 | 0.168219313 | 0.09603026 | 0.18821931 | pCi |
| ARS1-B11-01984-03 | | | | 2 | U-234 | 0.174271447 | 0.047325152 | 0.024145486 | 0.047325152 | 0.037486277 | 0.015827857 | 0.04237971 | 0.0216223 | 0.04237971 | pCi |
| ARS1-B11-01984-03 | | | | 2 | U-235 | 0.014963041 | 0.017028575 | 0.008688049 | 0.017028575 | 0.026855718 | 0.010048706 | 0.016932274 | 0.00863892 | 0.01693227 | pCi |
| ARS1-B11-01984-03 | | | | 2 | U-238 | 0.120242994 | 0.055501912 | 0.028317302 | 0.055501912 | 0.078550074 | 0.036365586 | 0.053565521 | 0.02732935 | 0.05356552 | pCi |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | MW-1-110419 | 2 | U-232 | 8.559823635 | 1.103472695 | 0.562996273 | 1.103472695 | 0.01214509 | 0 | 0.383887706 | 0.19586107 | 0.38388771 | pCi |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | MW-1-110419 | 2 | U-234 | 3.743294543 | 0.519976977 | 0.265294376 | 0.519976977 | 0.074545174 | 0.031212654 | 0.256311252 | 0.13077105 | 0.25631125 | pCi |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | MW-1-110419 | 2 | U-235 | 0.160700599 | 0.061513881 | 0.031384633 | 0.061513881 | 0.038167754 | 0.012059705 | 0.058367198 | 0.02977918 | 0.0583672 | pCi |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | MW-1-110419 | 2 | U-238 | 0.825715965 | 0.156280014 | 0.079734701 | 0.156280014 | 0.041464331 | 0.014684354 | 0.120266847 | 0.06136064 | 0.12026685 | pCi |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | MW-2-110421 | 2 | U-232 | 8.520118959 | 1.090225603 | 0.556237553 | 1.090225603 | 0.04206861 | 0.015740971 | 0.358072077 | 0.18268984 | 0.35807208 | pCi |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | MW-2-110421 | 2 | U-234 | 63.555318 | 7.743076092 | 3.950549027 | 7.743076092 | 0.051126099 | 0.020280418 | 0.975934532 | 0.49792578 | 0.97593453 | pCi |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | MW-2-110421 | 2 | U-235 | 2.232365086 | 0.333988791 | 0.170402444 | 0.333988791 | 0.012246375 | 0 | 0.196860153 | 0.10043885 | 0.19686015 | pCi |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | MW-2-110421 | 2 | U-238 | 54.37424512 | 6.633271502 | 3.384322195 | 6.633271502 | 0.041899573 | 0.015677722 | 0.901709434 | 0.46005583 | 0.90170943 | pCi |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 2 | U-232 | 8.510310687 | 1.087572849 | 0.554884107 | 1.087572849 | 0.028098384 | 0.008878129 | 0.353381426 | 0.18029665 | 0.35338143 | pCi |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 2 | U-234 | 62.70805081 | 7.639257929 | 3.897580576 | 7.639257929 | 0.053727048 | 0.021702916 | 0.958201196 | 0.48887816 | 0.9582012 | pCi |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 2 | U-235 | 2.489819913 | 0.364592947 | 0.186016809 | 0.364592947 | 0.032503463 | 0.010269983 | 0.205851065 | 0.10502605 | 0.20585107 | pCi |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 2 | U-238 | 54.41057754 | 6.636238022 | 3.385835726 | 6.636238022 | 0.035310811 | 0.012505121 | 0.89146521 | 0.45482919 | 0.89146521 | pCi |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 2 | U-232 | 8.498867703 | 4.168638103 | 2.126856175 | 4.168638103 | 1.354819499 | 0 | 4.040105253 | 2.06127819 | 4.04010525 | pCi |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 2 | U-234 | 63261.3878 | 7653.728603 | 3904.963573 | 7653.728603 | 9.051187994 | 3.849553898 | 348.2408251 | 177.67389 | 348.240825 | pCi |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 2 | U-235 | 72121.57278 | 8725.834438 | 4451.956346 | 8725.834438 | 1.567219108 | 0 | 400.2645977 | 204.226836 | 400.284598 | pCi |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 2 | U-238 | 114131.786 | 13801.93429 | 7041.803207 | 13801.93429 | 1.349375652 | 0 | 467.2412396 | 238.388388 | 467.24124 | pCi |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 2 | U-232 | 8.493380178 | 1.103104689 | 0.562808515 | 1.103104689 | 0.046332062 | 0.016408233 | 0.403867353 | 0.20605477 | 0.40386735 | pCi |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 2 | U-234 | 4.857633982 | 0.661914259 | 0.337711357 | 0.661914259 | 0.053597328 | 0.020054715 | 0.305693909 | 0.15596628 | 0.30569391 | pCi |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 2 | U-235 | 0.305758192 | 0.090232489 | 0.046036984 | 0.090232489 | 0.015634051 | 0 | 0.082318771 | 0.04199912 | 0.08231827 | pCi |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 2 | U-238 | 2.811394657 | 0.412599692 | 0.210510047 | 0.412599692 | 0.070070755 | 0.028304919 | 0.234059016 | 0.11941787 | 0.23405902 | pCi |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | MW-3-110420 | 2 | U-232 | 8.492562799 | 1.085433663 | 0.553792685 | 1.085433663 | 0.010353057 | 0 | 0.353040969 | 0.18012794 | 0.35304097 | pCi |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | MW-3-110420 | 2 | U-234 | 17.71281407 | 2.200637539 | 1.122774254 | 2.200637539 | 0.045809032 | 0.017738596 | 0.509773927 | 0.26008874 | 0.50977393 | pCi |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | MW-3-110420 | 2 | U-235 | 0.649610379 | 0.131690214 | 0.067188885 | 0.131690214 | 0.032536918 | 0.010280554 | 0.105726736 | 0.05394221 | 0.10572674 | pCi |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | MW-3-110420 | 2 | U-238 | 15.43632023 | 1.925623416 | 0.982460927 | 1.925623416 | 0.081123629 | 0.03540622B | 0.47687373 | 0.24330292 | 0.47687373 | pCi |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | MW-4-110420 | 2 | U-232 | 8.485206393 | 1.08014361 | 0.551093679 | 1.08014361 | 0.025955364 | 0.008201008 | 0.339125769 | 0.17302335 | 0.33912577 | pCi |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | MW-4-110420 | 2 | U-234 | 118.9504898 | 14.43222612 | 7.363380675 | 14.43222612 | 0.037884673 | 0.014175452 | 1.268017962 | 0.64694794 | 1.26801796 | pCi |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | MW-4-110420 | 2 | U-235 | 4.57933476 | 0.614861503 | 0.313704849 | 0.614861503 | 0.011050754 | 0 | 0.267835775 | 0.13665091 | 0.26783578 | pCi |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | MW-4-110420 | 2 | U-238 | 108.2253186 | 13.1358556 | 6.701967144 | 13.1358556 | 0.037808893 | 0.014147096 | 1.208302474 | 0.61648085 | 1.20830247 | pCi |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | MW-6-110420 | 2 | U-232 | 8.484389014 | 1.080824819 | 0.551441234 | 1.080824819 | 0.042869803 | 0.016600441 | 0.341585961 | 0.17427855 | 0.34158596 | pCi |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | MW-6-110420 | 2 | U-234 | 73.20502395 | 8.904001859 | 4.542858091 | 8.904001859 | 0.009649106 | 0 | 1.000657381 | 0.51053948 | 1.0006573B | pCi |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | MW-6-110420 | 2 | U-235 | 2.628962984 | 0.377675274 | 0.192691466 | 0.377675274 | 0.011184442 | 0 | 0.20416008 | 0.10416331 | 0.20416008 | pCi |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | MW-6-110420 | 2 | U-238 | 61.7977617 | 7.525207984 | 3.839391829 | 7.525207984 | 0.050127911 | 0.020249053 | 0.918790131 | 0.46877048 | 0.91879013 | pCi |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | MW-7-110419 | 2 | U-232 | 8.473996526 | 1.098435711 | 0.5604263B3 | 1.098435711 | 0.035611886 | 0.011252139 | 0.397031574 | 0.20256713 | 0.39703157 | pCi |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | MW-7-110419 | 2 | U-234 | 3.80344807 | 0.531219722 | 0.271030471 | 0.531219722 | 0.044840143 | 0.015879878 | 0.266237935 | 0.13583568 | 0.26623793 | pCi |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | MW-7-110419 | 2 | U-235 | 0.061541945 | 0.040230791 | 0.020525914 | 0.040230791 | 0.041192612 | 0.013015457 | 0.039537234 | 0.02017206 | 0.03953723 | pCi |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | MW-7-110419 | 2 | U-238 | 0.44316914 | 0.113369287 | 0.057841473 | 0.113369287 | 0.083929141 | 0.03543746 | 0.099918698 | 0.05097893 | 0.0999187 | pCi |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | MW-8-110419 | 2 | U-232 | 8.478083531 | 1.102219873 | 0.562357078 | 1.102219873 | 0.0372447 | 0.011768052 | 0.406139964 | 0.20721427 | 0.40613996 | pCi |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | MW-8-110419 | 2 | U-234 | 5.209553086 | 0.705723914 | 0.360063221 | 0.705723914 | 0.054361188 | 0.020340532 | 0.318768588 | 0.16263703 | 0.31876859 | pCi |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | MW-8-110419 | 2 | U-235 | 0.058512416 | 0.04035233 | 0.020587923 | 0.04035233 | 0.043081303 | 0.013612219 | 0.039727819 | 0.0202693 | 0.03972782 | pCi |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | MW-8-110419 | 2 | U-238 | 1.954712573 | 0.307918455 | 0.157101253 | 0.307918455 | 0.071069391 | 0.028708315 | 0.197486425 | 0.10075836 | 0.19748642 | pCi |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 2 | U-232 | 8.477849986 | 1.151158637 | 0.587325835 | 1.151158637 | 0.022906255 | 0 | 0.524676161 | 0.26769192 | 0.52467616 | pCi |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 2 | U-234 | 29.05916125 | 3.644971824 | 1.859679502 | 3.644971824 | 0.184678196 | 0.080909443 | 0.975162819 | 0.49753205 | 0.97516282 | pCi |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 2 | U-235 | 1.065731024 | 0.241017028 | 0.122967871 | 0.241017028 | 0.090831571 | 0.032167478 | 0.203711902 | 0.10393464 | 0.2037119 | pCi |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 2 | U-238 | 21.35722039 | 2.713140333 | 1.384255272 | 2.713140333 | 0.169368092 | 0.073277253 | 0.835649232 | 0.42635165 | 0.83564923 | pCi |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 2 | U-232 | 8.472945715 | 1.084270523 | 0.553199246 | 1.084270523 | 0.028695625 | 0.009066837 | 0.356336575 | 0.18180437 | 0.35633657 | pCi |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 2 | U-234 | 31.28938758 | 3.842995218 | 1.960711846 | 3.842995218 | 0.036131561 | 0.012795784 | 0.683908576 | 0.34893295 | 0.68390858 | pCi |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 2 | U-235 | 1.000809104 | 0.179219338 | 0.091438438 | 0.179219338 | 0.033192432 | 0.010487674 | 0.132244724 | 0.0674718 | 0.13224472 | pCi |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 2 | U-238 | 22.77285666 | 2.813555821 | 1.435487664 | 2.813555821 | 0.06762893 | 0.028555011 | 0.583719919 | 0.29781629 | 0.58371992 | pCi |

35000993

| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984-01 | | | L | | 0.835362941 | 2423 | 1440 | 0 | 1440 | 0.213413358 | 1 | 5/26/2011 | 5/28/2011 | 0.08681 |
| ARS1-B11-01984-01 | | | L | | 0.835362941 | 9650 | 1440 | 3 | 1440 | 0.213413358 | 1 | 5/26/2011 | 5/28/2011 | 0.13664 |
| ARS1-B11-01984-01 | | | L | | 0.835362941 | 348 | 1440 | 1 | 1440 | 0.213413358 | 1 | 5/26/2011 | 5/28/2011 | 0.01543 |
| ARS1-B11-01984-01 | | | L | | 0.835362941 | 10054 | 1440 | 4 | 1440 | 0.213413358 | 1 | 5/26/2011 | 5/28/2011 | 0.15885 |
| ARS1-B11-01984-02 | | | L | | 0.772163715 | 2366 | 1440 | 0 | 1440 | 0.224953875 | 1 | 5/26/2011 | 5/28/2011 | 0.08681 |
| ARS1-B11-01984-02 | | | L | | 0.772163715 | 9438 | 1440 | 1 | 1440 | 0.224953875 | 1 | 5/26/2011 | 5/28/2011 | 0.13664 |
| ARS1-B11-01984-02 | | | L | | 0.772163715 | 343 | 1440 | 1 | 1440 | 0.224953875 | 1 | 5/26/2011 | 5/28/2011 | 0.01543 |
| ARS1-B11-01984-02 | | | L | | 0.772163715 | 9439 | 1440 | 4 | 1440 | 0.224953875 | 1 | 5/26/2011 | 5/28/2011 | 0.15885 |
| ARS1-B11-01984-03 | | | L | | 0.67503694 | 1986 | 1440 | 2 | 1440 | 0.215816796 | 1 | 5/26/2011 | 5/28/2011 | 0.08681 |
| ARS1-B11-01984-03 | | | L | | 0.67503694 | 91 | 1440 | 10 | 1440 | 0.215816796 | 1 | 5/26/2011 | 5/28/2011 | 0.13664 |
| ARS1-B11-01984-03 | | | L | | 0.67503694 | 9 | 1440 | 3 | 1440 | 0.215816796 | 1 | 5/26/2011 | 5/28/2011 | 0.01543 |
| ARS1-B11-01984-03 | | | L | | 0.67503694 | 109 | 1440 | 53 | 1440 | 0.215816796 | 1 | 5/26/2011 | 5/28/2011 | 0.15885 |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | L | | 0.64012516 | 1910 | 1440 | 0 | 1440 | 0.218973055 | 0.5 | 4/19/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | L | | 0.64012516 | 846 | 1440 | 9 | 1440 | 0.218973055 | 0.5 | 4/19/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | L | | 0.64012516 | 32 | 1440 | 1 | 1440 | 0.218973055 | 0.5 | 4/19/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | L | | 0.64012516 | 187 | 1440 | 2 | 1440 | 0.218973055 | 0.5 | 4/19/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | L | | 0.754744883 | 2184 | 1440 | 3 | 1440 | 0.213045776 | 0.5 | 4/21/2011 | 5/28/2011 | 0.17379 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | L | | 0.754744883 | 16307 | 1440 | 5 | 1440 | 0.213045776 | 0.5 | 4/21/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | L | | 0.754744883 | 494 | 1440 | 0 | 1440 | 0.213045776 | 0.5 | 4/21/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | L | | 0.754744883 | 13978 | 1440 | 3 | 1440 | 0.213045776 | 0.5 | 4/21/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | L | | 0.738012764 | 2231 | 1440 | 1 | 1440 | 0.223027632 | 0.5 | 4/21/2011 | 5/28/2011 | 0.17379 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | L | | 0.738012764 | 16471 | 1440 | 6 | 1440 | 0.223027632 | 0.5 | 4/21/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | L | | 0.738012764 | 565 | 1440 | 1 | 1440 | 0.223027632 | 0.5 | 4/21/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | L | | 0.738012764 | 14317 | 1440 | 2 | 1440 | 0.223027632 | 0.5 | 4/21/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | L | | 0.005988356 | 17 | 1440 | 0 | 1440 | 0.209818289 | 0.5 | 4/21/2011 | 5/28/2011 | 0.17379 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | L | | 0.005988356 | 126807 | 1440 | 11 | 1440 | 0.209818289 | 0.5 | 4/21/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | L | | 0.005988356 | 124711 | 1440 | 0 | 1440 | 0.209818289 | 0.5 | 4/21/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | L | | 0.005988356 | 229215 | 1440 | 0 | 1440 | 0.209818289 | 0.5 | 4/21/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | L | | 0.57103717 | 1705 | 1440 | 2 | 1440 | 0.220569149 | 0.5 | 4/20/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | L | | 0.57103717 | 979 | 1440 | 3 | 1440 | 0.220569149 | 0.5 | 4/20/2011 | 5/28/2011 | 0.2732 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | L | | 0.57103717 | 53 | 1440 | 0 | 1440 | 0.220569149 | 0.5 | 4/20/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | L | | 0.57103717 | 572 | 1440 | 6 | 1440 | 0.220569149 | 0.5 | 4/20/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | L | | 0.750513263 | 2223 | 1440 | 0 | 1440 | 0.219087392 | 0.5 | 4/20/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | L | | 0.750513263 | 4650 | 1440 | 4 | 1440 | 0.219087392 | 0.5 | 4/20/2011 | 5/28/2011 | 0.2732 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | L | | 0.750513263 | 148 | 1440 | 1 | 1440 | 0.219087392 | 0.5 | 4/20/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | L | | 0.750513263 | 4073 | 1440 | 16 | 1440 | 0.219087392 | 0.5 | 4/20/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | L | | 0.83895983 | 2408 | 1440 | 1 | 1440 | 0.212396607 | 0.5 | 4/20/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | L | | 0.83895983 | 33815 | 1440 | 3 | 1440 | 0.212396607 | 0.5 | 4/20/2011 | 5/28/2011 | 0.2732 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | L | | 0.83895983 | 1123 | 1440 | 0 | 1440 | 0.212396607 | 0.5 | 4/20/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | L | | 0.83895983 | 30828 | 1440 | 3 | 1440 | 0.212396607 | 0.5 | 4/20/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | L | | 0.816073912 | 2382 | 1440 | 4 | 1440 | 0.215743065 | 0.5 | 4/20/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | L | | 0.816073912 | 20560 | 1440 | 0 | 1440 | 0.215743065 | 0.5 | 4/20/2011 | 5/28/2011 | 0.2732 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | L | | 0.816073912 | 637 | 1440 | 0 | 1440 | 0.215743065 | 0.5 | 4/20/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | L | | 0.816073912 | 17397 | 1440 | 6 | 1440 | 0.215743065 | 0.5 | 4/20/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | L | | 0.60908473 | 1753 | 1440 | 1 | 1440 | 0.213233352 | 0.5 | 4/19/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | L | | 0.60908473 | 790 | 1440 | 2 | 1440 | 0.213233352 | 0.5 | 4/19/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | L | | 0.60908473 | 12 | 1440 | 1 | 1440 | 0.213233352 | 0.5 | 4/19/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | L | | 0.60908473 | 102 | 1440 | 10 | 1440 | 0.213233352 | 0.5 | 4/19/2011 | 5/28/2011 | 0.31770 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | L | | 0.566943855 | 1677 | 1440 | 1 | 1440 | 0.219039932 | 0.5 | 4/19/2011 | 5/28/2011 | 0.17380 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | L | | 0.566943855 | 1035 | 1440 | 3 | 1440 | 0.219039932 | 0.5 | 4/19/2011 | 5/28/2011 | 0.27328 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | L | | 0.566943855 | 11 | 1440 | 1 | 1440 | 0.219039932 | 0.5 | 4/19/2011 | 5/28/2011 | 0.03087 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | L | | 0.566943855 | 394 | 1440 | 6 | 1440 | 0.219039932 | 0.5 | 4/19/2011 | 5/28/2011 | 0.31770 |
| B11-01984-14 | ARS1-11-00897 | 011 | L | | 0.342121526 | 1003 | 1440 | 0 | 1440 | 0.21722503 | 0.5 | 4/20/2011 | 5/28/2011 | 0.17380 |
| B11-01984-14 | ARS1-11-00897 | 011 | L | | 0.342121526 | 3462 | 1440 | 17 | 1440 | 0.21722503 | 0.5 | 4/20/2011 | 5/28/2011 | 0.2732 |
| B11-01984-14 | ARS1-11-00897 | 011 | L | | 0.342121526 | 111 | 1440 | 2 | 1440 | 0.21722503 | 0.5 | 4/20/2011 | 5/28/2011 | 0.03087 |
| B11-01984-14 | ARS1-11-00897 | 011 | L | | 0.342121526 | 2551 | 1440 | 14 | 1440 | 0.21722503 | 0.5 | 4/20/2011 | 5/28/2011 | 0.31770 |
| B11-01984-15 | ARS1-11-00897 | 012 | L | | 0.755888906 | 2175 | 1440 | 1 | 1440 | 0.213233352 | 0.5 | 4/20/2011 | 5/29/2011 | 0.17380 |
| B11-01984-15 | ARS1-11-00897 | 012 | L | | 0.755888906 | 8047 | 1440 | 2 | 1440 | 0.213233352 | 0.5 | 4/20/2011 | 5/29/2011 | 0.27328 |
| B11-01984-15 | ARS1-11-00897 | 012 | L | | 0.755888906 | 223 | 1440 | 1 | 1440 | 0.213233352 | 0.5 | 4/20/2011 | 5/29/2011 | 0.03087 |
| B11-01984-15 | ARS1-11-00897 | 012 | L | | 0.755888906 | 5877 | 1440 | 10 | 1440 | 0.213233352 | 0.5 | 4/20/2011 | 5/29/2011 | 0.31770 |

35000994

| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984-01 | | | 0.178027093 | 0.082712023 | 2.22 | 1.96 | 1.682638889 | 0 | 1.682638869 | 0.98 | ApexAlpha | A_2_3B | 39.81627655 | | |
| ARS1-B11-01984-01 | | | 0.277459623 | 0.13018988 | 2.22 | 1.96 | 6.701388889 | 0.002083333 | 6.699305556 | 0.98 | ApexAlpha | A_2_3B | 44.50381088 | | |
| ARS1-B11-01984-01 | | | 0.036332471 | 0.014709166 | 2.22 | 1.96 | 0.241666667 | 0.000694444 | 0.240972222 | 0.96 | ApexAlpha | A_2_3B | 47.43571854 | | |
| ARS1-B11-01984-01 | | | 0.321782483 | 0.151355023 | 2.22 | 1.96 | 6.981944444 | 0.002777778 | 6.979166667 | 0.98 | ApexAlpha | A_2_3B | 44.36736298 | | |
| ARS1-B11-01984-02 | | | 0.178152759 | 0.082712023 | 2.22 | 1.96 | 1.643055556 | 0 | 1.643055556 | 0.98 | ApexAlpha | A_2_4A | 38.41609192 | | |
| ARS1-B11-01984-02 | | | 0.277585153 | 0.13018988 | 2.22 | 1.96 | 6.554166667 | 0.000694444 | 6.553472222 | 0.98 | ApexAlpha | A_2_4A | 43.13824081 | | |
| ARS1-B11-01984-02 | | | 0.036477975 | 0.014709166 | 2.22 | 1.96 | 0.238194444 | 0.000694444 | 0.2375 | 0.98 | ApexAlpha | A_2_4A | 14.2139082 | | |
| ARS1-B11-01984-02 | | | 0.321907762 | 0.151355023 | 2.22 | 1.96 | 6.554861111 | 0.002777778 | 6.552083333 | 0.98 | ApexAlpha | A_2_4A | 46.86788177 | | |
| ARS1-B11-01984-03 | | | 0.179094186 | 0.082712023 | 2.22 | 1.96 | 1.379166667 | 0.001388889 | 1.377777778 | 0.98 | ApexAlpha | A_2_4B | 40.27577209 | | |
| ARS1-B11-01984-03 | | | 0.278525586 | 0.13018988 | 2.22 | 1.96 | 0.063194444 | 0.006944444 | 0.05625 | 0.98 | ApexAlpha | A_2_4B | 25.77999306 | | |
| ARS1-B11-01984-03 | | | 0.037568047 | 0.014709166 | 2.22 | 1.96 | 0.00625 | 0.002083333 | 0.004166667 | 0.98 | ApexAlpha | A_2_4B | 6.138093472 | | |
| ARS1-B11-01984-03 | | | 0.322846314 | 0.151355023 | 2.22 | 1.96 | 0.075694444 | 0.036805556 | 0.038888889 | 0.98 | ApexAlpha | A_2_4B | 8.593330383 | | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | 0.359014715 | 0.082712023 | 2.22 | 1.96 | 1.326388889 | 0 | 1.326388889 | 0.98 | ApexAlpha | A_2_5A | 29.66066933 | | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | 0.557510068 | 0.13018988 | 2.22 | 1.96 | 0.5875 | 0.00625 | 0.58125 | 0.98 | ApexAlpha | A_2_5A | 27.81350517 | | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | 0.075667824 | 0.014709166 | 2.22 | 1.96 | 0.022222222 | 0.000694444 | 0.021527778 | 0.98 | ApexAlpha | A_2_5A | 4.889849663 | | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | 0.646150447 | 0.151355023 | 2.22 | 1.96 | 0.129861111 | 0.001388889 | 0.128472222 | 0.98 | ApexAlpha | A_2_5A | 16.5469017 | | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | 0.357437183 | 0.082712023 | 2.22 | 1.96 | 1.516666667 | 0.002083333 | 1.514583333 | 0.98 | ApexAlpha | A_2_5B | 63.23594666 | | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | 0.555955456 | 0.13018988 | 2.22 | 1.96 | 11.33430556 | 0.003472222 | 11.32083333 | 0.98 | ApexAlpha | A_2_5B | 65.6692276 | | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | 0.073665856 | 0.014709166 | 2.22 | 1.96 | 0.343055556 | 0 | 0.343055556 | 0.98 | ApexAlpha | A_2_5B | 50.82377243 | | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | 0.644598953 | 0.151355023 | 2.22 | 1.96 | 9.706944444 | 0.002083333 | 9.704861111 | 0.98 | ApexAlpha | A_2_5B | 67.47711945 | | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | 0.357192641 | 0.082712023 | 2.22 | 1.96 | 1.549305556 | 0.000694444 | 1.548611111 | 0.98 | ApexAlpha | A_3_1A | 48.20111465 | | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | 0.555711409 | 0.13018988 | 2.22 | 1.96 | 11.43819444 | 0.004166667 | 11.43402778 | 0.98 | ApexAlpha | A_3_1A | 58.67838669 | | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | 0.073582977 | 0.014709166 | 2.22 | 1.96 | 0.392361111 | 0.000694444 | 0.391666667 | 0.98 | ApexAlpha | A_3_1A | 47.90333176 | | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | 0.644355394 | 0.151355023 | 2.22 | 1.96 | 9.942361111 | 0.001388889 | 9.940972222 | 0.98 | ApexAlpha | A_3_1A | 63.52745819 | | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | 1.701670013 | 0.082712023 | 2.22 | 1.96 | 0.011805556 | 0 | 0.011805556 | 0.98 | ApexAlpha | A_3_1B | 4.694890308 | | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | 1.897470392 | 0.13018988 | 2.22 | 1.96 | 88.06041667 | 0.007638889 | 88.0527778 | 0.98 | ApexAlpha | A_3_1B | 223.4042358 | | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | 1.62883859 | 0.014709166 | 2.22 | 1.96 | 86.60486111 | 0 | 86.60486111 | 0.98 | ApexAlpha | A_3_1B | 91.45392809 | | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | 1.983430476 | 0.151355023 | 2.22 | 1.96 | 159.1770833 | 0 | 159.1770833 | 0.98 | ApexAlpha | A_3_1B | 103.445076 | | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | 0.360375666 | 0.082712023 | 2.22 | 1.96 | 1.184027778 | 0.001388889 | 1.182638889 | 0.98 | ApexAlpha | A_3_2B | 30.2557621 | | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | 0.558878095 | 0.13018988 | 2.22 | 1.96 | 0.679861111 | 0.002083333 | 0.677777778 | 0.98 | ApexAlpha | A_3_2B | 29.02689934 | | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | 0.077253532 | 0.014709166 | 2.22 | 1.96 | 0.036805556 | 0 | 0.036805556 | 0.98 | ApexAlpha | A_3_2B | 8.558202744 | | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | 0.647515742 | 0.151355023 | 2.22 | 1.96 | 0.397222222 | 0.004166667 | 0.393055556 | 0.98 | ApexAlpha | A_3_2B | 30.83281708 | | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | 0.357213127 | 0.082712023 | 2.22 | 1.96 | 1.54375 | 0 | 1.54375 | 0.98 | ApexAlpha | A_3_3A | 35.24778366 | | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | 0.555722037 | 0.13018988 | 2.22 | 1.96 | 3.229166667 | 0.002777778 | 3.226388889 | 0.98 | ApexAlpha | A_3_3A | 34.71844101 | | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | 0.073595291 | 0.014709166 | 2.22 | 1.96 | 0.102777778 | 0.000694444 | 0.102083333 | 0.98 | ApexAlpha | A_3_3A | 33.72981262 | | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | 0.644365997 | 0.151355023 | 2.22 | 1.96 | 2.828472222 | 0.011111111 | 2.817361111 | 0.98 | ApexAlpha | A_3_3A | 35.34767532 | | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | 0.356413418 | 0.082712023 | 2.22 | 1.96 | 1.672222222 | 0.000694444 | 1.671527778 | 0.98 | ApexAlpha | A_3_3B | 67.77412415 | | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | 0.554923967 | 0.13018988 | 2.22 | 1.96 | 23.48263889 | 0.002083333 | 23.48055558 | 0.98 | ApexAlpha | A_3_3B | 82.13598633 | | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | 0.072670235 | 0.014709166 | 2.22 | 1.96 | 0.779861111 | 0 | 0.779861111 | 0.98 | ApexAlpha | A_3_3B | 88.02515411 | | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | 0.643569524 | 0.151355023 | 2.22 | 1.96 | 21.40833333 | 0.002083333 | 21.40625 | 0.98 | ApexAlpha | A_3_3B | 84.92006683 | | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | 0.356528991 | 0.082712023 | 2.22 | 1.96 | 1.654166667 | 0.002777778 | 1.651388889 | 0.98 | ApexAlpha | A_3_4B | 57.33830643 | | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | 0.555039303 | 0.13018988 | 2.22 | 1.96 | 14.27777778 | 0 | 14.27777778 | 0.98 | ApexAlpha | A_3_4B | 66.15758514 | | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | 0.072803923 | 0.014709166 | 2.22 | 1.96 | 0.442361111 | 0 | 0.442361111 | 0.98 | ApexAlpha | A_3_4B | 51.39112854 | | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | 0.643684629 | 0.151355023 | 2.22 | 1.96 | 12.08125 | 0.004166667 | 12.07708333 | 0.98 | ApexAlpha | A_3_4B | 65.5785675 | | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | 0.359977234 | 0.082712023 | 2.22 | 1.96 | 1.217361111 | 0.000694444 | 1.216666667 | 0.98 | ApexAlpha | A_3_5A | 27.4553318 | | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | 0.558470588 | 0.13018988 | 2.22 | 1.96 | 0.548611111 | 0.001388889 | 0.547222222 | 0.98 | ApexAlpha | A_3_5A | 26.25976372 | | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | 0.076781178 | 0.014709166 | 2.22 | 1.96 | 0.006333333 | 0.000694444 | 0.007638889 | 0.98 | ApexAlpha | A_3_5A | 4.898194313 | | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | 0.647109045 | 0.151355023 | 2.22 | 1.96 | 0.070833333 | 0.006944444 | 0.063888889 | 0.98 | ApexAlpha | A_3_5A | 29.63407707 | | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | 0.360578221 | 0.082712023 | 2.22 | 1.96 | 1.164583333 | 0.000694444 | 1.163888889 | 0.98 | ApexAlpha | A_3_6A | 34.43494797 | | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | 0.559070327 | 0.13018988 | 2.22 | 1.96 | 0.71875 | 0.002083333 | 0.716666667 | 0.98 | ApexAlpha | A_3_6A | 29.59216309 | | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | 0.077476346 | 0.014709166 | 2.22 | 1.96 | 0.007638889 | 0.000694444 | 0.006944444 | 0.98 | ApexAlpha | A_3_6A | 7.349233627 | | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | 0.647707584 | 0.151355023 | 2.22 | 1.96 | 0.273611111 | 0.004166667 | 0.269444444 | 0.98 | ApexAlpha | A_3_6A | 29.63024139 | | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | 0.369766324 | 0.082712023 | 2.22 | 1.96 | 0.696527778 | 0 | 0.696527778 | 0.98 | ApexAlpha | A_3_6B | 36.30580902 | | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | 0.568249509 | 0.13018988 | 2.22 | 1.96 | 2.404166667 | 0.011805556 | 2.392361111 | 0.98 | ApexAlpha | A_3_6B | 38.73180934 | | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | 0.088116096 | 0.014709166 | 2.22 | 1.96 | 0.077083333 | 0.001388889 | 0.075694444 | 0.98 | ApexAlpha | A_3_6B | 19.59401321 | | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | 0.65686841 | 0.151355023 | 2.22 | 1.96 | 1.771527778 | 0.009722222 | 1.761805556 | 0.98 | ApexAlpha | A_3_6B | 36.32271194 | | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | 0.357432346 | 0.082712023 | 2.22 | 1.96 | 1.510416667 | 0.000694444 | 1.509722222 | 0.98 | ApexAlpha | A_3_5A | 29.19708081 | | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | 0.555930195 | 0.13018988 | 2.22 | 1.96 | 5.588194444 | 0.001388889 | 5.566805556 | 0.98 | ApexAlpha | A_3_5A | 36.52808109 | | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | 0.073836565 | 0.014709166 | 2.22 | 1.96 | 0.154861111 | 0.000694444 | 0.154168667 | 0.98 | ApexAlpha | A_3_5A | 45.06338501 | | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | 0.644573733 | 0.151355023 | 2.22 | 1.96 | 4.08125 | 0.006944444 | 4.074305556 | 0.98 | ApexAlpha | A_3_5A | 38.45557404 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | Delta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984-01 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949027778 | |
| ARS1-B11-01984-01 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949027778 | |
| ARS1-B11-01984-01 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949027778 | |
| ARS1-B11-01984-01 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949027778 | |
| ARS1-B11-01984-02 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-02 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-02 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-02 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-03 | | | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-03 | | | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-03 | | | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-03 | | | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 1.949722222 | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08958333 | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08958333 | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08958333 | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | | U-232 | 6/9/2010 | | | 25162.03704 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.17013889 | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | | U-232 | 6/9/2010 | | | 89745370.37 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.17013889 | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | | U-232 | 6/9/2010 | | | 2.5706E+11 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.17013889 | |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | | U-232 | 6/9/2010 | | | 1.63194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.17013889 | |

3500996

| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01984-01 | | | | | | | 0.999946311 | | | | | 0.061663514 | 0.394567781 | 568.1776039 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-01 | | | | | | | 0.999999985 | | | | | 0.061663514 | 0.394984736 | 568.7780198 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-01 | | | | | | | 1 | | | | | 0.061663514 | 0.34076339 | 490.699281 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-01 | | | | | | | 1 | | | | | 0.061663514 | 0.395776295 | 569.9178641 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-02 | | | | | | | 0.999946292 | | | | | 0.061663514 | 0.384439209 | 553.5924614 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-02 | | | | | | | 0.999999985 | | | | | 0.061663514 | 0.384845469 | 554.1774752 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-02 | | | | | | | 1 | | | | | 0.061663514 | 0.332015986 | 478.1030194 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-02 | | | | | | | 1 | | | | | 0.061663514 | 0.385616708 | 555.2880597 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-03 | | | | | | | 0.999946292 | | | | | 0.061663514 | 0.322431591 | 464.3014913 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-03 | | | | | | | 0.999999985 | | | | | 0.061663514 | 0.322772324 | 464.792146 | | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-03 | | | | | | | 1 | | | | | 0.061663514 | 0.278463903 | 400.9880198 | | ABAILEY | 6/2/2011 |
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| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | | | | 0.998923766 | | | | | 0.061663514 | 0.154955166 | 223.1354385 | ASP-A-024 | ABAILEY | 6/2/2011 |
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| ARS1-B11-01984-04 | ARS1-11-00897 | 001 | | | | | 1 | | | | | 0.061663514 | 0.133962026 | 192.905317 | ASP-A-024 | ABAILEY | 6/2/2011 |
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| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | | | | 0.998978802 | | | | | 0.061663514 | 0.177765515 | 255.9823414 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | | | | 0.999999714 | | | | | 0.061663514 | 0.178125666 | 256.5009587 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | | | | 1 | | | | | 0.061663514 | 0.153673589 | 221.2899687 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-05 | ARS1-11-00897 | 002 | | | | | 1 | | | | | 0.061663514 | 0.178482682 | 257.0150623 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | | | | 0.998978802 | | | | | 0.061663514 | 0.18196881 | 262.0350869 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | | | | 0.999999714 | | | | | 0.061663514 | 0.182337477 | 262.565967 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-06 | ARS1-11-00897 | 003 | | | | | 1 | | | | | 0.061663514 | 0.157307227 | 226.5274071 | ASP-A-024 | ABAILEY | 6/2/2011 |
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| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | | | | 0.998978802 | | | | | 0.061663514 | 0.001389074 | 2.000266458 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | | | | 0.999999714 | | | | | 0.061663514 | 0.001391888 | 2.004318976 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | | | | 1 | | | | | 0.061663514 | 0.001200818 | 1.729177487 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-07 | ARS1-11-00897 | 004 | | | | | 1 | | | | | 0.061663514 | 0.001394678 | 2.008336222 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | | | | 0.998951284 | | | | | 0.061663514 | 0.139242429 | 200.5090982 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | | | | 0.999999706 | | | | | 0.061663514 | 0.139528375 | 200.9208606 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | | | | 1 | | | | | 0.061663514 | 0.120374716 | 173.339591 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-08 | ARS1-11-00897 | 005 | | | | | 1 | | | | | 0.061663514 | 0.139808033 | 201.3235668 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | | | | 0.998951284 | | | | | 0.061663514 | 0.181776695 | 261.7584412 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | | | | 0.999999706 | | | | | 0.061663514 | 0.182149989 | 262.2959843 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | | | | 1 | | | | | 0.061663514 | 0.157145478 | 226.2694879 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-09 | ARS1-11-00897 | 006 | | | | | 1 | | | | | 0.061663514 | 0.182515073 | 262.8217049 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | | | | 0.998951284 | | | | | 0.061663514 | 0.196993179 | 283.6701771 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | | | | 0.999999706 | | | | | 0.061663514 | 0.197397721 | 284.2527178 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | | | | 1 | | | | | 0.061663514 | 0.170300088 | 245.2321262 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-10 | ARS1-11-00897 | 007 | | | | | 1 | | | | | 0.061663514 | 0.197793365 | 284.8224463 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | | | | 0.998951284 | | | | | 0.061663514 | 0.194638516 | 280.2794634 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | | | | 0.999999706 | | | | | 0.061663514 | 0.195036223 | 280.855041 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | | | | 1 | | | | | 0.061663514 | 0.168264488 | 242.3008631 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-11 | ARS1-11-00897 | 008 | | | | | 1 | | | | | 0.061663514 | 0.195429139 | 281.4179595 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | | | | 0.998923766 | | | | | 0.061663514 | 0.143576469 | 206.7501438 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | | | | 0.999999698 | | | | | 0.061663514 | 0.143875297 | 207.1804263 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | | | | 1 | | | | | 0.061663514 | 0.124124918 | 178.7398823 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-12 | ARS1-11-00897 | 009 | | | | | 1 | | | | | 0.061663514 | 0.144163668 | 207.5956822 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | | | | 0.998923766 | | | | | 0.061663514 | 0.137282074 | 197.6861862 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | | | | 0.999999698 | | | | | 0.061663514 | 0.137567783 | 198.097607 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | | | | 1 | | | | | 0.061663514 | 0.118683263 | 170.9038989 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-13 | ARS1-11-00897 | 010 | | | | | 1 | | | | | 0.061663514 | 0.137843511 | 198.4946561 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | | | | 0.998951284 | | | | | 0.061663514 | 0.08215854 | 118.3082977 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | | | | 0.999999706 | | | | | 0.061663514 | 0.08232726 | 118.5512538 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | | | | 1 | | | | | 0.061663514 | 0.071025843 | 102.277214 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-14 | ARS1-11-00897 | 011 | | | | | 1 | | | | | 0.061663514 | 0.082492268 | 118.7888664 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-15 | ARS1-11-00897 | 012 | | | | | 0.998921549 | | | | | 0.061663514 | 0.178181505 | 256.5813677 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-15 | AR51-11-00897 | 012 | | | | | 0.999999697 | | | | | 0.061663514 | 0.178552729 | 257.1159304 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-15 | AR51-11-00897 | 012 | | | | | 1 | | | | | 0.061663514 | 0.154042031 | 221.8205241 | ASP-A-024 | ABAILEY | 6/2/2011 |
| ARS1-B11-01984-15 | AR51-11-00897 | 012 | | | | | 1 | | | | | 0.061663514 | 0.178910605 | 257.6312707 | ASP-A-024 | ABAILEY | 6/2/2011 |

35000997

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-012
Batch Identification: B11-01984 B
Sample Identification: 11-01984-15
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/29/11 16:05:22
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86566.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2132 +/- 0.0044 on 4/19/10 14:24:55
Effective Efficiency: 0.2132 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

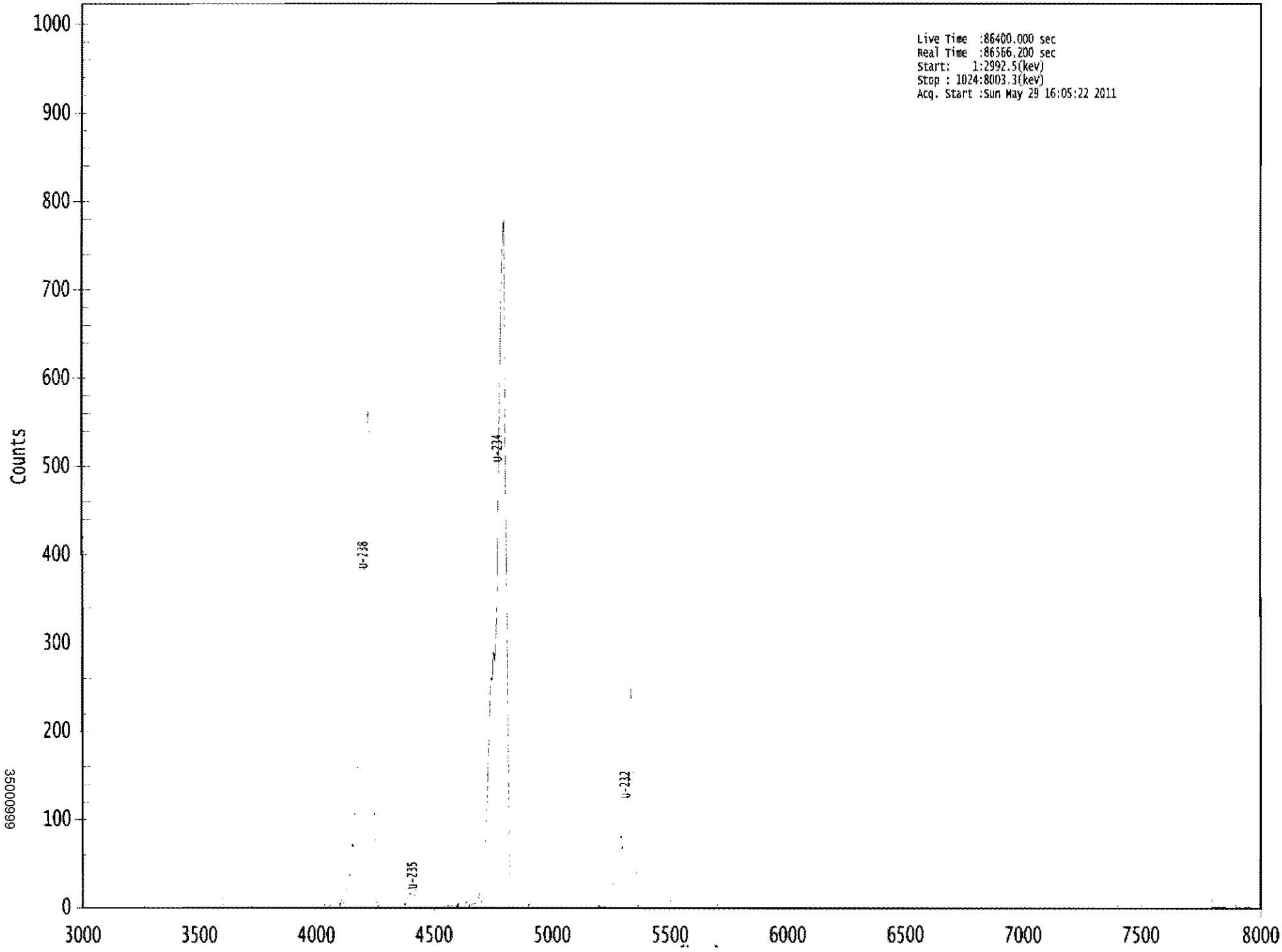
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5309.637 | 2175.00 | 46.64 | 0.00 | 0.00E+000 | 29 |
| U-234 | 4769.028 | 8047.00 | 89.71 | 0.00 | 0.00E+000 | 38 |
| U-235 | 4402.291 | 223.00 | 14.93 | 0.00 | 0.00E+000 | 45 |
| U-238 | 4199.892 | 5877.00 | 76.66 | 0.00 | 0.00E+000 | 38 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.1971E+000 | 2.97 | 3.9777E-003 | 2.06 |
| U-234 | 1.1829E+001 | 2.34 | 3.9777E-003 | 2.06 |
| U-235 | 4.0438E-001 | 7.01 | 4.9070E-003 | 2.06 |
| U-238 | 8.6018E+000 | 2.44 | 3.9606E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012958.CNF




3600099

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-013
Batch Identification: B11-01984 B
Sample Identification: 11-01984-16
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/29/11 16:05:25
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86566.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/19/10 14:26:08
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

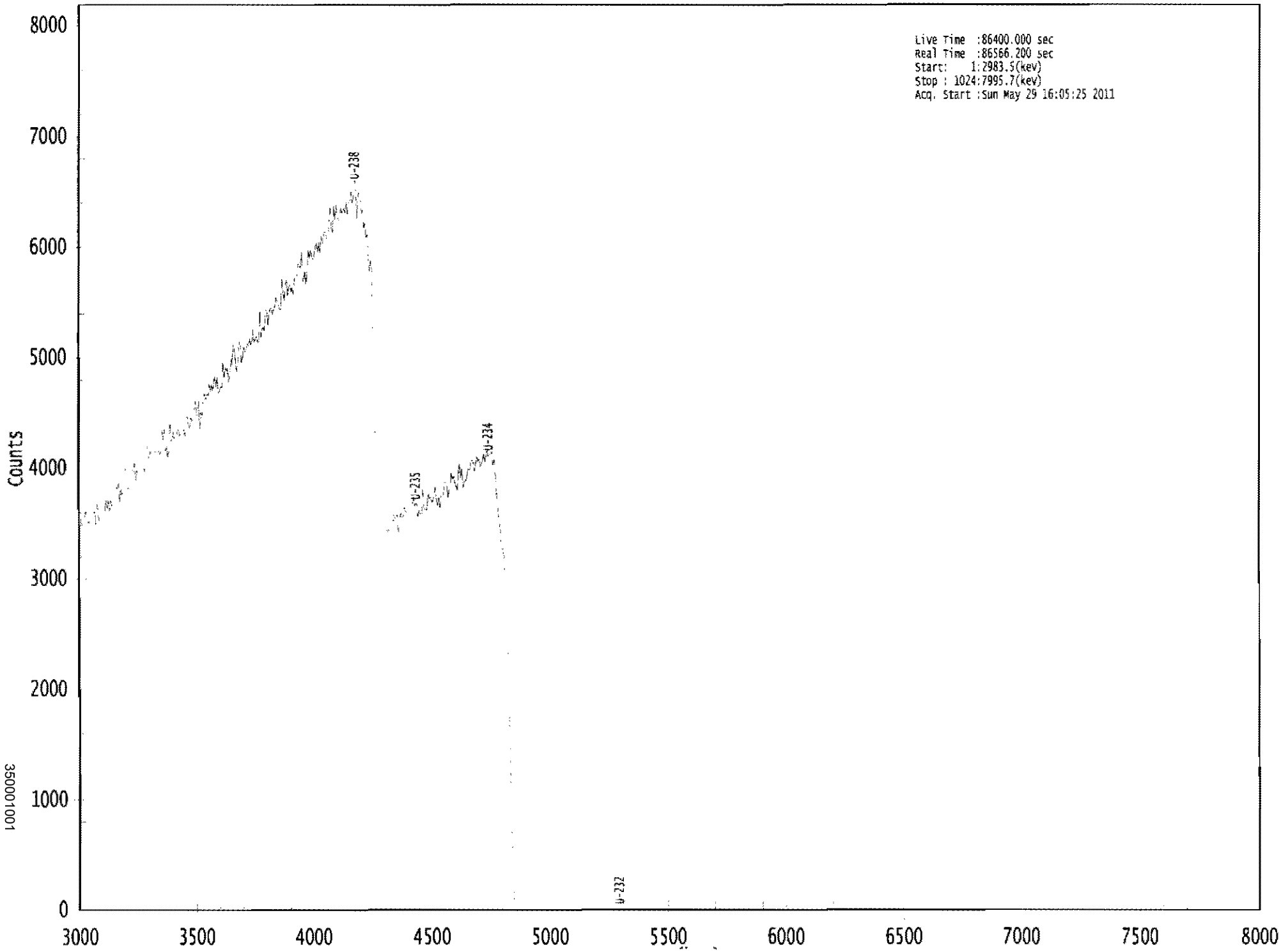
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5280.036 | 29.00 | 5.39 | 0.00 | 0.00E+000 | 9 |
| U-234 | 4731.582 | 122045.0 | 349.35 | 0.00 | 0.00E+000 | 4 |
| U-235 | 4422.210 | 116405.0 | 341.18 | 0.00 | 0.00E+000 | 8 |
| U-238 | 4161.894 | 215481.0 | 464.20 | 0.00 | 0.00E+000 | 22 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 4.1498E-002 | 18.68 | 3.8722E-003 | 2.05 |
| U-234 | 1.7464E+002 | 2.07 | 3.8722E-003 | 2.05 |
| U-235 | 2.0549E+002 | 2.07 | 4.7769E-003 | 2.05 |
| U-238 | 3.0702E+002 | 2.06 | 3.8556E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012899.CNF




350001001

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-024
Batch Identification: B11-01984 B
Sample Identification: 11-01984-17
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/29/11 16:05:27
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86566.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2172 +/- 0.0045 on 4/19/10 14:26:42
Effective Efficiency: 0.2172 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

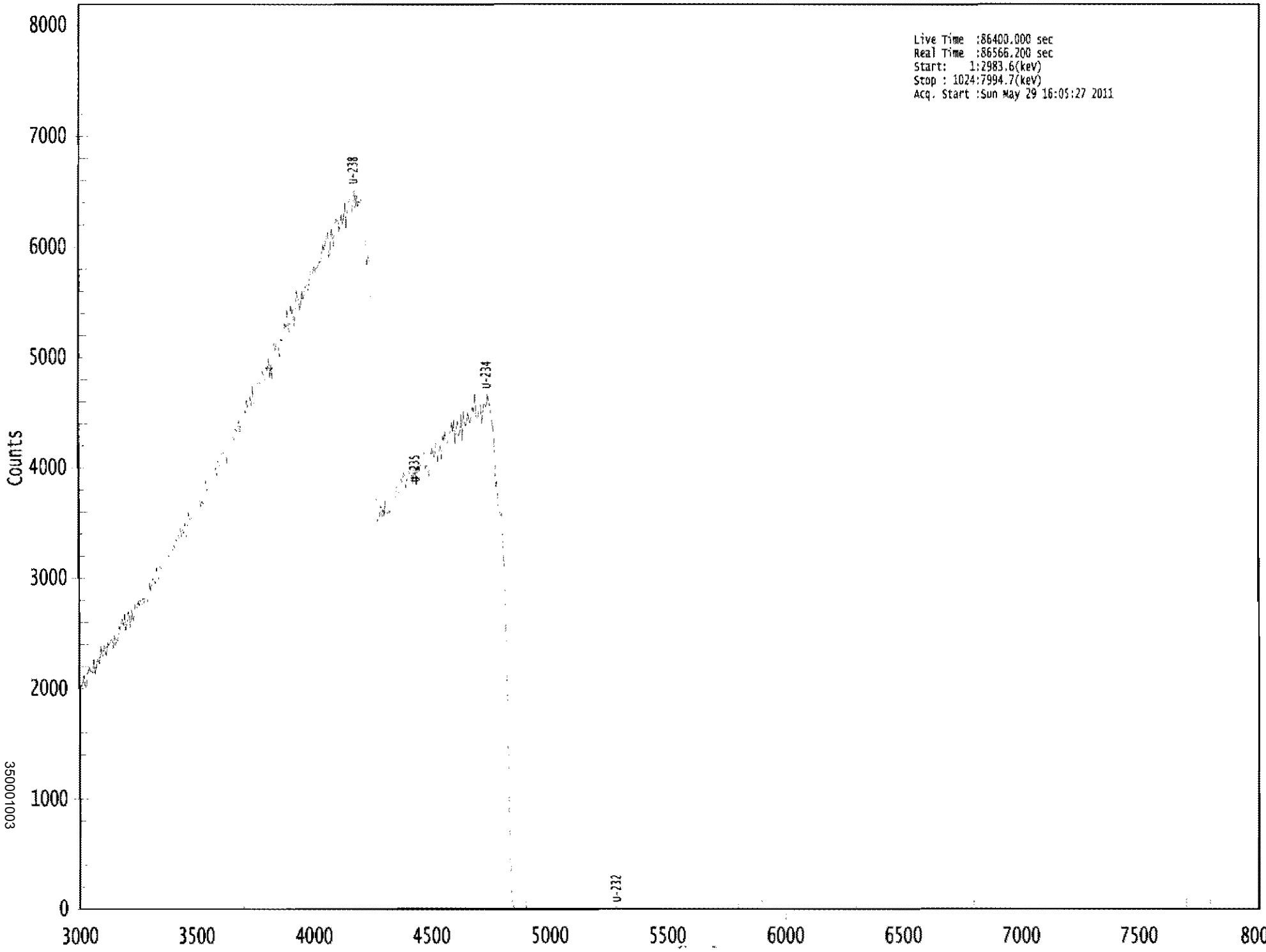
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| U-232 | 5270.414 | 298.00 | 17.26 | 0.00 | 0.00E+000 | 28 |
| U-234 | 4728.168 | 129706.0 | 360.15 | 0.00 | 0.00E+000 | 336 |
| U-235 | 4422.239 | 127064.0 | 356.46 | 0.00 | 0.00E+000 | 4 |
| U-238 | 4160.917 | 211436.0 | 459.82 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 4.2999E-001 | 6.15 | 3.9046E-003 | 2.05 |
| U-234 | 1.8716E+002 | 2.07 | 3.9046E-003 | 2.05 |
| U-235 | 2.2618E+002 | 2.07 | 4.8168E-003 | 2.05 |
| U-238 | 3.0378E+002 | 2.07 | 3.8878E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012894.CNF




350001003

Batch ID ARS1-11-01984

| | | |
|---|---|---|
| UCF | 2.22 | dpm/ pCi |
| ACF | 1 | L/ L |
| CF | 1.96 | |
| TPU sys | 0.062468 | |

| | |
|---|---|
| Tracer ID | S-0241 |
| tracer pCi/g | 4.08252 |
| tracer To | 6/11/2010 |

| | Isotope | half-life days | Abundance |
|---|---|---|---|
| tracer | U-232 | 25162.03704 | 0.997 |
| analyte1 | U-238 | 1.63194E+12 | 1 |
| analyte2 | U-235 | 2.5706E+11 | 0.861 |
| analyte3 | U-234 | 89745400 | 0.998 |

| Sample ID | collection date | aliquot (L) | grams tracer added | U-238 cnts | U-238 bkg cnts | U-235 cnts | U-235 bkg cnts | U-234 cnts | U-234 bkg cnts | U-232 cnts | U-232 bkg cnts | sample time (min) | bkg time (min) | U-232 net CPM | count date | tracer DF | decay corrected tracer dpm | Eff | PE | CR | DF1 | DF2 | DI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11-01984-15 | 04/28/11 | 0.5 | 1.037 | 5977 | 1 | 221 | 1 | 8047 | 1 | 2175 | 1 | 1440 | 1440 | 1.5097 | 05/29/11 | 0.99035 | 9.280 | 0.2132 | 0.004 | 173.4256 | 1.0000 | 1.0000 | 1.0 |
| 11-01984-16 | 04/20/11 | 0.5 | 1.037 | 215481 | 1 | 156405 | 1 | 122045 | 1 | 29 | 1 | 1440 | 1440 | 0.0194 | 5/29/11 0:00 | 0.99035 | 9.280 | 0.219 | 0.005 | 2.1262 | 1.0000 | 1.0000 | 1.0 |
| 11-01984-17 | 04/21/11 | 0.5 | 1.037 | 211456 | 1 | 127064 | 1 | 129706 | 1 | 298 | 1 | 1440 | 1440 | 0.2063 | 5/29/11 0:00 | 0.99035 | 9.280 | 0.2172 | 0.005 | 22.7393 | 1.0000 | 1.0000 | 1.0 |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |
| XXXX | XXXX | xx | xx | xxx | xx | xxx | xx | xxx | xx | xxx | xx | xxxx | xxxx | #VALUE! | XXXX | #VALUE! | #VALUE! | xxxx | xx | #VALUE! | #VALUE! | #VALUE! | #VA |

| Sample ID | detects. (K) | Y | U-238 activity | U-238 1.96s cnt uncert | U-238 1.96s TPU | U-238 MDC | U-238 DLC | U-235 activity | U-235 1.96s cnt uncert | U-235 1.96s TPU | U-235 MDC | U-235 DLC | U-234 activity | U-234 1.96s cnt uncert | U-234 1.96s TPU | U-234 MDC | U-234 DLC | Reporting Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11-01984-15 | 0.18058 | 76.31% | 22.596609 | 0.577872924 | 2.826373174 | 0.028314069 | 0.008946278 | 0.991542439 | 0.131020247 | 0.178618846 | 0.032685097 | 0.010390567 | 31.00352695 | 0.677534055 | 3.855978939 | 0.028370819 | 0.008964209 | pCi/L |
| 11-01984-16 | 0.00235 | 0.96% | 66338.336 | 271.6592909 | 3882.096117 | 2.198385199 | 0.694614576 | 46167.11811 | 231.9035202 | 4947.877614 | 2.553292914 | 0.806753283 | 36513.12596 | 204.8568268 | 4475.258988 | 2.202791444 | 0.696086799 | pCi/L |
| 11-01984-17 | 0.02467 | 10.23% | 5951.7058 | 25.36945534 | 729.1521428 | 0.20725517 | 0.065485549 | 4154.134255 | 22.84180738 | 509.1335453 | 0.240714483 | 0.076057569 | 3658.397392 | 19.91003115 | 448.3665035 | 0.207670572 | 0.065616802 | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |
| XXXX | #VALUE! | ######## | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | #VALUE! | pCi/L |

350001004

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01914 - 12 | Bil-0194 | A24B ~~A14B~~ 5-24-11 | 12773 | U | 5-24-11 1126 | | 10500 |
| 11-01914 -13 | ↓ | A25A ~~A15A~~ 5-24-11 | 12774 | ↓ | ↓ | | ↓ |
| 11-01914 -14 | ↓ | A25B | 12775 | ↓ | ↓ | | ↓ |
| 11-01914 -15 | ↓ | A31A | 12776 | ↓ | ↓ | | ↓ |
| 11-01914 -16 | ↓ | A31B | 12777 | ↓ | ↓ | | ↓ Rill 5-25-11 |
| 1-36 | Source Check | A11A - A36B | N/A | Source | 5-27-11 1920 | | 7200 |
| ↓ | ↓ | ↓ | ↓ | ↓ | 5-27-11 2055 | | ↓ |
| 11-01955 -01 | Bil-0195 | A11A | 12900 | Th | 5-25-11 14:0 | | 86400 |
| 11-01955 -02 | ↓ | A11B | 12901 | ↓ | ↓ | | ↓ |
| 11-01955 -03 | ↓ | A12A | 12902 | ↓ | ↓ | | ↓ |
| 11-01955 -04 | ↓ | A12B | 12928 | ↓ | ↓ | | ↓ |
| 11-01955 -05 | ↓ | A13A | 12929 | ↓ | ↓ | | ↓ |
| 11-01955 ~~-01~~ -06 5-25-11 | ↓ | A13B | 12930 | ↓ | ↓ | | ↓ |
| 11-01955 -01 | ↓ | A14A | 12931 | ↓ | ↓ | | ↓ |
| 11-01955 ~~-01~~ -08 5-28-11 | ↓ | A14B | 12932 | ↓ | ↓ | | ↓ |



Reviewed By: YHM Date: 6-2-11
Initials

3500001005

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01985-09 ~~10~~ | 5-25-11 B11-01955 | A15A | 12933 | Th | 5-28-11 1410 | | 86400 |
| 11-01955 ~~10~~ 11 | 5-25-11 ↓ | A15B | 12934 | ↓ | ↓ | | ↓ |
| 11-01985 ~~11~~ 12 | 5-25-11 ↓ | A1LA | 12935 | ↓ | ↓ | | ↓ |
| 11-01985 ~~12~~ 13 | 5-25-11 ↓ | A16B | 12936 | ↓ | ↓ | | ↓ |
| 11-01985 ~~13~~ 14 | 5-25-11 ↓ | A21A | 12937 | ↓ | ↓ | | ↓ |
| 11-01985 ~~14~~ 15 | 5-26-11 ↓ | A21B | 12938 | ↓ | ↓ | | ↓ |
| 11-01955 ~~15~~ | 5-26-11 ↓ | A22A | 12939 | ↓ | ↓ | | ↓ |
| 11-01954-01 | B11-01954A | A23B | 12945 | ↓ | ↓ | | ↓ |
| 11-01954-02 | ↓ | A24A | 12946 | ↓ | ↓ | | ↓ |
| 11-01954-03 | ↓ | A24B | 12947 | ↓ | ↓ | | ↓ |
| 11-01954-04 | ↓ | A25A | 12948 | ↓ | ↓ | | ↓ |
| 11-01954-05 | ↓ | A25B | 12949 | ↓ | ↓ | | ↓ |
| 11-01954-06 | ↓ 5-25-11 | ~~A11~~ A31A | 12950 | ↓ | ↓ | | ↓ |
| 11-01954-07 | ↓ | A31B | 12872 | ↓ | ↓ | | ↓ |
| 11-01954-08 | ↓ | A32B | 12951 | ↓ | ↓ | | ↓ |

350001006



Reviewed By: LYM Date: 6-2-11
Initials

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01954-09 | B11-01954A | A33A | 12952 | U | 5-28-11 1410 | CAS | 86400 |
| 11-01954-10 | ↓ | A33B | 12953 | ↓ | ↓ | CAS | ↓ |
| 11-01954-11 | ↓ | A34B | 12954 | ↓ | ↓ | CAS | ↓ |
| 11-01954-12 | ↓ | A35A | 12955 | ↓ | ↓ | CAS | ↓ |
| 11-01954-13 | ↓ | A36A | 12956 | ↓ | ↓ | CAS | ↓ |
| 11-01954-14 | ↓ | A36B | 12957 | ↓ | ↓ | CAS | ↓ |
| 11-01946-01 | B11-01946 | A11A | | Am | 5-29-11 1606 | CAS | ↓ |
| 11-01946-02 | ↓ | A11B | | ↓ | ↓ | CAS | ↓ |
| 11-01946-03 | ↓ | A12A | | ↓ | ↓ | CAS | ↓ |
| 11-01946-04 | ↓ | A12B | | ↓ | ↓ | CAS | ↓ |
| 11-01946-05 | ↓ | A13A | | ↓ | ↓ | CAS | ↓ |
| 11-01946-06 | ↓ | A13B | | ↓ | ↓ | CAS | ↓ |
| 11-01946-07 | ↓ | A14A | | ↓ | ↓ | CAS | ↓ |
| 11-01946-08 | ↓ | A14B | | ↓ | ↓ | CAS | ↓ |
| 11-01946-09 | ↓ | A15A | | ↓ | ↓ | CAS | ↓ |



Reviewed By: VM Date: 6-2-11
Initials

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01946 -10 | B11-01946 | A15B | | Am | 5-27-11 1601 | CW | 36400 |
| 11-01946 -11 | ↓ | A16A | | ↓ | ↓ | CW | ↓ |
| 11-01947 -01 | B11-01947 | A21A | | Pu | ↓ | CW | ↓ |
| 11-01947 -02 | ↓ | A21B | | ↓ | ↓ | CW | ↓ |
| 11-01947-03 | ↓ | A22A | | ↓ | ↓ | CW | ↓ |
| 11-01947 -04 | ↓ | A23B | | ↓ | ↓ | CW | ↓ |
| 11-01947-05 | ↓ | A24A | | ↓ | ↓ | CW | ↓ |
| 11-01947-06 | ↓ | A24B | | ↓ | ↓ | CW | ↓ |
| 11-01947 -07 | ↓ | A25A | | ↓ | ↓ | CW | ↓ |
| 11-01947 -08 | ↓ | A25B | | ↓ | ↓ | CW | ↓ |
| 11-01947 -09 | ↓ | A31A | | ↓ | ↓ | CW | ↓ |
| 11-01947 -10 | ↓ | A31B | | ↓ | ↓ | CW | ↓ |
| 11-01947 -11 | ↓ | A32B | | ↓ | ↓ | CW | ↓ |
| 11-01954 -15 | B11-01954 B | A35A | 12958 | U | ↓ | CW | ↓ |
| 11-01954 -16 | ↓ | A36A | 12959 | ↓ | ↓ | CW | ↓ |



Reviewed By: YHM Date: 6-2-11
Initials

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01934-17 | 611-01934 3 | A36B | 12994 | U | 5-21-11 1606 | | 86400 |
| 11-01926-01 | B11-01926 | A12A | | Pu | 5-31-11 2149 | | ↓ |
| 11-01926-02 | ↓ | A12B | | ↓ | ↓ | | ↓ |
| 11-01926-03 | ↓ | A13A | | ↓ | ↓ | | ↓ |
| 11-01926-04 | ↓ | A13B | | ↓ | ↓ | | ↓ |
| 11-01926-05 | ↓ | A14A | | ↓ | ↓ | | ↓ |
| 11-01927-01 | 611-01927 | A14B | | U | ↓ | | ↓ |
| 11-01927-02 | ↓ | A15A | | ↓ | ↓ | | ↓ |
| 11-01927-03 | ↓ | A15B | | ↓ | ↓ | | ↓ |
| 11-01927-04 | ↓ | A16A | | ↓ | ↓ | | ↓ |
| 11-01927-05 | ↓ | A16B | | ↓ | ↓ | | ↓ |
| 11-01230-01 | B11-01230 | A23B | | ↓ | ↓ | | ↓ |
| 11-01230-02 | ↓ | A24A | | ↓ | ↓ | | ↓ |
| 11-01230-03 | ↓ | A24B | | ↓ | ↓ | | ↓ |
| 11-01230-04 | ↓ | A25A | | ↓ | ↓ | | ↓ |



Reviewed By: _____ Date: 6-2-11
Initials

# Nonconformance Report

**NCR #:** 1293
*Assigned by QAO*

## Part A: Initiator (Deficiency Identification)

**Describe Nonconformance:**

The LCS/LCSD Recovery for ARS1-B11-01663 is extremely high at 902%. The acceptable range for LCS/LCSD recovery is 75-125%. The RER, DER and RPD also failed. Tracer Recoveries for ARS1-B11-01663-04, 07, 09, 13-16 are biased low.

| | |
|---|---|
| ARS1-B11-01663 | ARS-026 |
| ARS Batch No. | ARS Procedure No. |
| Isotopic Uranium | Eichrom ACW-03-15 |
| Analyte(s) | Method |
| ARS1-11-0897 | |
| ARS SDG(s) | |

| | | |
|---|---|---|
| Initiator's Signature | Heather Wright<br>Name (print) | 5/10/11<br>Date |

# Nonconformance Report

**NCR #:** 1293
*Assigned by QAO*

## Part B: Responsible Manager (Investigation and Proposed Resolution)

**1) Did this nonconformance affect analytical results?** ○ Yes ◉ No

*If Yes:*

Identify affected client(s): _____

ARS Sample ID(s) / SDG(s): _____

**2) Is client contact required?** ○ Yes (Part C Signature Required) ◉ No

**3) Cause of Nonconformance:**

Suspect contamination of control samples due to high activity of samples.

**4) Proposed Immediate Resolution** Proposed Completion Date: 06-02-2011

Is retesting of sample required? ◉ Yes ○ No

Has Nonconformance item(s) been tagged Out of Service? ○ Yes ◉ N/A

**Immediate Resolution Actions(s):** *CAR Required* ○ *Yes* ◉ *No*

Rerun batch

**Long Term Action(s):**

Jamaal Brown

Person(s) assigned to Implement Resolution

Virginia Mulligan — 06-02-2011

Responsible Manager's Signature — Date

# Nonconformance Report

NCR #: 1293
Assigned by QAO

## Part C: QAO (Evaluation)

**1) Route to Project Manager for Client Notification** ☐ N/A

Project Manager's Signature — 5/12/11 Date of Notification

**2) Notify Regulation Body** ☒ N/A

QAO's Signature — Date of Notification

**3) Execute Immediate Resolution and Establish Completion Date** ☐ N/A

Responsible Individual's Signature — 06-02-2011 Completion Date

**4) Execute Corrective Action and Establish Completion Date** ☒ N/A

Responsible Manager's Signature — Completion Date

**5) Nonconformance Category (*Select Only One*)**

| | | |
|---|---|---|
| ○ PT Results | ○ HS&E | ○ Equipment |
| ◉ Batch QC Results | ○ Contractual | ○ Software |
| ○ Instr. QC or Malfunction | ○ Procedural | ○ Prep |
| ○ Missing or Defective Data | ○ Reporting Errors | ○ Other |

Additional Category Detail (e.g., Blank, LCS, Chemical Yield, Background, Lost Sample, etc?)

### Verification

**Immediate Resolution Verified Complete:** 06-02-2011 Date ☐ N/A

**Corrective Actions Verified Complete:** Date ☒ N/A

**OAO Comments:**

Rerun QC was acceptable. Report rerun results.

QAO's Signature (Indicates NCR Complete) — 06-02-2011 Date

# Nonconformance Report

**NCR #:** 1293
*Assigned by QAO*

## Part D: Corrective Action Request

**Responsible Manager (Investigation, Root Cause, and Proposed Corrective Actions(s))**

**1) Description of Root Cause Investigation**

**2) Results of Root Cause Determination**

**3) Proposed Corrective Action(s) and Preventive Measures**
(Include Responsible Individual and Estimated Completion Date for each action)

Responsible Manager's Signature

Date

ARS INTERNATIONAL

# QC Results per Analytical Batch

| | |
|---|---|
| Analytical Batch | ARS1-B11-01663 |
| SDG | ARS1-11-00897 |
| Analysis | Uranium in Water |
| Analysis Test Method | ARS-026/Eichrom ACW-03-15 |
| Analysis Code | ASP-A-024 |
| Report Units | pCi/L |

## Acceptable QC Performance Ranges

| QC Sample Type | Performance Items and Ranges | | |
|---|---|---|---|
| Laboratory Control Sample | Recovery (%): | > 75 | < 125 |
| Matrix Spike | Recovery (%): | > 60 | < 140 |
| Duplicate | Replicate Error Ratio (RER): | | < 1 |
| | Duplicate Error Ratio (DER): | | < 3 |
| | Relative Percent Difference (RPD %): | | ≤ 25 |

## Laboratory Control Sample

Analysis Date: 04-13-11 19:55 | Analysis Technician: JBROWN

| Analysis Batch Sample ID | QC Type | Analyte | Results | CSU (2s) | Expected Value | LCS Rec (%) | MDC |
|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | LCS | U-238 | 151.7 | 18.6 | 16.8 | 902 | 0.013 |

## Duplicate RER/DER/RPD

Analysis Date: 04-13-11 19:55 | Analysis Technician: JBROWN

| Analyte | Result LCS | CSU LCS (2s) | Results LCSD | CSU LCSD (2s) | RER | DER | RPD |
|---|---|---|---|---|---|---|---|
| U-238 | 151.7 | 18.6 | 276.1 | 33.8 | 28.85 | 79.97 | 58.2 |

## Method Blank

Analysis Date: 04-13-11 19:55 / 04-13-11 19:55 | Analysis Technician: JBROWN / JBROWN

| Analysis Batch Sample ID | QC Type | Analyte | Results | CSU (2s) | MDC | Qual |
|---|---|---|---|---|---|---|
| ARS1-B11-01663-03 | MBL | U-234 | 0.026 | 0.023 | 0.034 | U |
| ARS1-B11-01663-03 | MBL | U-235 | 0.0033 | 0.0065 | 0.009 | U |
| ARS1-B11-01663-03 | MBL | U-238 | 0.034 | 0.024 | 0.031 | |

Jamie Armstrong

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

LELAP Certificate# 01949 NELAP Certificate # E87558

ARS INTERNATIONAL

# Rerun Report

| | |
|---|---|
| SDG | ARS1-11-00897 |
| Analysis | ASP-A-024 |
| Run | 2 |

| Fraction | Client ID | Rerun Reason | Comments | Original Deadline | Rerun Deadline |
|---|---|---|---|---|---|
| 001 | MW-1-110419 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 002 | MW-2-110421 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 003 | MW-2-2-110421 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 004 | JPOP41S-110421 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 005 | MD-SW-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 006 | MW-3-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 007 | MW-4-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 008 | MW-6-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 009 | MW-7-110419 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 010 | MW-8-110419 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 011 | MW-MD-02-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 012 | MW-MD-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |
| 013 | NPOP20E-110420 | LCS | LCS/LCSD failed extremely high, rerun batch | 05/06/11 | 05/13/11 |

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01663**

**Method** ARS-026 **Analysis** ASP-A-024 **Matrix** AQ

**Description** Uranium in Water

| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | LCS | B-11684 | | | | | | | | |
| ARS1-B11-01663-02 | LCSD | B-11685 | | | | | | | | |
| ARS1-B11-01663-03 | MBL | | | | | | | | | |
| ARS1-B11-01663-04 | TRG | | | | **ARS1-11-00897** | 001 | 1 | MW-1-110419 | STD | 05/03/11 |
| ARS1-B11-01663-05 | TRG | | | | **ARS1-11-00897** | 002 | 1 | MW-2-110421 | STD | 05/03/11 |
| ARS1-B11-01663-06 | TRG | | | | **ARS1-11-00897** | 003 | 1 | MW-2-2-110421 | STD | 05/03/11 |
| ARS1-B11-01663-07 | TRG | | | | **ARS1-11-00897** | 004 | 1 | JPOP41S-110421 | STD | 05/03/11 |
| ARS1-B11-01663-08 | TRG | | | | **ARS1-11-00897** | 005 | 1 | MD-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01663-09 | TRG | | | | **ARS1-11-00897** | 006 | 1 | MW-3-110420 | STD | 05/03/11 |
| ARS1-B11-01663-10 | TRG | | | | **ARS1-11-00897** | 007 | 1 | MW-4-110420 | STD | 05/03/11 |
| ARS1-B11-01663-11 | TRG | | | | **ARS1-11-00897** | 008 | 1 | MW-6-110420 | STD | 05/03/11 |
| ARS1-B11-01663-12 | TRG | | | | **ARS1-11-00897** | 009 | 1 | MW-7-110419 | STD | 05/03/11 |
| ARS1-B11-01663-13 | TRG | | | | **ARS1-11-00897** | 010 | 1 | MW-8-110419 | STD | 05/03/11 |
| ARS1-B11-01663-14 | TRG | | | | **ARS1-11-00897** | 011 | 1 | MW-MD-02-110420 | STD | 05/03/11 |
| ARS1-B11-01663-15 | TRG | | | | **ARS1-11-00897** | 012 | 1 | MW-MD-110420 | STD | 05/03/11 |
| ARS1-B11-01663-16 | TRG | | | | **ARS1-11-00897** | 013 | 1 | NPOP20E-110420 | STD | 05/03/11 |

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# Technical Notes

| | |
|---|---|
| Batch | ARS1-B11-01663 |
| Analysis Code | ASP-A-024 |
| Procedure No | ARS-026 |
| Matrix | AQ |

| # | Date | Dept | Batch Technical Notes | User ID |
|---|---|---|---|---|
| 1 | 05-03-11 16:58 | CHEMISTRY | B11-01663-01,02,07,16 all seem to have a film covering the plate. I am unsure what this can be attributed to. As a result tracer recovery/activity could be affected. | JBROWN |
| 2 | 05-10-11 12:08 | COUNTROOM | ARS1-B11-01663-02 (LCSD) U-233 and U-234 not identified as peaks are extremely wide and experience a large amount of tailing. FWHM for U-232/234/238 100kev. ARS1-B11-01663-07 (ARS1-11-00897-004) U-234/238 FWHM > 100kev. U-234 peak centroid lies outside +/- 50keV acceptance range due to excessive peak tailing. All peaks overlap due to excessive tailing. This will affect activity calculations as peaks cannot be differentiated. ARS1-B11-01663-16 (ARS1-11-00897-013) U-234/235 FWHM > 100keV due to excessive peak tailing and overlap. All peaks overlap due to excessive tailing. This will affect activity calculations as peaks cannot be differentiated. | JARMSTRONG |

**Batch ID** ARS1-B11-01663

| | | |
|---|---|---|
| OCF | 2.22 | dpm/ pCi |
| ACF | 1 | L/ L |
| CF | 1.96 | |
| TPU sys | 0.062468 | |

| | |
|---|---|
| Tracer ID | S-0241 |
| tracer pCi/g | 4.084775 |
| tracer To | 06-09-2010 |

| | Isotope | half-life days | Abundance |
|---|---|---|---|
| tracer | U-232 | 25162.03704 | 0.997 |
| analyte1 | U-238 | 1.63194E+12 | 1 |
| analyte2 | U-235 | 2.5706E+11 | 0.861 |
| analyte3 | U-234 | 89745400 | 0.998 |

| Sample ID | collection date | aliquot (L) | grams tracer added | U-238 cnts | U-238 bkg cnts | U-235 cnts | U-235 bkg cnts | U-234 cnts | U-234 bkg cnts | U-232 cnts | U-232 bkg cnts | sample time (min) | bkg time (min) | U-232 net CPM | count date | tracer DF | decay corrected tracer dpm | EF | PE | CR | DF1 | DF2 | DF3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | 05-09-11 | 1 | 1.029 | 83789 | 1 | 1970 | 2 | 30685 | 3 | 2293 | 0 | 1440 | 1440 | 1.5924 | 5-9-11 11:03 | 0.99083 | 9.218 | 0.2205 | 0.98 | 0.7994 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-02 | 05-09-11 | 1 | 1.03 | 147622 | 2 | 3197 | 0 | 46020 | 4 | 2223 | 1 | 1440 | 1440 | 1.5431 | 5-9-11 11:03 | 0.99083 | 9.227 | 0.2148 | 0.98 | 0.7945 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-03 | 05-09-11 | 1 | 1.031 | 15 | 3 | 1 | 0 | 13 | 4 | 1468 | 1 | 1440 | 1440 | 1.0188 | 5-9-11 11:03 | 0.99083 | 9.236 | 0.2232 | 0.98 | 0.9043 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-04 | 04-19-11 | 0.5 | 1.022 | 1123 | 4 | 25 | 1 | 369 | 3 | 602 | 2 | 1440 | 1440 | 0.4167 | 5-9-11 11:03 | 0.99083 | 9.155 | 0.2134 | 0.98 | 0.2176 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-05 | 04-21-11 | 0.5 | 1.024 | 10672 | 3 | 152 | 2 | 11831 | 5 | 1435 | 1 | 1440 | 1440 | 0.9958 | 5-9-11 11:03 | 0.99083 | 9.173 | 0.225 | 0.98 | 0.4923 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-06 | 04-21-11 | 0.5 | 1.024 | 10914 | 47 | 408 | 4 | 12688 | 6 | 1580 | 2 | 1440 | 1440 | 1.0958 | 5-9-11 11:03 | 0.99083 | 9.171 | 0.2158 | 0.98 | 0.5649 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-07 | 04-21-11 | 0.1 | 1.009 | 3465 | 5 | 2183 | 2 | 1459 | 4 | 3 | 0 | 1440 | 1440 | 0.0021 | 5-9-11 11:03 | 0.99083 | 9.039 | 0.219 | 0.98 | 0.0031 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-08 | 04-20-11 | 0.5 | 1.023 | 679 | 1 | 29 | 0 | 1240 | 2 | 2495 | 2 | 1440 | 1440 | 1.7113 | 5-9-11 11:03 | 0.99083 | 9.164 | 0.219 | 0.98 | 0.9050 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-09 | 04-20-11 | 0.5 | 1.025 | 1253 | 1 | 58 | 0 | 1442 | 1 | 668 | 1 | 1440 | 1440 | 0.4632 | 5-9-11 11:03 | 0.99083 | 9.182 | 0.223 | 0.98 | 0.2308 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-10 | 04-20-11 | 0.5 | 1.018 | 26598 | 5 | 1074 | 0 | 28748 | 4 | 2015 | 1 | 1440 | 1440 | 1.3986 | 5-9-11 11:03 | 0.99083 | 9.119 | 0.2098 | 0.98 | 0.7459 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-11 | 04-20-11 | 0.5 | 1.021 | 9456 | 2 | 361 | 0 | 11551 | 6 | 1342 | 2 | 1440 | 1440 | 0.9306 | 5-9-11 11:03 | 0.99083 | 9.146 | 0.2206 | 0.98 | 0.4706 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-12 | 04-19-11 | 0.5 | 1.019 | 105 | 11 | 9 | 0 | 527 | 8 | 973 | 0 | 1440 | 1440 | 0.6757 | 5-9-11 11:03 | 0.99083 | 9.128 | 0.2191 | 0.98 | 0.3447 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-13 | 04-19-11 | 0.5 | 1.021 | 151 | 6 | 6 | 1 | 526 | 4 | 902 | 2 | 1440 | 1440 | 0.5556 | 5-9-11 11:03 | 0.99083 | 9.146 | 0.2124 | 0.98 | 0.2918 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-14 | 04-20-11 | 0.5 | 1.018 | 1909 | 6 | 73 | 0 | 2771 | 4 | 799 | 5 | 1440 | 1440 | 0.5514 | 5-9-11 11:03 | 0.99083 | 9.119 | 0.2157 | 0.98 | 0.2860 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-15 | 04-20-11 | 0.5 | 1.022 | 1605 | 1 | 71 | 1 | 2410 | 7 | 687 | 1 | 1440 | 1440 | 0.4764 | 5-9-11 11:03 | 0.99083 | 9.155 | 0.219 | 0.98 | 0.2425 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-16 | 04-28-11 | 0.1 | 1.007 | 172295 | 18 | 92451 | 1 | 113017 | 7 | 105 | 1 | 1440 | 1440 | 0.0722 | 5-9-11 11:03 | 0.99083 | 9.021 | 0.2173 | 0.98 | 0.0376 | 1.0000 | 1.0000 | 1.0000 |

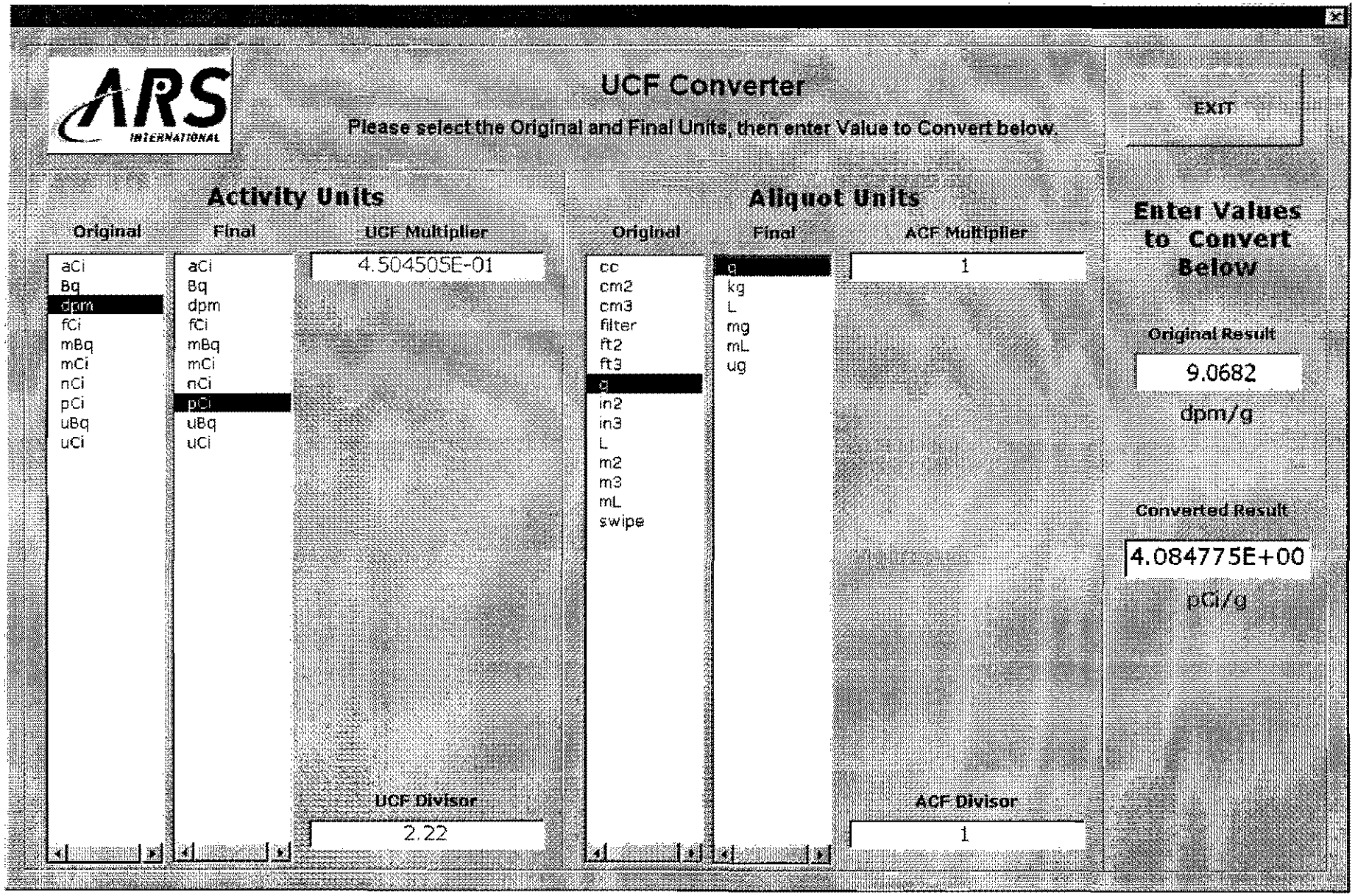
| Sample ID | decon. (K) | Y | U-238 activity | U-238 1.96s cnt uncert | U-238 1.96s TPU | U-238 MDC | U-238 DLC | U-235 activity | U-235 1.96s cnt uncert | U-235 1.96s TPU | U-235 MDC | U-235 DLC | U-234 activity | U-234 1.96s cnt uncert | U-234 1.96s TPU | U-234 MDC | U-234 DLC | Reporting Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | 0.38150 | 78.34% | 151.72438 | 1.027366534 | 18.60309464 | 0.013512373 | 0.004212632 | 4.138997752 | 0.183054169 | 0.538815605 | 0.019558257 | 0.006919361 | 55.67066027 | 0.622992862 | 6.844575573 | 0.019559384 | 0.007111125 | pCi/L |
| ARS1-B11-01663-02 | 0.37126 | 77.86% | 276.12155 | 1.408606588 | 33.8369036 | 0.01737684 | 0.006153908 | 6.943357142 | 0.240757229 | 0.883795374 | 0.005887569 | 0 | 86.24489962 | 0.788084541 | 10.58895829 | 0.022519945 | 0.008720381 | pCi/L |
| ARS1-B11-01663-03 | 0.24483 | 49.42% | 0.0340308 | 0.023582118 | 0.023947382 | 0.03055927 | 0.011426994 | 0.003293725 | 0.006455701 | 0.006468284 | 0.008925995 | 0 | 0.025574223 | 0.022963626 | 0.02317625 | 0.03414308 | 0.013221199 | pCi/L |
| ARS1-B11-01663-04 | 0.05052 | 21.33% | 15.382313 | 0.904502139 | 2.089308452 | 0.165171202 | 0.063959118 | 0.3831272 | 0.159562622 | 0.166316757 | 0.117551782 | 0.037142345 | 7.796102268 | 0.6456768 | 1.152403072 | 0.148330092 | 0.055391232 | pCi/L |
| ARS1-B11-01663-05 | 0.12050 | 48.25% | 61.484613 | 1.167031194 | 7.617931461 | 0.062059875 | 0.023221178 | 2.342651151 | 0.246829623 | 0.378411244 | 0.062180555 | 0.022602921 | 68.30045004 | 1.231215582 | 8.452671456 | 0.062184252 | 0.023267717 | pCi/L |
| ARS1-B11-01663-06 | 0.13260 | 55.36% | 56.910781 | 1.074647522 | 7.050983609 | 0.181241663 | 0.083524659 | 2.457327806 | 0.241983865 | 0.386106287 | 0.071084362 | 0.028300403 | 66.54909452 | 1.158803292 | 8.230078838 | 0.074026261 | 0.029902736 | pCi/L |
| ARS1-B11-01663-07 | 0.00005 | 0.11% | 46957.821 | 1566.941014 | 5959.090992 | 177.9768401 | 70.59886867 | 34178.29655 | 1444.143933 | 4450.032705 | 146.4548349 | 51.85905349 | 19786.28924 | 1019.482076 | 2628.352112 | 161.1970156 | 60.372101 | pCi/L |
| ARS1-B11-01663-08 | 0.20970 | 88.69% | 2.2453033 | 0.169260573 | 0.322837407 | 0.02438294 | 0.007704176 | 0.111542436 | 0.040597304 | 0.042832855 | 0.010425448 | 0 | 4.108047413 | 0.223209003 | 0.552742063 | 0.030826947 | 0.010917186 | pCi/L |
| ARS1-B11-01663-09 | 0.05399 | 22.62% | 15.527241 | 0.850785207 | 2.086907336 | 0.091312609 | 0.028851663 | 0.8254391 | 0.215009115 | 0.238100686 | 0.039035172 | 0 | 17.90702582 | 0.925227891 | 2.379715999 | 0.091495614 | 0.028909487 | pCi/L |
| ARS1-B11-01663-10 | 0.17024 | 73.10% | 108.47947 | 1.304072131 | 13.34579259 | 0.053494839 | 0.021120037 | 5.088603123 | 0.304323364 | 0.593364411 | 0.012839449 | 0 | 117.488934 | 1.358438121 | 14.44902464 | 0.049112554 | 0.019017817 | pCi/L |
| ARS1-B11-01663-11 | 0.11293 | 46.12% | 58.133767 | 1.1721106 | 7.213603139 | 0.037125311 | 0.0202306 | 2.578201862 | 0.265961876 | 0.412773571 | 0.019354369 | 0 | 71.13385224 | 1.298258035 | 8.805665145 | 0.086918816 | 0.035110654 | pCi/L |
| ARS1-B11-01663-12 | 0.08216 | 33.78% | 0.7944766 | 0.178417863 | 0.203211906 | 0.15332949 | 0.065212449 | 0.029449056 | 0.033324743 | 0.031519238 | 0.026602317 | 0 | 4.395316449 | 0.383933278 | 0.661067943 | 0.13440014 | 0.055724822 | pCi/L |
| ARS1-B11-01663-13 | 0.06742 | 28.60% | 1.4934672 | 0.252949355 | 0.312121813 | 0.145293818 | 0.058892716 | 0.059812855 | 0.062033976 | 0.062464752 | 0.08807757 | 0.027829502 | 5.387257184 | 0.465683868 | 0.807424991 | 0.12400522 | 0.048018446 | pCi/L |
| ARS1-B11-01663-14 | 0.06711 | 28.03% | 1.6960556 | 0.887482217 | 2.509019612 | 0.145965632 | 0.058962478 | 0.877261372 | 0.201248916 | 0.228119181 | 0.032567569 | 0 | 28.68784213 | 1.070474406 | 3.671961363 | 0.124573168 | 0.048239147 | pCi/L |
| ARS1-B11-01663-15 | 0.05776 | 23.76% | 19.261106 | 0.944969513 | 2.540558926 | 0.129475288 | 0.048446257 | 0.977492856 | 0.232240434 | 0.261264819 | 0.102814969 | 0.032486016 | 28.94956207 | 1.160857424 | 3.729763181 | 0.180950458 | 0.074151194 | pCi/L |
| ARS1-B11-01663-16 | 0.00178 | 3.69% | 673.10804 | 317.3892814 | 8247.491314 | 8.271510841 | 3.856339065 | 41952.88419 | 270.4388835 | 5143.711327 | 3.341147945 | 1.055688542 | 45025.98129 | 260.2422994 | 5518.997813 | 5.890294031 | 2.409669925 | pCi/L |

# LCS Report
## Analytical Batch: ARS1-B11-01663



| BlindID | ABatch | ABatchSampleID | BlindGroup | StdID | Isotope | ExpectedAddition | ExpectedValue | EmptyWt | GrossWt | NetWt | UserID | ModDate | ExpectedValue_CT | MidPointCountDate | KnownValue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-11684 | ARS1-B11-01663 | ARS1-B11-01663-01 | B-UU238 | S-0028 | U-238 | 1 | 15.7364287 | 13.516 | 14.5846 | 1.0686 | VMULLIGAN | 04-28-2011 | 15.7364287 | 05-09-2011 | 16.81594771 |
| B-11685 | ARS1-B11-01663 | ARS1-B11-01663-02 | B-UU238 | S-0028 | U-238 | 1 | 15.7364287 | 13.5378 | 14.6046 | 1.0668 | VMULLIGAN | 04-28-2011 | 15.7364287 | 05-09-2011 | 16.78762214 |

350001019


ARS
INTERNATIONAL
UCF Converter
Please select the Original and Final Units, then enter Value to Convert below.
EXIT
Activity Units
Original
Final
UCF Multiplier
aCi
Bq
dpm
fCi
mBq
mCi
nCi
pCi
uBq
uCi
4.504505E-01
UCF Divisor
2.22
Aliquot Units
Original
Final
ACF Multiplier
cc
cm2
cm3
filter
ft2
ft3
g
in2
in3
L
m2
m3
mL
swipe
kg
L
mg
mL
ug
1
ACF Divisor
1
Enter Values to Convert Below
Original Result
9.0682
dpm/g
Converted Result
4.084775E+00
pCi/g

350001020

| ID_31001_026 | ABatch | ABatchSampleID | ClientID | Aliquot | AliquotUnits | UserID | ModDate | IC_ID | BalanceSerialNumber |
|---|---|---|---|---|---|---|---|---|---|
| 8846 | ARS1-B11-01663 | ARS1-B11-01663-01 | | 1 | L | JBROWN | 05/03/2011 16:50:29 | | |
| 8847 | ARS1-B11-01663 | ARS1-B11-01663-02 | | 1 | L | JBROWN | 05/03/2011 16:50:29 | | |
| 8848 | ARS1-B11-01663 | ARS1-B11-01663-03 | | 1 | L | JBROWN | 05/03/2011 16:50:29 | | |
| 8849 | ARS1-B11-01663 | ARS1-B11-01663-04 | MW-1-110419 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85962 | |
| 8850 | ARS1-B11-01663 | ARS1-B11-01663-05 | MW-2-110421 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85963 | |
| 8851 | ARS1-B11-01663 | ARS1-B11-01663-06 | MW-2-2-110421 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85964 | |
| 8852 | ARS1-B11-01663 | ARS1-B11-01663-07 | JPOP41S-110421 | 0.1 | L | JBROWN | 05/03/2011 16:50:29 | 85965 | |
| 8853 | ARS1-B11-01663 | ARS1-B11-01663-08 | MD-SW-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85966 | |
| 8854 | ARS1-B11-01663 | ARS1-B11-01663-09 | MW-3-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85967 | |
| 8855 | ARS1-B11-01663 | ARS1-B11-01663-10 | MW-4-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85968 | |
| 8856 | ARS1-B11-01663 | ARS1-B11-01663-11 | MW-6-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85969 | |
| 8857 | ARS1-B11-01663 | ARS1-B11-01663-12 | MW-7-110419 | 0.5 | L | JBROWN | 05/03/2011 16:50:29 | 85970 | |
| 8858 | ARS1-B11-01663 | ARS1-B11-01663-13 | MW-8-110419 | 0.5 | L | JBROWN | 05/03/2011 16:50:30 | 85971 | |
| 8859 | ARS1-B11-01663 | ARS1-B11-01663-14 | MW-MD-02-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:30 | 85972 | |
| 8860 | ARS1-B11-01663 | ARS1-B11-01663-15 | MW-MD-110420 | 0.5 | L | JBROWN | 05/03/2011 16:50:30 | 85973 | |
| 8861 | ARS1-B11-01663 | ARS1-B11-01663-16 | NPOP20E-110420 | 0.1 | L | JBROWN | 05/03/2011 16:50:30 | 85974 | |

| ABatch | ABatchSampleID | ClientID | SampleType | EmptyWt | FilledWt | NetWt | Exp Val | StdID | Isotope | TracerDate | UserID | ModDate | HL days | Ref Date | Cert dpm/g | Curr ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663 | ARS1-B11-01663-01 | | LCS | 97.051 | 98.080 | 1.029 | 9.333 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-02 | | LCSD | 110.334 | 111.363 | 1.030 | 9.338 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-03 | | MBL | 91.208 | 92.239 | 1.031 | 9.350 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-04 | MW-1-110419 | TRG | 435.803 | 436.825 | 1.022 | 9.269 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-05 | MW-2-110421 | TRG | 291.400 | 292.424 | 1.024 | 9.287 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-06 | MW-2-2-110421 | TRG | 305.284 | 306.308 | 1.024 | 9.287 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-07 | JPOP41S-110421 | TRG | 156.318 | 157.327 | 1.009 | 9.152 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-08 | MD-SW-110420 | TRG | 417.668 | 418.691 | 1.023 | 9.278 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-09 | MW-3-110420 | TRG | 440.132 | 441.157 | 1.025 | 9.296 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-10 | MW-4-110420 | TRG | 377.881 | 378.899 | 1.018 | 9.233 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-11 | MW-6-110420 | TRG | 396.184 | 397.205 | 1.021 | 9.260 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-12 | MW-7-110419 | TRG | 435.912 | 436.931 | 1.019 | 9.242 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-13 | MW-8-110419 | TRG | 469.006 | 470.027 | 1.021 | 9.260 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-14 | MW-MD-02-110420 | TRG | 467.526 | 468.544 | 1.018 | 9.233 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-15 | MW-MD-110420 | TRG | 375.358 | 376.380 | 1.022 | 9.269 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |
| ARS1-B11-01663 | ARS1-B11-01663-16 | NPOP20E-110420 | TRG | 160.828 | 161.834 | 1.007 | 9.130 | S-0241 | U-232 | 5/3/2011 | JBROWN | 5/3/2011 | 25162.037 | 6/9/2010 | 9.152 | 9.070 |

# Standards Activity as of: 05-09-11 11:03

| Active | Std ID | Isotope | PSCLT | Verification Date | Exp Date | Status | Ref Date | Ref ACT (dpm) | ACT at Date Above (dpm/g) | Halflife (days) | Parent ID | Expended Date | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | S-0241 | U-232 | ST | 06-11-10 | 06-11-11 | OK | 06-09-10 | 9.1520E+00 | 9.0682 | 2.5166E+04 | S-0161 | | |

350001023

5/9/2011 11:03:19

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/9/2011
Time : 11:03:19
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01721-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01721-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-01 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-02 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-03 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-04 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-05 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-06 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-07 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-08 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-09 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-10 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-11 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-12 | A_3_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-13 | A_3_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-14 | A_3_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-15 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01663-16 | A_3_6B | Shelf 2 | Alpha Analyst10139 | |

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCS
Batch Identification: B11-01663
Sample Identification: 11-01663-01
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:00
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

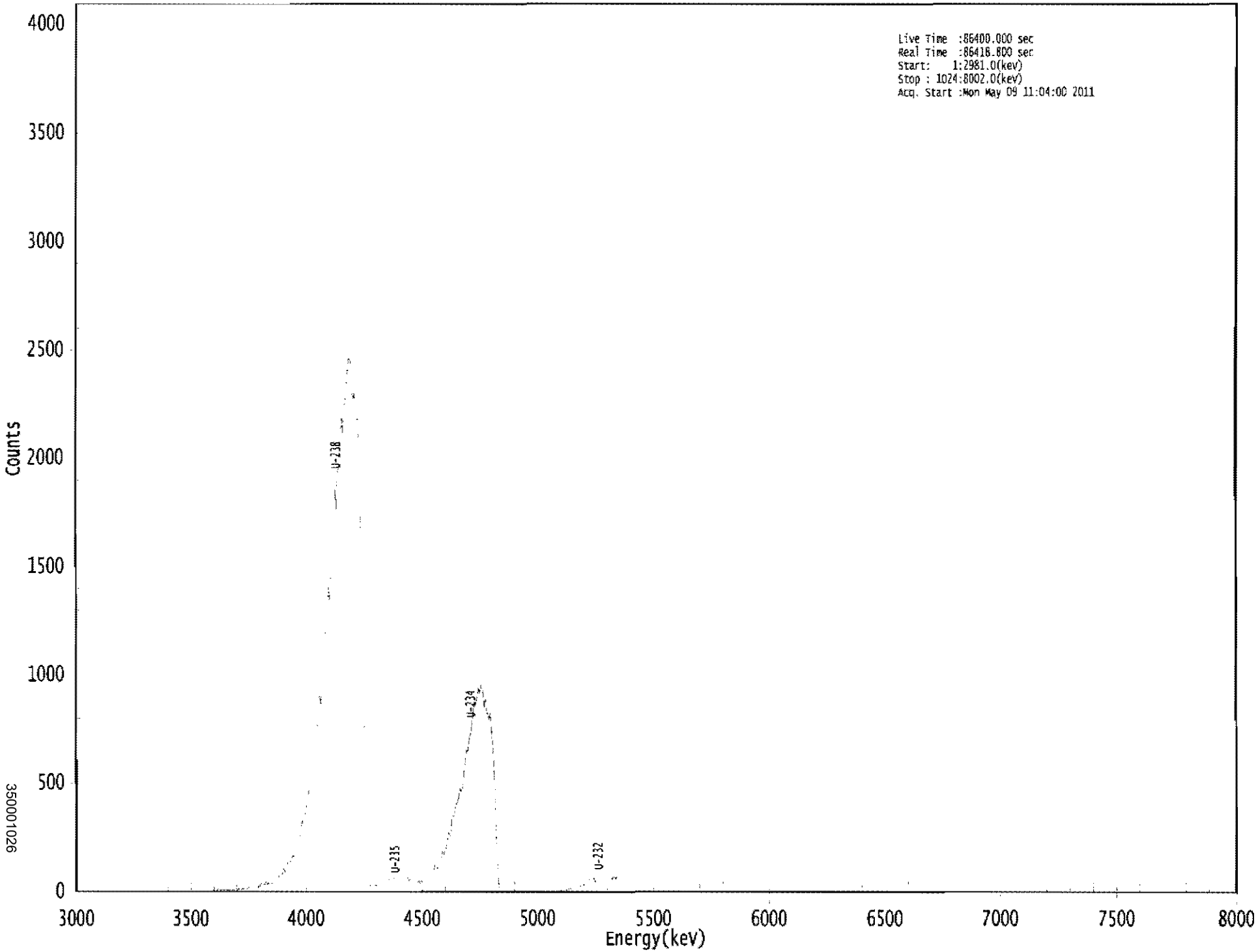
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5247.828 | 2293.00 | 47.89 | 0.00 | 0.00E+000 | 119.8 |
| U-234 | 4697.634 | 30685.00 | 175.17 | 0.00 | 0.00E+000 | 141.5 |
| U-235 | 4369.754 | 1970.00 | 44.38 | 0.00 | 0.00E+000 | 147.6 |
| U-238 | 4120.767 | 83789.00 | 289.46 | 0.00 | 0.00E+000 | 156.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.2592E+000 | 2.93 | 3.8462E-003 | 2.06 |
| U-234 | 4.3615E+001 | 2.13 | 3.8462E-003 | 2.06 |
| U-235 | 3.4542E+000 | 3.05 | 4.7448E-003 | 2.06 |
| U-238 | 1.1858E+002 | 2.08 | 3.8297E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012225.CNF



**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:59

Chamber: A 2 1A
Detector Serial: 55794
Chamber Serial : 12044979A
Type: System Background
Measurement Date: 4/2/2011 16:08:16

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.3000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: LCSD
Batch Identification: B11-01663
Sample Identification: 11-01663-02
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:02
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

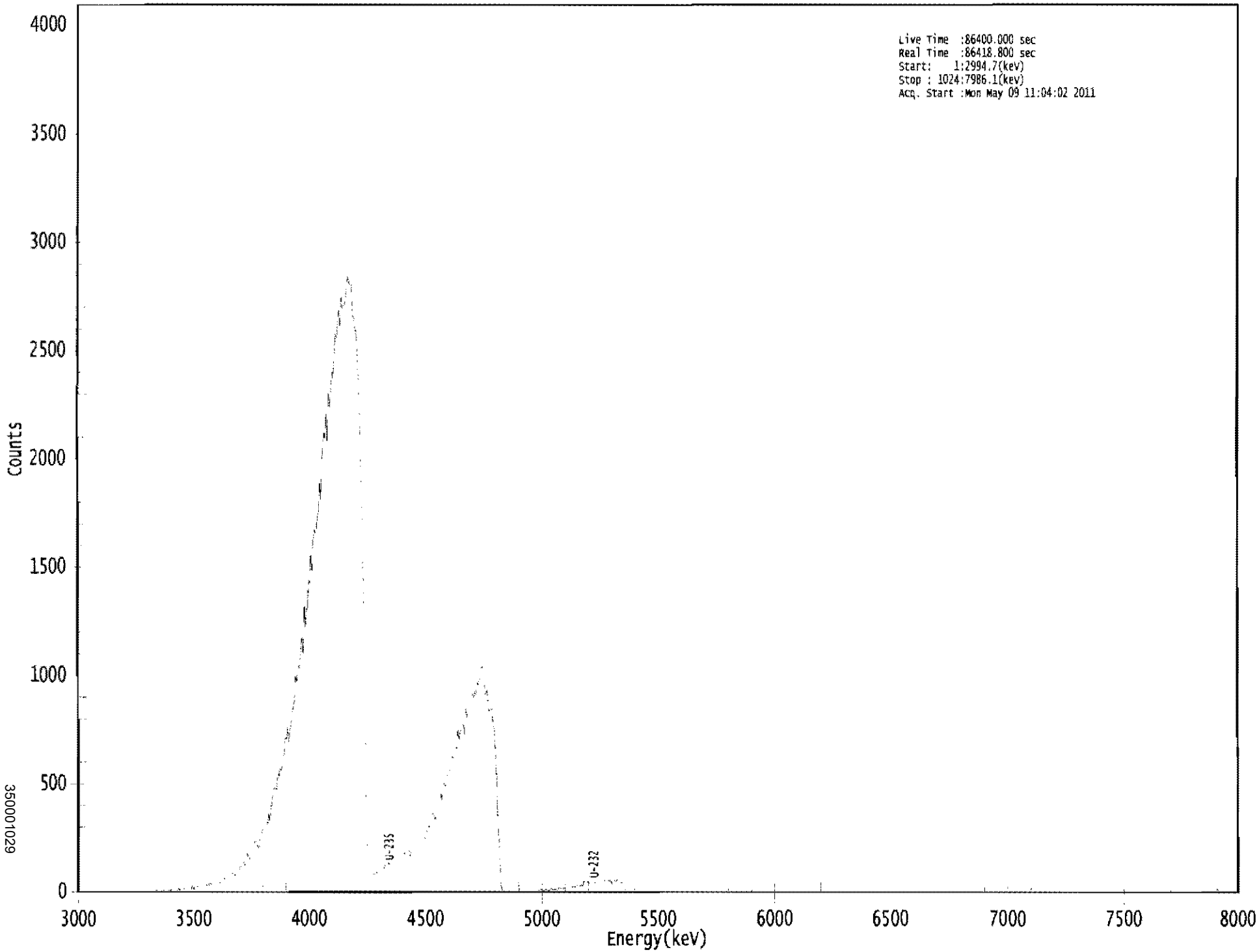
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5226.475 | 2223.00 | 47.15 | 0.00 | 0.00E+000 | 174.3 |
| U-235 | 4346.903 | 3197.00 | 56.54 | 0.00 | 0.00E+000 | 92.1 |
| U-238 ~~<not ID'd>~~ | 4066.491 | 147622.0 | 384.22 | 0.00 | 0.00E+000 | 236.8 |
| ~~<not ID'd>~~ U-234 | 4664.680 | 46020.00 | 214.52 | 0.00 | 0.00E+000 | 214.4 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.2443E+000 | 2.95 | 3.9492E-003 | 2.05 |
| U-235 | 5.7557E+000 | 2.71 | 4.8718E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012226.CNF




350001029

**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:58

Chamber: A 2 1B
Detector Serial: 55795
Chamber Serial : 12044979B
Type: System Background
Measurement Date: 4/2/2011 16:08:18

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 1.9000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: MBL
Batch Identification: B11-01663
Sample Identification: 11-01663-03
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:04
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

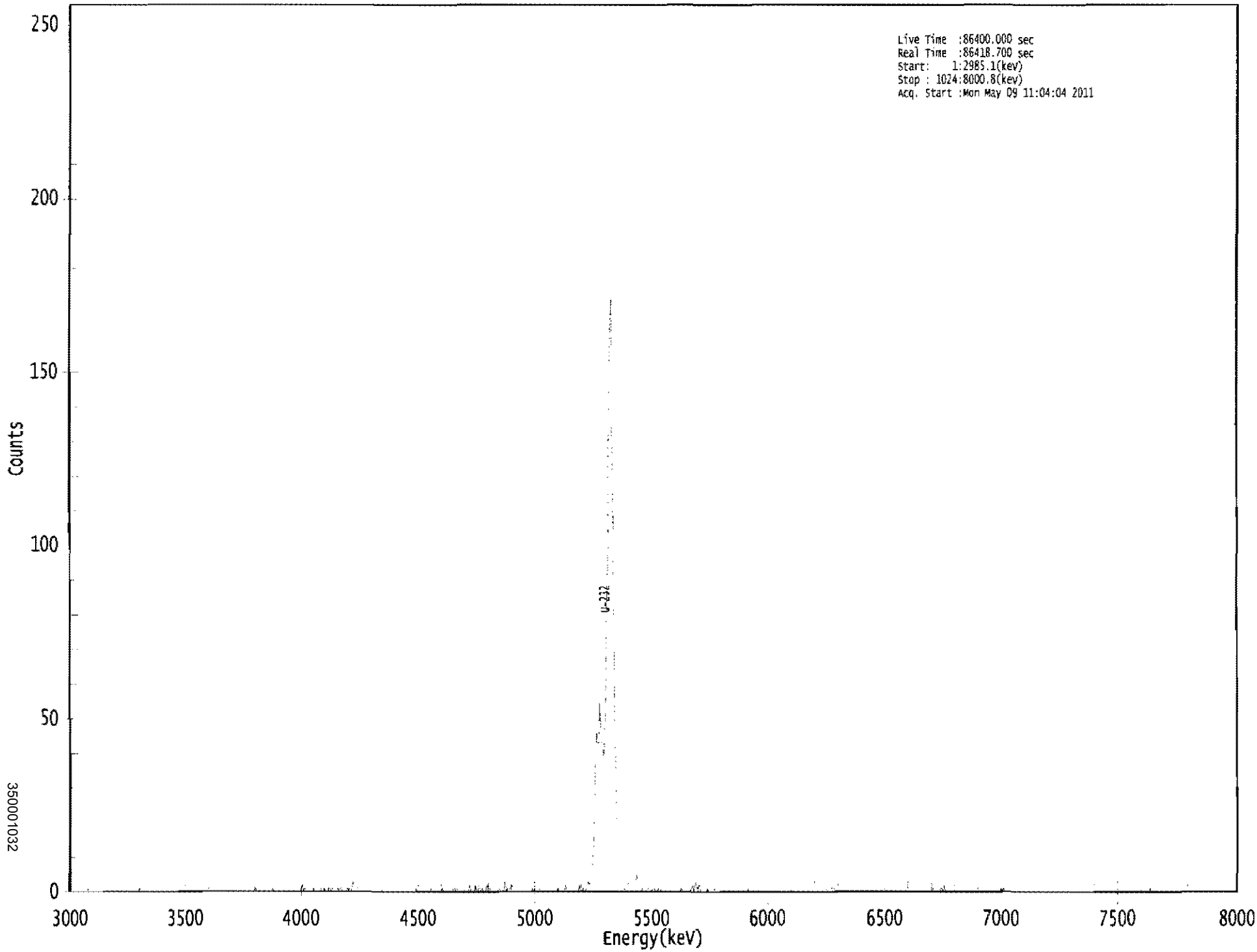
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5295.632 | 1468.00 | 38.31 | 0.00 | 0.00E+000 | 28.5 |
| U-234 | 4753.576 | 13.00 | 3.61 | 0.00 | 0.00E+000 | 4.9 |
| U-235 | 4475.616 | 1.00 | 1.00 | 0.00 | 0.00E+000 | 4.9 |
| U-238 | 4166.729 | 15.00 | 3.87 | 0.00 | 0.00E+000 | 6.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.0616E+000 | 3.32 | 3.8003E-003 | 2.05 |
| U-234 | 1.8257E-002 | 27.81 | 3.8003E-003 | 2.05 |
| U-235 | 1.7325E-003 | 100.02 | 4.6881E-003 | 2.05 |
| U-238 | 2.0975E-002 | 25.90 | 3.7840E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012204.CNF




350001032

**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:58

Chamber: A 2 2A
Detector Serial: 55796
Chamber Serial : 12044980A
Type: System Background
Measurement Date: 4/2/2011 16:08:21

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.4000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-001
Batch Identification: B11-01663
Sample Identification: 11-01663-04
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:06
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2134 +/- 0.0044 on 5/24/10 08:35:23
Effective Efficiency: 0.2134 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

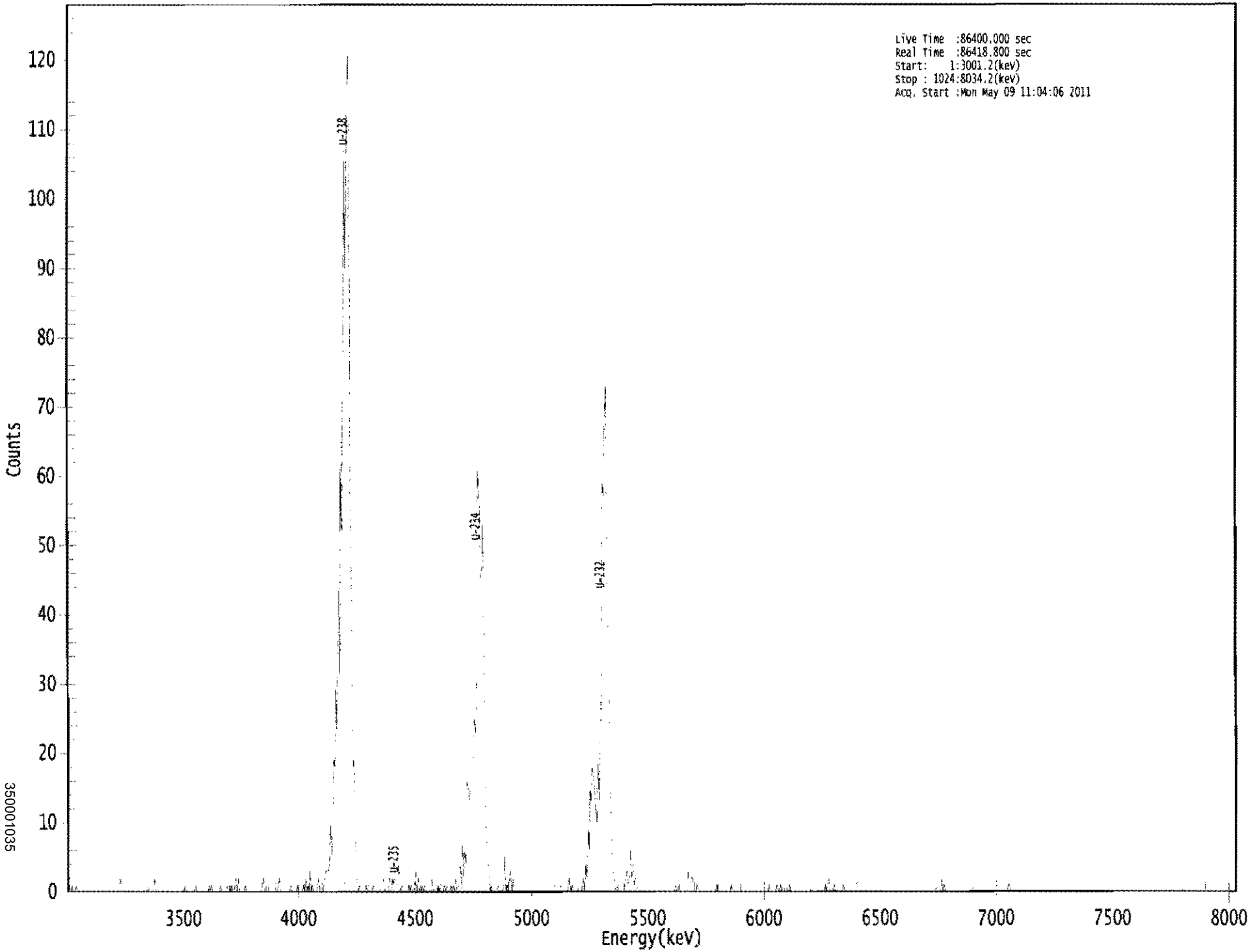
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5308.219 | 602.00 | 24.54 | 0.00 | 0.00E+000 | 30.1 |
| U-234 | 4769.874 | 569.00 | 23.85 | 0.00 | 0.00E+000 | 32.5 |
| U-235 | 4414.557 | 25.00 | 5.00 | 0.00 | 0.00E+000 | 8.2 |
| U-238 | 4200.819 | 1123.00 | 33.51 | 0.00 | 0.00E+000 | 35.6 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 8.8416E-001 | 4.56 | 3.9743E-003 | 2.06 |
| U-234 | 8.3569E-001 | 4.67 | 3.9743E-003 | 2.06 |
| U-235 | 4.5295E-002 | 20.11 | 4.9028E-003 | 2.06 |
| U-238 | 1.6423E+000 | 3.62 | 3.9573E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012205.CNF




350001035

**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:57

Chamber: A 2 3B
Detector Serial: 55799
Chamber Serial : 12044981B
Type: System Background
Measurement Date: 4/2/2011 16:08:25

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.2000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-002
Batch Identification: B11-01663
Sample Identification: 11-01663-05
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:09
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/13/10 09:49:41
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

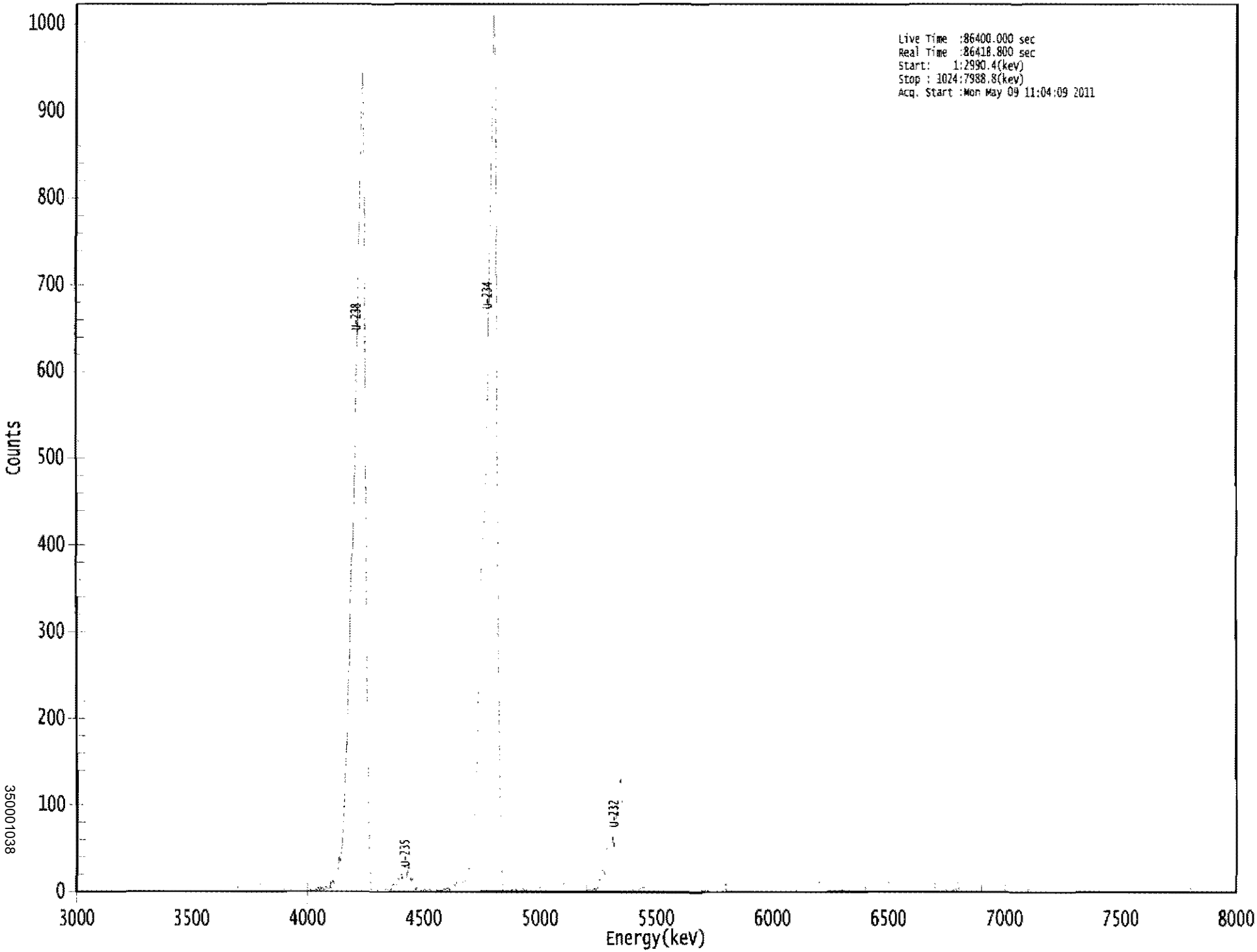
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5312.659 | 1435.00 | 37.88 | 0.00 | 0.00E+000 | 37.5 |
| U-234 | 4774.014 | 11831.00 | 108.77 | 0.00 | 0.00E+000 | 45.5 |
| U-235 | 4410.263 | 352.00 | 18.76 | 0.00 | 0.00E+000 | 16.8 |
| U-238 | 4206.542 | 10672.00 | 103.31 | 0.00 | 0.00E+000 | 47.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.9995E+000 | 3.34 | 3.7704E-003 | 2.05 |
| U-234 | 1.6485E+001 | 2.25 | 3.7704E-003 | 2.05 |
| U-235 | 6.0504E-001 | 5.71 | 4.6513E-003 | 2.05 |
| U-238 | 1.4806E+001 | 2.27 | 3.7543E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012203.CNF




350001038

**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:57

Chamber: A 2 4A
Detector Serial: 55800
Chamber Serial : 12044982A
Type: System Background
Measurement Date: 4/2/2011 16:08:26

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 4.1000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 6.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-003
Batch Identification: B11-01663
Sample Identification: 11-01663-06
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:11
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2158 +/- 0.0044 on 4/13/10 09:50:10
Effective Efficiency: 0.2158 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

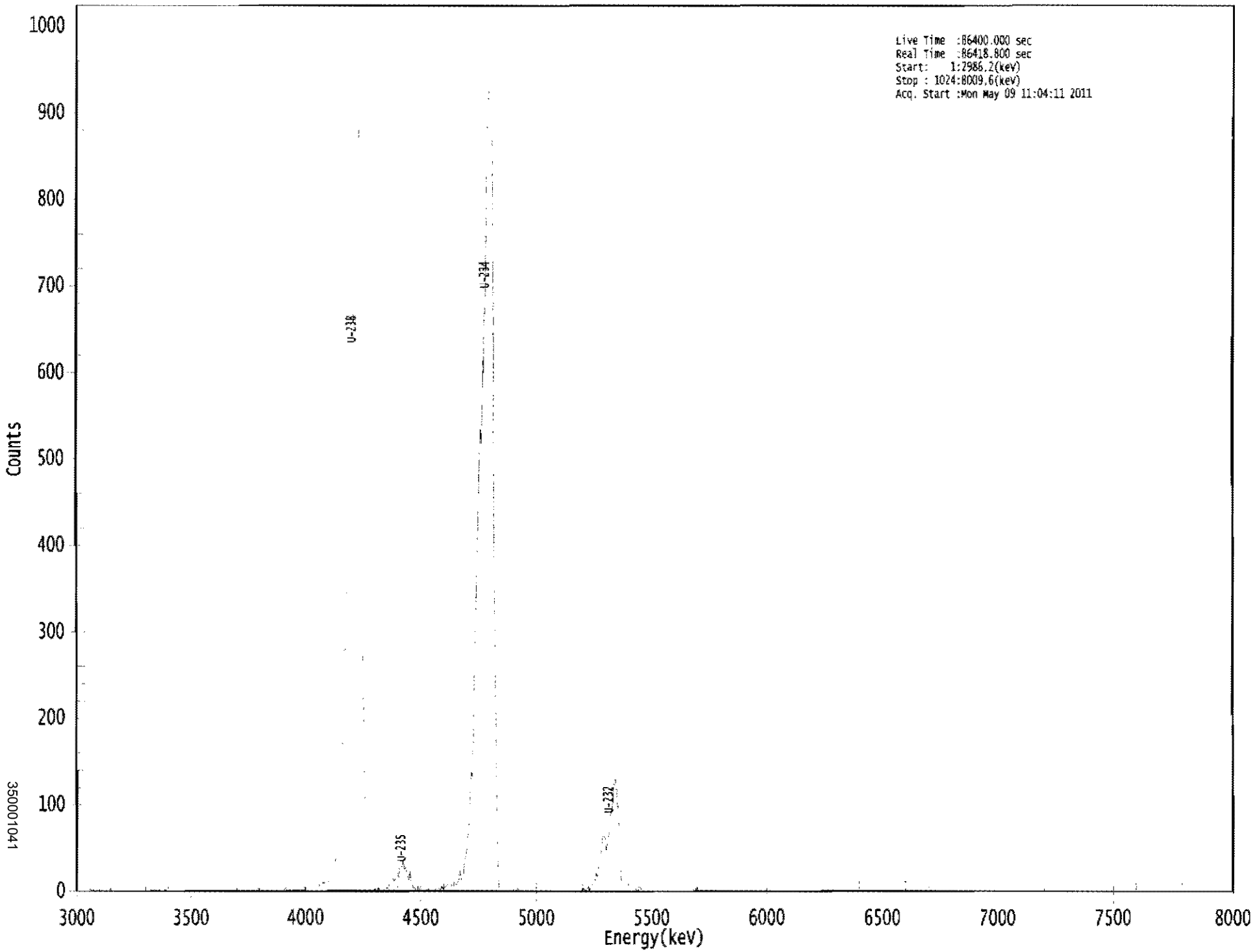
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5306.336 | 1580.00 | 39.75 | 0.00 | 0.00E+000 | 45.1 |
| U-234 | 4766.660 | 12688.00 | 112.64 | 0.00 | 0.00E+000 | 63.6 |
| U-235 | 4404.895 | 408.00 | 20.20 | 0.00 | 0.00E+000 | 36.4 |
| U-238 | 4195.903 | 10914.00 | 104.47 | 0.00 | 0.00E+000 | 55.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 2.2947E+000 | 3.25 | 3.9301E-003 | 2.05 |
| U-234 | 1.8427E+001 | 2.24 | 3.9301E-003 | 2.05 |
| U-235 | 7.3099E-001 | 5.36 | 4.8482E-003 | 2.05 |
| U-238 | 1.5783E+001 | 2.27 | 3.9132E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012206.CNF




350001041

**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:56

Chamber: A 2 4B
Detector Serial: 55801
Chamber Serial : 12044982B
Type: System Background
Measurement Date: 4/2/2011 16:08:28

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.2400E+002 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 1.1000E+001 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 3.8000E+001 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | <Ab : : : > |
| Bkg Counts - U232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 6.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 4.7000E+001 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | <Ab : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-004
Batch Identification: B11-01663
Sample Identification: 11-01663-07
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:13
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/13/10 20:11:11
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

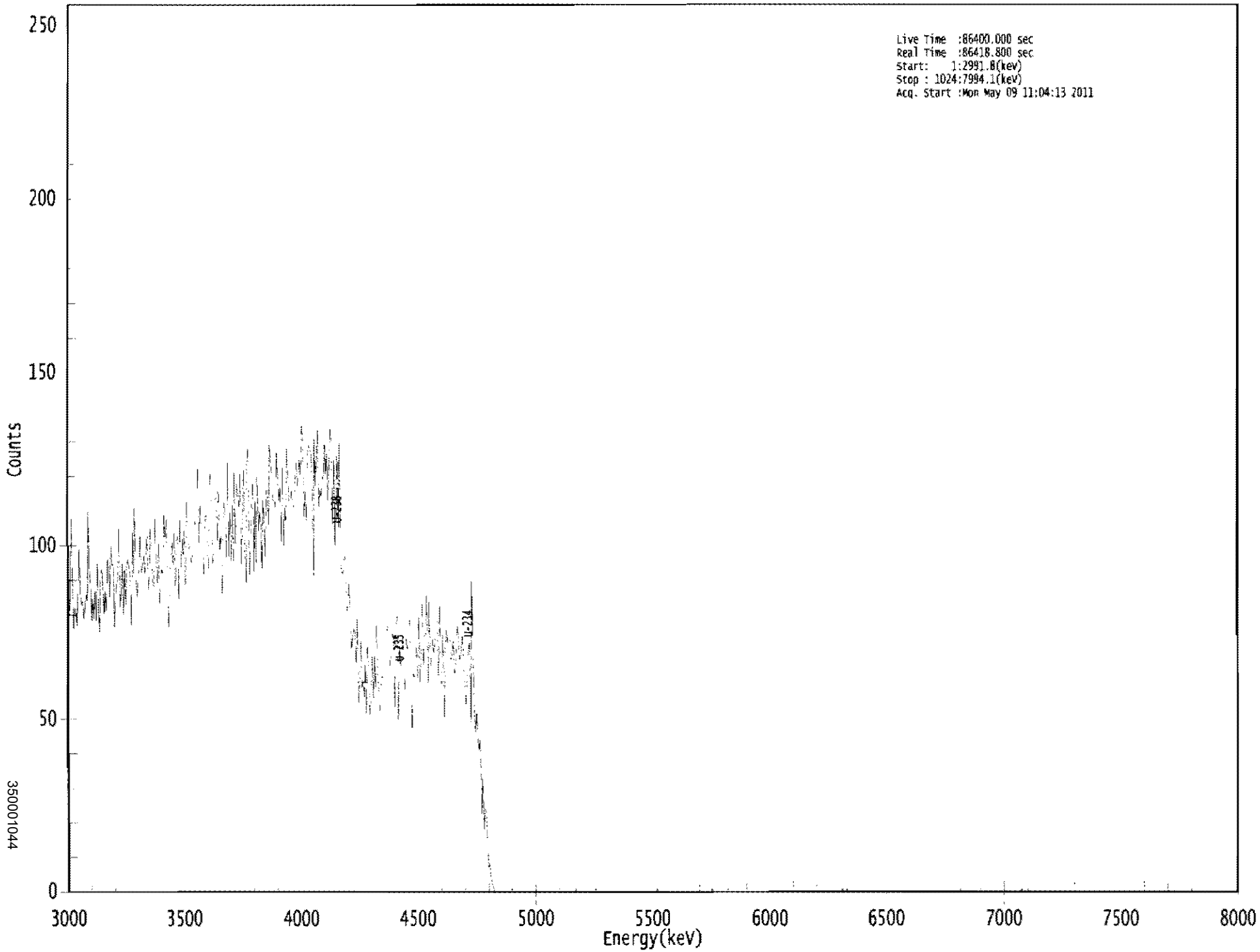
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5296.536 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| U-234 | 4711.860 | 1459.00 | 38.20 | 0.00 | 0.00E+000 | 111.2 |
| U-235 | 4421.182 | 2183.00 | 46.72 | 0.00 | 0.00E+000 | 0.0 |
| U-238 | 4155.122 | 3465.00 | 58.86 | 0.00 | 0.00E+000 | 184.5 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 4.2942E-003 | 57.77 | 3.8734E-003 | 2.06 |
| U-234 | 2.0884E+000 | 3.33 | 3.8734E-003 | 2.06 |
| U-235 | 3.8548E+000 | 2.97 | 4.7783E-003 | 2.06 |
| U-238 | 4.9385E+000 | 2.67 | 3.8568E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012202.CNF



**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:55

Chamber: A 2 5A
Detector Serial: 55802
Chamber Serial : 12044983A
Type: System Background
Measurement Date: 4/2/2011 16:08:30

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 3.1000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-005
Batch Identification: B11-01663
Sample Identification: 11-01663-08
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 2 5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:15
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86418.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2130 +/- 0.0044 on 4/13/10 20:11:42
Effective Efficiency: 0.2130 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

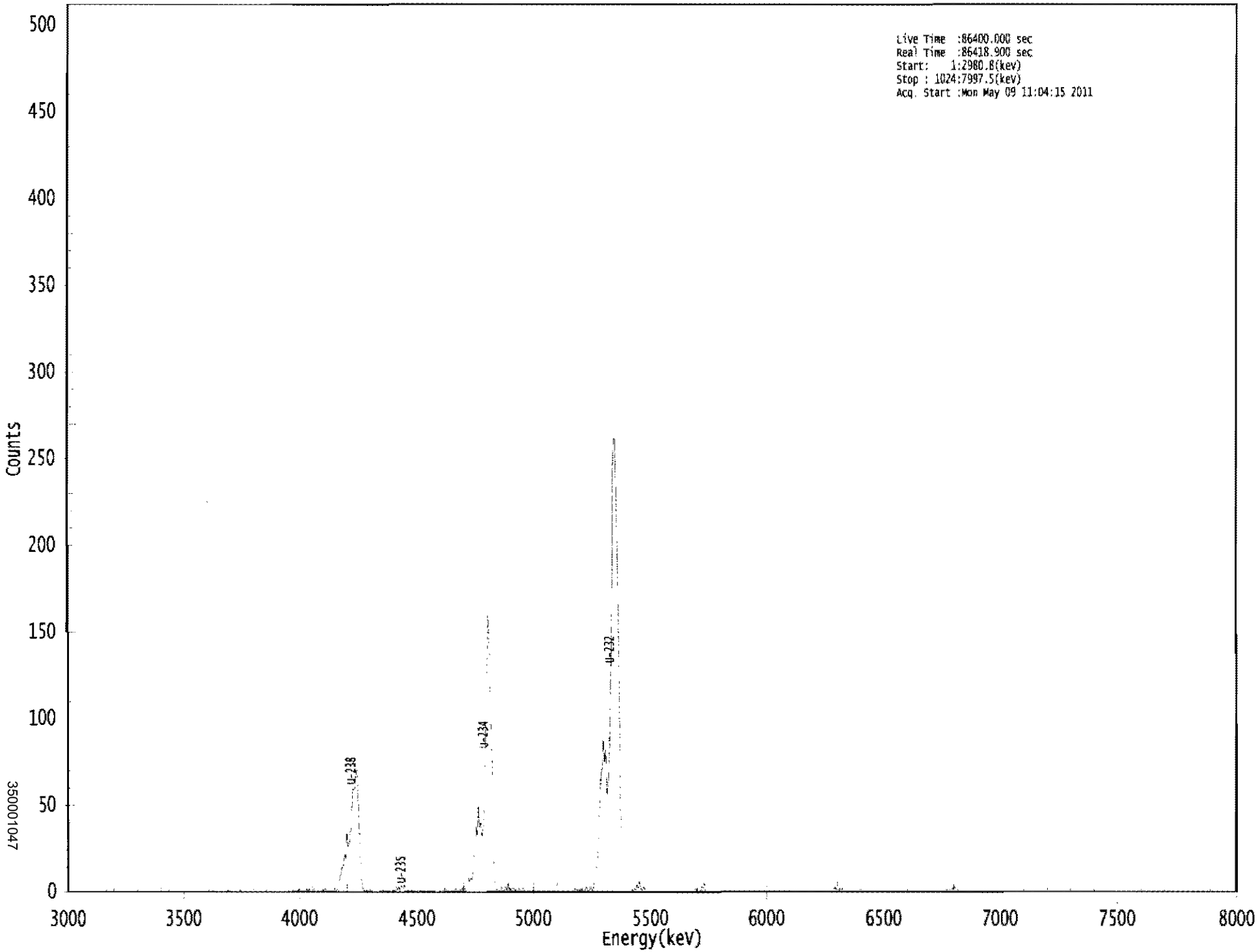
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5316.834 | 2495.00 | 49.95 | 0.00 | 0.00E+000 | 33.8 |
| U-234 | 4776.176 | 1240.00 | 35.21 | 0.00 | 0.00E+000 | 28.6 |
| U-235 | 4416.147 | 29.00 | 5.39 | 0.00 | 0.00E+000 | 8.2 |
| U-238 | 4204.629 | 679.00 | 26.06 | 0.00 | 0.00E+000 | 36.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.6707E+000 | 2.87 | 3.9812E-003 | 2.06 |
| U-234 | 1.8243E+000 | 3.51 | 3.9812E-003 | 2.06 |
| U-235 | 5.2633E-002 | 18.68 | 4.9113E-003 | 2.06 |
| U-238 | 9.9468E-001 | 4.35 | 3.9641E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012201.CNF



**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:55

Chamber: A 2 5B
Detector Serial: 55803
Chamber Serial : 12044983B
Type: System Background
Measurement Date: 4/2/2011 16:08:32

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 1.9000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-006
Batch Identification: B11-01663
Sample Identification: 11-01663-09
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:17
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.3 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2230 +/- 0.0046 on 5/28/10 09:42:00
Effective Efficiency: 0.2230 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

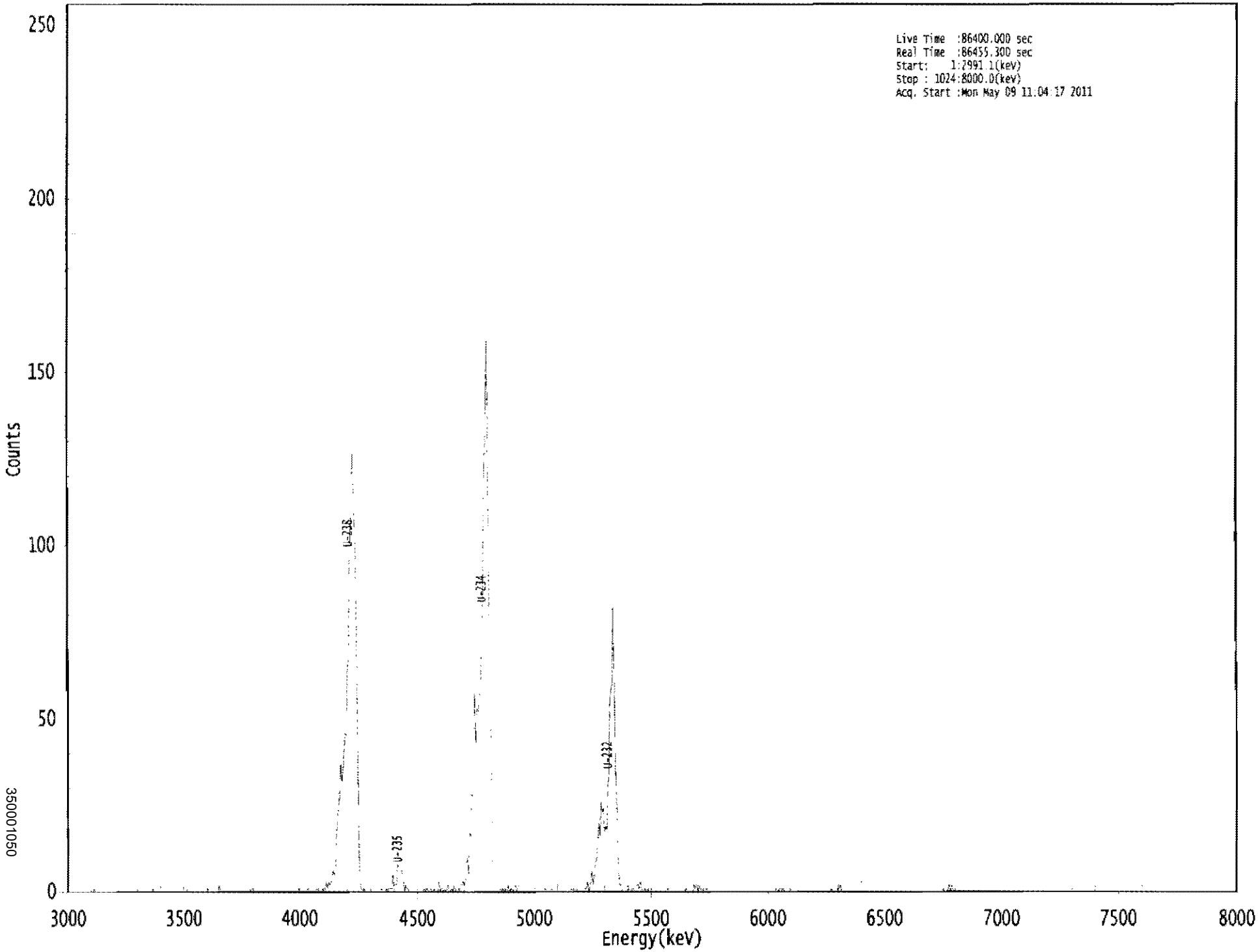
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5310.365 | 668.00 | 25.85 | 0.00 | 0.00E+000 | 26.4 |
| U-234 | 4772.073 | 1442.00 | 37.97 | 0.00 | 0.00E+000 | 29.8 |
| U-235 | 4409.921 | 58.00 | 7.62 | 0.00 | 0.00E+000 | 27.7 |
| U-238 | 4203.011 | 1253.00 | 35.40 | 0.00 | 0.00E+000 | 40.4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 9.3880E-001 | 4.38 | 3.8030E-003 | 2.06 |
| U-234 | 2.0266E+000 | 3.34 | 3.8030E-003 | 2.06 |
| U-235 | 1.0056E-001 | 13.29 | 4.6915E-003 | 2.06 |
| U-238 | 1.7534E+000 | 3.49 | 3.7867E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012214.CNF



**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:54

Chamber: A 3 1A
Detector Serial: 55806
Chamber Serial : 12044985A
Type: System Background
Measurement Date: 4/2/2011 16:08:36

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.1000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-007
Batch Identification: B11-01663
Sample Identification: 11-01663-10
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:19
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2098 +/- 0.0043 on 4/18/10 15:12:35
Effective Efficiency: 0.2098 +/- 0.0043

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

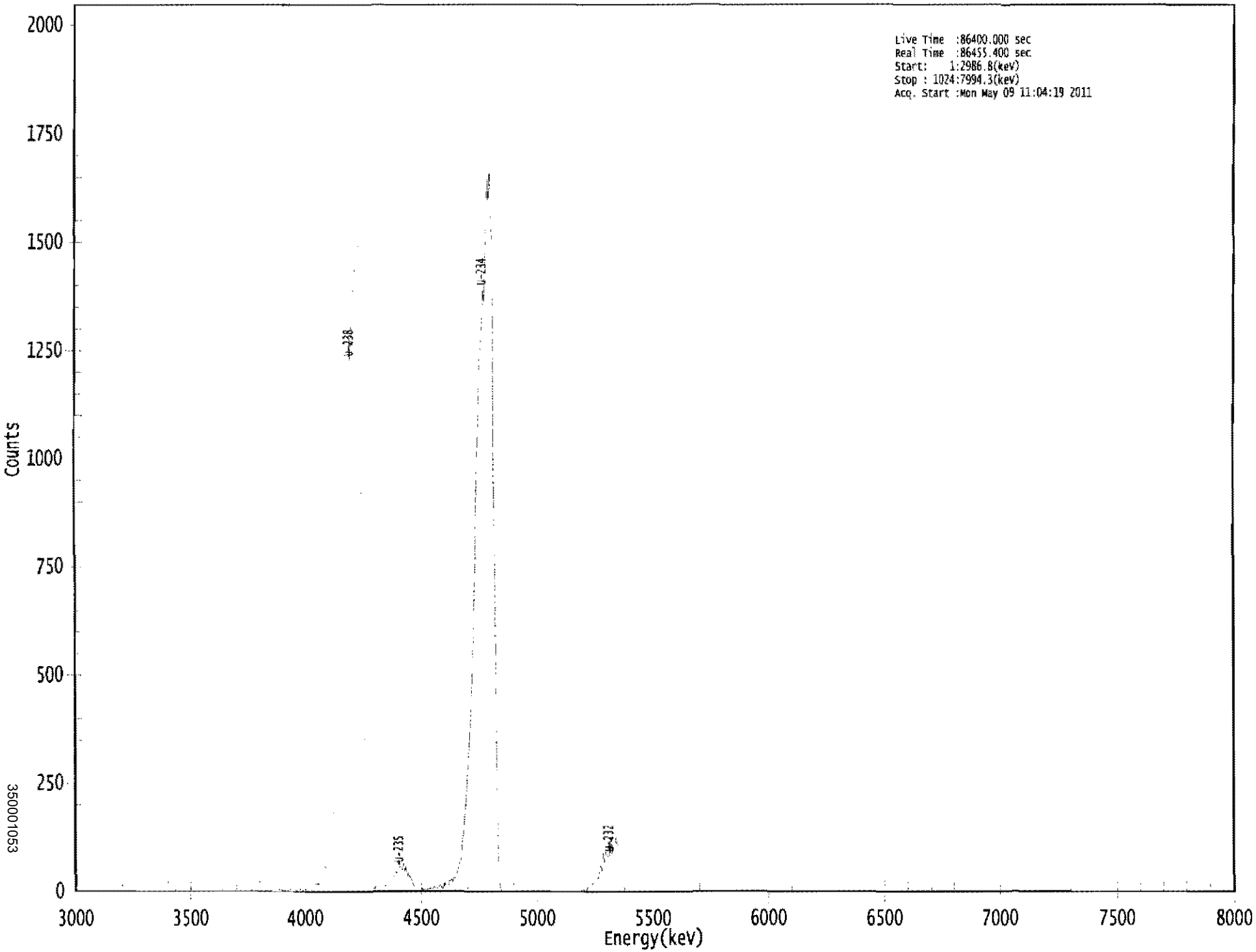
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5300.591 | 2015.00 | 44.89 | 0.00 | 0.00E+000 | 77.5 |
| U-234 | 4758.148 | 28748.00 | 169.55 | 0.00 | 0.00E+000 | 80.8 |
| U-235 | 4394.944 | 1074.00 | 32.77 | 0.00 | 0.00E+000 | 53.1 |
| U-238 | 4187.828 | 26598.00 | 163.09 | 0.00 | 0.00E+000 | 80.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 3.0101E+000 | 3.03 | 4.0424E-003 | 2.06 |
| U-234 | 4.2946E+001 | 2.14 | 4.0424E-003 | 2.06 |
| U-235 | 1.9792E+000 | 3.68 | 4.9868E-003 | 2.06 |
| U-238 | 3.9563E+001 | 2.15 | 4.0251E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012227.CNF




350001053

**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:54

Chamber: A 3 1B
Detector Serial: 55807
Chamber Serial : 12044985B
Type: System Background
Measurement Date: 4/2/2011 16:08:38

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.6000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-008
Batch Identification: B11-01663
Sample Identification: 11-01663-11
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:21
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2206 +/- 0.0045 on 4/18/10 15:13:08
Effective Efficiency: 0.2206 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

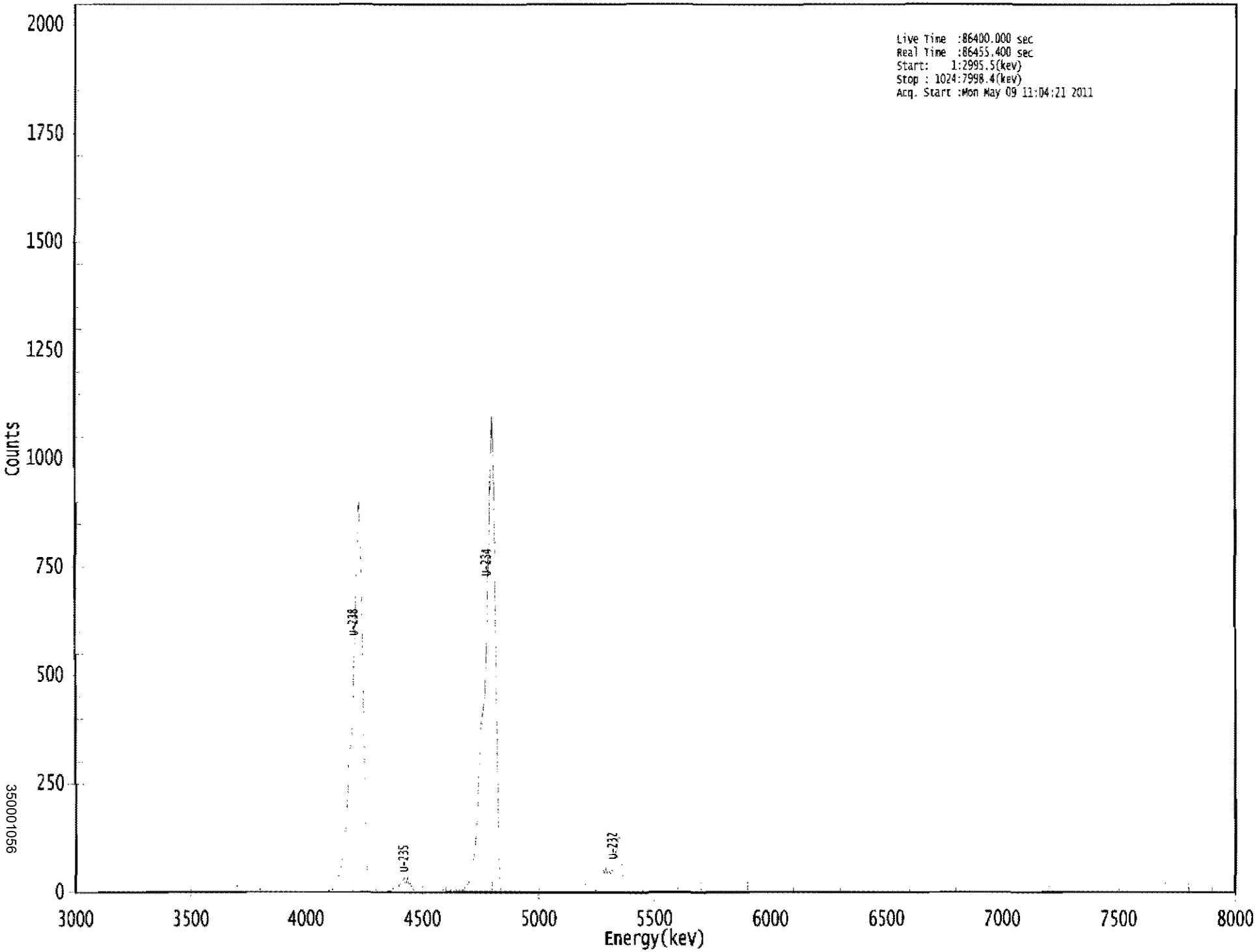
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5318.111 | 1342.00 | 36.63 | 0.00 | 0.00E+000 | 34.5 |
| U-234 | 4779.836 | 11551.00 | 107.48 | 0.00 | 0.00E+000 | 40.5 |
| U-235 | 4416.651 | 361.00 | 19.00 | 0.00 | 0.00E+000 | 19.3 |
| U-238 | 4210.736 | 9456.00 | 97.24 | 0.00 | 0.00E+000 | 43.6 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.9070E+000 | 3.42 | 3.8454E-003 | 2.05 |
| U-234 | 1.6415E+001 | 2.25 | 3.8454E-003 | 2.05 |
| U-235 | 6.3285E-001 | 5.65 | 4.7438E-003 | 2.05 |
| U-238 | 1.3380E+001 | 2.30 | 3.8289E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012215.CNF

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**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:53

Chamber: A 3 2B
Detector Serial: 55809
Chamber Serial : 12045128B
Type: System Background
Measurement Date: 4/2/2011 16:08:40

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.6000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 8.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 6.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-009
Batch Identification: B11-01663
Sample Identification: 11-01663-12
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:22
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2191 +/- 0.0045 on 4/18/10 15:15:02
Effective Efficiency: 0.2191 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

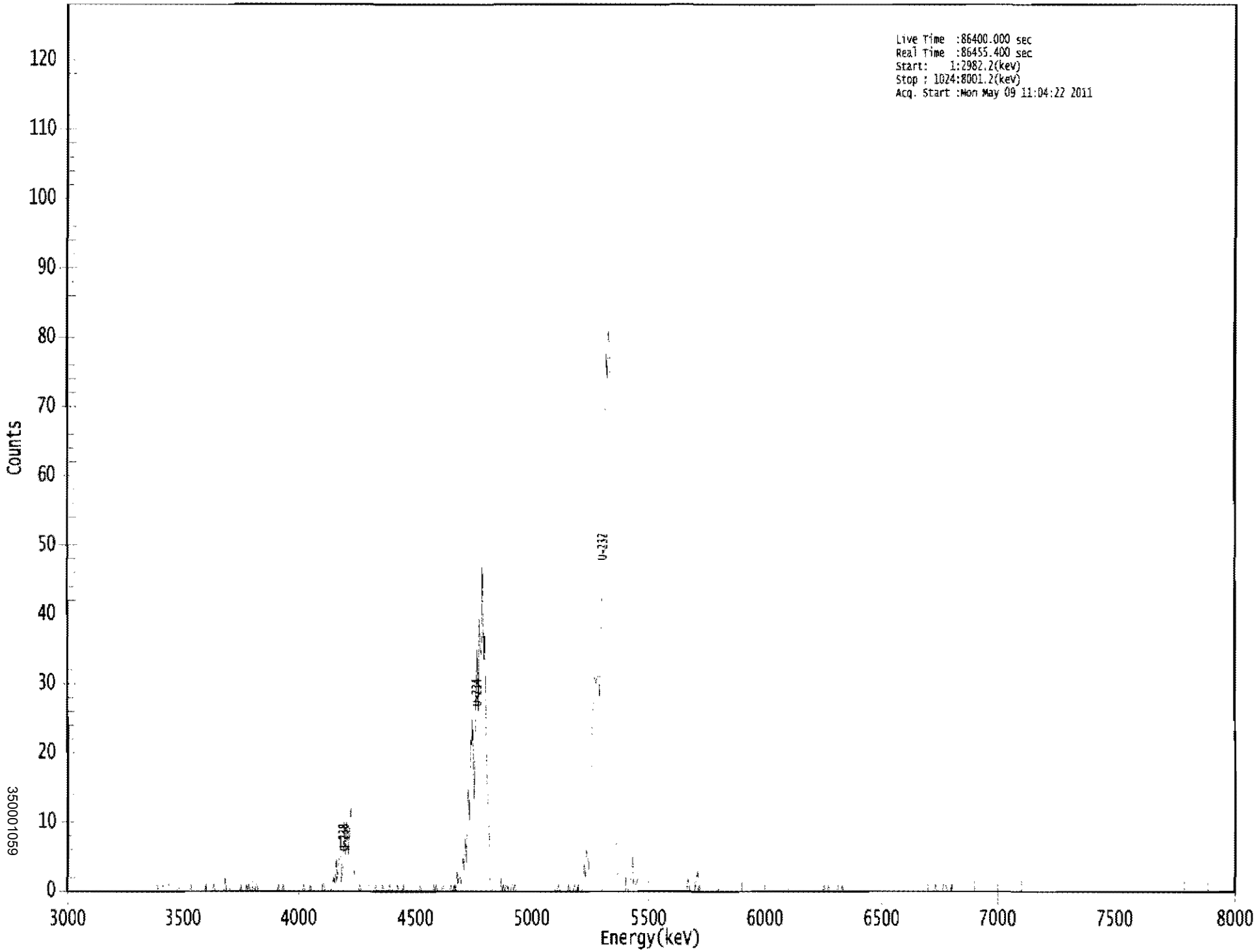
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5292.021 | 973.00 | 31.19 | 0.00 | 0.00E+000 | 43.3 |
| U-234 | 4751.314 | 527.00 | 22.96 | 0.00 | 0.00E+000 | 45.9 |
| U-235 | 4401.699 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| U-238 | 4179.240 | 105.00 | 10.25 | 0.00 | 0.00E+000 | 11.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.3920E+000 | 3.81 | 3.8714E-003 | 2.06 |
| U-234 | 7.5396E-001 | 4.82 | 3.8714E-003 | 2.06 |
| U-235 | 5.2947E-003 | 57.77 | 4.7758E-003 | 2.06 |
| U-238 | 1.4957E-001 | 9.97 | 3.8548E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012216.CNF



**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:53

Chamber: A 3 3A
Detector Serial: 55810
Chamber Serial : 12045129A
Type: System Background
Measurement Date: 4/2/2011 16:08:41

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 5.2000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 5.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 9.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 8.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 1.1000E+001 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-010
Batch Identification: B11-01663
Sample Identification: 11-01663-13
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:24
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2124 +/- 0.0044 on 4/18/10 15:15:32
Effective Efficiency: 0.2124 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

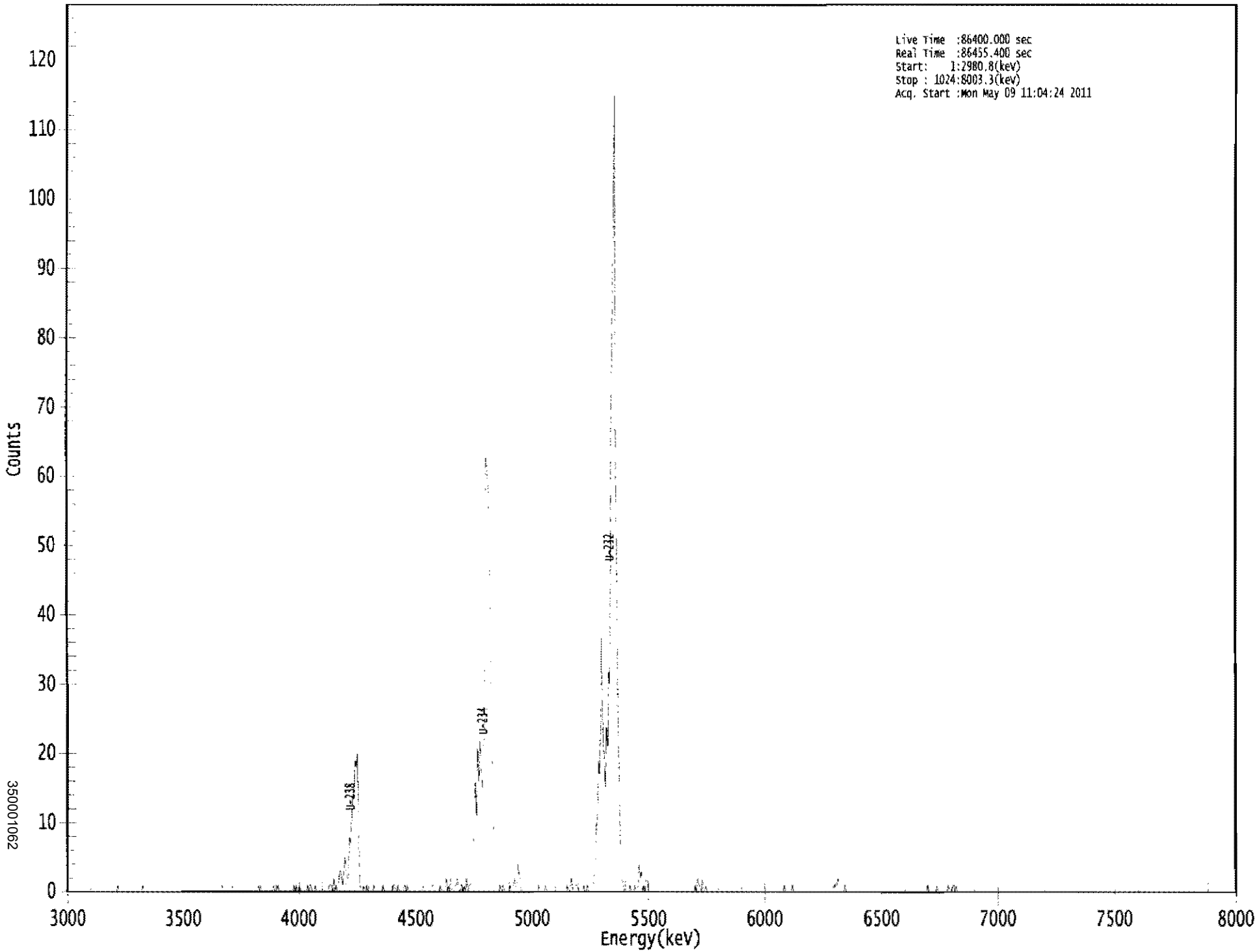
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5320.342 | 802.00 | 28.32 | 0.00 | 0.00E+000 | 22.2 |
| U-234 | 4778.916 | 526.00 | 22.93 | 0.00 | 0.00E+000 | 26.3 |
| U-235 | 4414.385 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 9.8 |
| U-238 | 4209.256 | 151.00 | 12.29 | 0.00 | 0.00E+000 | 29.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.1835E+000 | 4.09 | 3.9934E-003 | 2.06 |
| U-234 | 7.7623E-001 | 4.82 | 3.9934E-003 | 2.06 |
| U-235 | 1.0923E-002 | 40.88 | 4.9263E-003 | 2.06 |
| U-238 | 2.2188E-001 | 8.39 | 3.9762E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012219.CNF

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**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:52

Chamber: A 3 3B
Detector Serial: 55811
Chamber Serial : 12045129B
Type: System Background
Measurement Date: 4/2/2011 16:08:43

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 4.0000E+001 | |
| Boundary Limits: [-1.000E-006, 4.090E+002] | | < : : : > |
| Bkg Counts - Am241 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po209 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu238 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Pu242 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th228 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th229 | 3.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th230 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - Th232 | 5.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U232 | 2.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U235 | 1.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |
| Bkg Counts - U238 | 6.0000E+000 | |
| Boundary Limits: [-1.000E-006, 2.500E+001] | | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-011
Batch Identification: B11-01663
Sample Identification: 11-01663-14
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:26
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2157 +/- 0.0044 on 4/18/10 15:16:34
Effective Efficiency: 0.2157 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

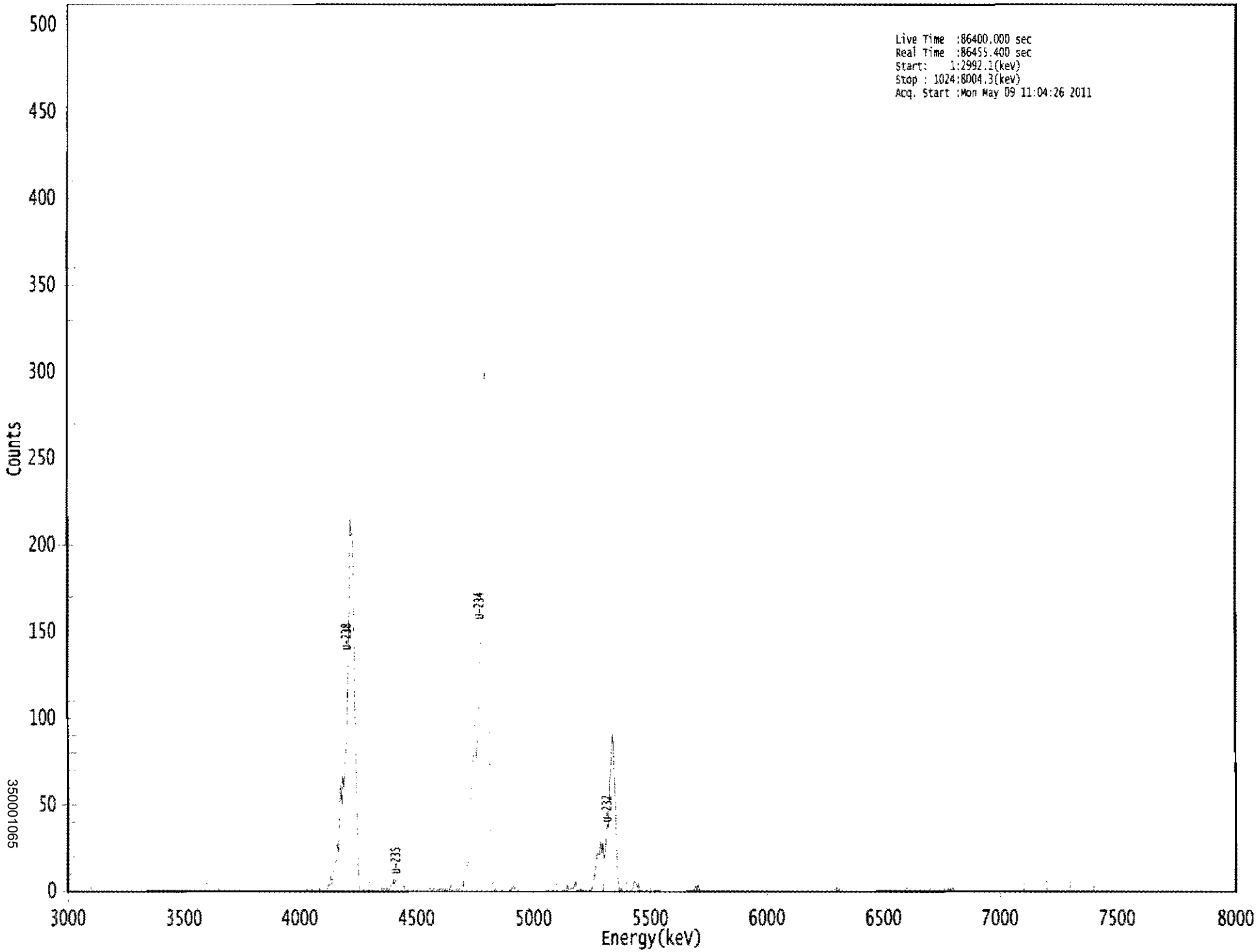
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5314.379 | 799.00 | 28.27 | 0.00 | 0.00E+000 | 29.5 |
| U-234 | 4772.639 | 2771.00 | 52.64 | 0.00 | 0.00E+000 | 33.7 |
| U-235 | 4407.159 | 73.00 | 8.54 | 0.00 | 0.00E+000 | 47.8 |
| U-238 | 4202.801 | 1909.00 | 43.69 | 0.00 | 0.00E+000 | 31.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.1608E+000 | 4.09 | 3.9314E-003 | 2.05 |
| U-234 | 4.0258E+000 | 2.80 | 3.9314E-003 | 2.05 |
| U-235 | 1.3083E-001 | 11.88 | 4.8499E-003 | 2.05 |
| U-238 | 2.7616E+000 | 3.08 | 3.9145E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012218.CNF



**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:52

Chamber: A 3 4B
Detector Serial: 55813
Chamber Serial : 12045130B
Type: System Background
Measurement Date: 4/2/2011 16:08:46

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 5.1000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 7.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 6.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 7.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 5.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 5.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 6.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-012
Batch Identification: B11-01663
Sample Identification: 11-01663-15
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:28
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.5 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2190 +/- 0.0045 on 4/19/10 14:26:08
Effective Efficiency: 0.2190 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

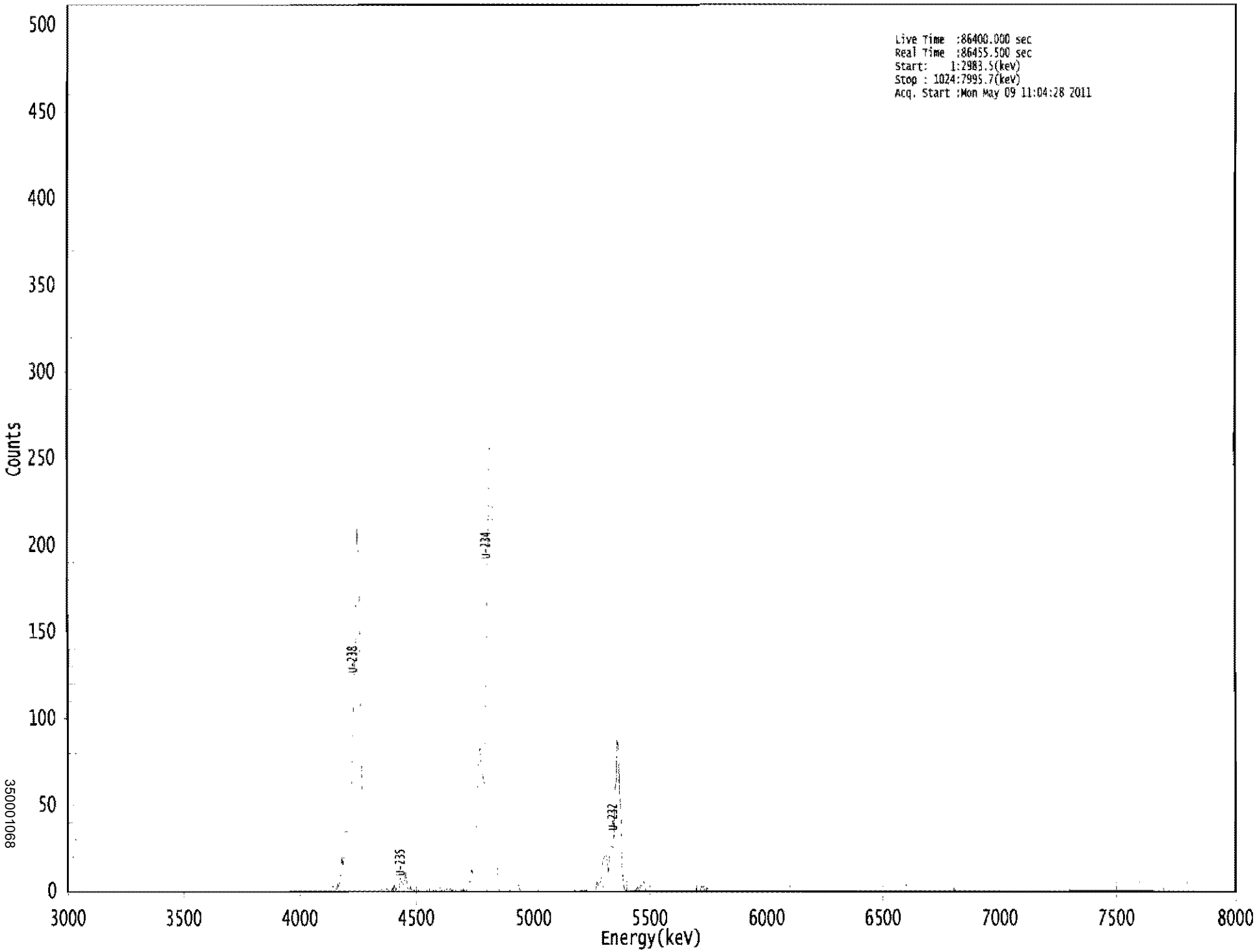
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5330.226 | 687.00 | 26.21 | 0.00 | 0.00E+000 | 27.7 |
| U-234 | 4789.241 | 2410.00 | 49.09 | 0.00 | 0.00E+000 | 34.9 |
| U-235 | 4421.079 | 71.00 | 8.43 | 0.00 | 0.00E+000 | 11.9 |
| U-238 | 4219.899 | 1605.00 | 40.06 | 0.00 | 0.00E+000 | 31.0 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 9.8308E-001 | 4.33 | 3.8722E-003 | 2.05 |
| U-234 | 3.4486E+000 | 2.89 | 3.8722E-003 | 2.05 |
| U-235 | 1.2533E-001 | 12.04 | 4.7769E-003 | 2.05 |
| U-238 | 2.2869E+000 | 3.23 | 3.8556E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012220.CNF




3500001068

**********
***** GENIE QUALITY ASSURANCE *****
**********

Last Results Report printed 5/10/2011 12:45:51

Chamber: A 3 6A
Detector Serial: 55816
Chamber Serial : 12045132A
Type: System Background
Measurement Date: 4/2/2011 16:08:51

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 2.9000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 7.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-013
Batch Identification: B11-01663
Sample Identification: 11-01663-16
Sample Geometry: Shelf 2
Protocol Description: Uranium - 24 Hrs

Detector Name: A 3 6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/9/11 11:04:30
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86455.4 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2172 +/- 0.0045 on 4/19/10 14:26:42
Effective Efficiency: 0.2172 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

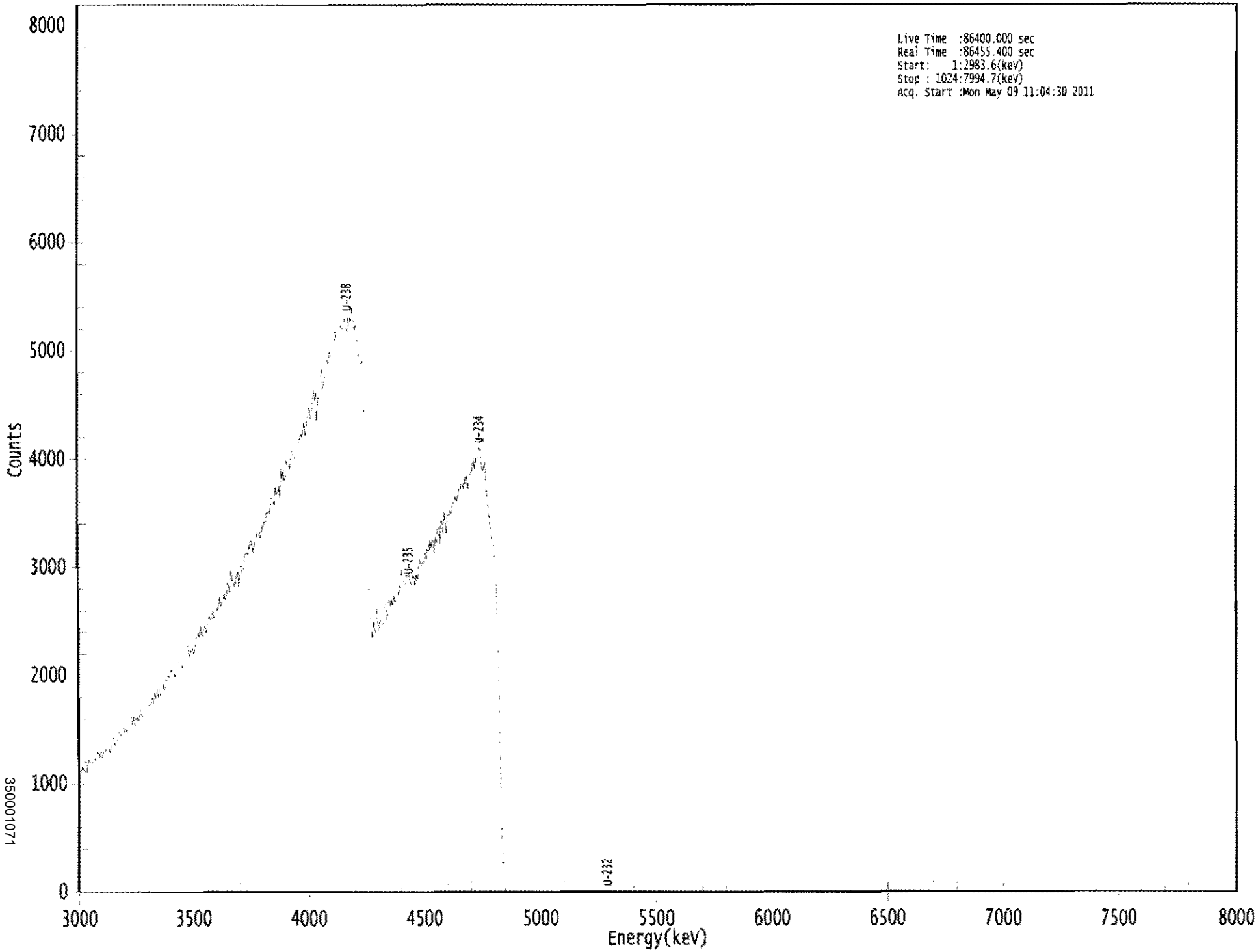
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| U-232 | 5275.072 | 105.00 | 10.25 | 0.00 | 0.00E+000 | 4.9 |
| U-234 | 4730.123 | 115017.0 | 339.14 | 0.00 | 0.00E+000 | 217.5 |
| U-235 | 4422.907 | 92451.00 | 304.06 | 0.00 | 0.00E+000 | 167.5 |
| U-238 | 4161.076 | 172295.0 | 415.08 | 0.00 | 0.00E+000 | 4.9 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| U-232 | 1.5151E-001 | 9.97 | 3.9046E-003 | 2.05 |
| U-234 | 1.6596E+002 | 2.08 | 3.9046E-003 | 2.05 |
| U-235 | 1.6457E+002 | 2.08 | 4.8168E-003 | 2.05 |
| U-238 | 2.4754E+002 | 2.07 | 3.8878E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012217.CNF




350001071

**********
***** G E N I E Q U A L I T Y A S S U R A N C E *****
**********

Last Results Report printed 5/10/2011 12:45:50

Chamber: A 3 6B
Detector Serial: 55817
Chamber Serial : 12045132B
Type: System Background
Measurement Date: 4/2/2011 16:08:54

| Parameter Description | Last Value | Deviation/Flags < LU : SD : UD : BS > |
|---|---|---|
| Bkg cpm (3-8 MeV) | 5.2000E+001 | |
| Boundary Limits: | [-1.000E-006, 4.090E+002] | < : : : > |
| Bkg Counts - Am241 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Am243 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm242 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Cm243 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po209 | 2.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Po210 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu238 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu239 | 0.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Pu242 | 4.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th228 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th229 | 3.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th230 | 9.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - Th232 | 9.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U232 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U234 | 7.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U235 | 1.0000E+000 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |
| Bkg Counts - U238 | 1.8000E+001 | |
| Boundary Limits: | [-1.000E-006, 2.500E+001] | < : : : > |

Flags Key: LU = Lower/Upper Bounds Test (Ab = Above, Be = Below)
SD = Sample Driven N-Sigma Test (In = Investigate, Ac = Action)
UD = User Driven N-Sigma Test (In = Investigate, Ac = Action)
BS = Measurement Bias Test (In = Investigate, Ac = Action)

Batch ID ARS1-B11-01663

| | | |
|---|---|---|
| UCF | 2.22 | dpm/ pCi |
| ACF | 1 | U/ L |
| CF | 1.96 | |
| TPU sys | 0.062468 | |

| | |
|---|---|
| Tracer ID | S-0241 |
| tracer pCi/g | 4.084775 |
| tracer To | 06-09-2010 |

| | Isotope | half-life days | Abundance |
|---|---|---|---|
| tracer | U-232 | 25162.08704 | 0.997 |
| analyte1 | U-238 | 1.63194E+12 | 1 |
| analyte2 | U-235 | 2.5706E+11 | 0.861 |
| analyte3 | U-234 | 89745406 | 0.998 |

| Sample ID | collection date | aliquot (L) | grams tracer added | U-238 cnts | U-238 bkg cnts | U-235 cnts | U-235 bkg cnts | U-234 cnts | U-234 bkg cnts | U-232 cnts | U-232 bkg cnts | sample time (min) | bkg time (min) | U-232 net CPM | count date | tracer DF | decay corrected tracer dpm | Eff | PE | CR | DF1 | DF2 | DF3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | 05-09-11 | 1 | 1.028 | 83789 | 1 | 1970 | 2 | 30685 | 3 | 2293 | 0 | 1440 | 1440 | 1.5924 | 5-9-11 11:03 | 0.99083 | 9.218 | 0.2205 | 0.98 | 0.7994 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-02 | 05-09-11 | 1 | 1.03 | 147622 | 2 | 3197 | 0 | 46020 | 4 | 2223 | 1 | 1440 | 1440 | 1.5431 | 5-9-11 11:03 | 0.99083 | 9.227 | 0.2148 | 0.98 | 0.7945 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-03 | 05-09-11 | 1 | 1.031 | 15 | 3 | 1 | 0 | 13 | 4 | 1468 | 1 | 1440 | 1440 | 1.0188 | 5-9-11 11:02 | 0.99083 | 9.236 | 0.2232 | 0.98 | 0.5043 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-04 | 04-19-11 | 0.5 | 1.022 | 1123 | 4 | 25 | 1 | 569 | 3 | 602 | 2 | 1440 | 1440 | 0.4167 | 5-9-11 11:03 | 0.99083 | 9.155 | 0.2134 | 0.98 | 0.2176 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-05 | 04-21-11 | 0.5 | 1.024 | 10672 | 3 | 352 | 2 | 11831 | 3 | 1435 | 1 | 1440 | 1440 | 0.9958 | 5-9-11 11:03 | 0.99083 | 9.173 | 0.225 | 0.98 | 0.4923 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-06 | 04-21-11 | 0.5 | 1.024 | 10914 | 47 | 408 | 4 | 12688 | 6 | 1560 | 2 | 1440 | 1440 | 1.0958 | 5-9-11 11:03 | 0.99083 | 9.173 | 0.2156 | 0.98 | 0.5649 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-07 | 04-21-11 | 0.5 | 1.009 | 3465 | 5 | 2183 | 2 | 1459 | 4 | 3 | 0 | 1440 | 1440 | 0.0021 | 5-9-11 11:03 | 0.99083 | 9.039 | 0.219 | 0.98 | 0.0011 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-08 | 04-20-11 | 0.5 | 1.023 | 679 | 1 | 29 | 0 | 1240 | 2 | 2495 | 2 | 1440 | 1440 | 1.7315 | 5-9-11 11:03 | 0.99083 | 9.164 | 0.213 | 0.98 | 0.9050 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-09 | 04-20-11 | 0.5 | 1.025 | 1253 | 1 | 58 | 0 | 1442 | 1 | 668 | 1 | 1440 | 1440 | 0.4632 | 5-9-11 11:03 | 0.99083 | 9.182 | 0.223 | 0.98 | 0.2308 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-10 | 04-20-11 | 0.5 | 1.018 | 26598 | 5 | 1074 | 0 | 28748 | 4 | 2015 | 1 | 1440 | 1440 | 1.3986 | 5-9-11 11:03 | 0.99083 | 9.119 | 0.2068 | 0.98 | 0.7459 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-11 | 04-20-11 | 0.5 | 1.021 | 9456 | 2 | 361 | 0 | 11551 | 6 | 1342 | 2 | 1440 | 1440 | 0.9306 | 5-9-11 11:03 | 0.99083 | 9.146 | 0.2266 | 0.98 | 0.4706 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-12 | 04-19-11 | 0.5 | 1.019 | 105 | 11 | 3 | 0 | 527 | 8 | 973 | 0 | 1440 | 1440 | 0.6757 | 5-9-11 11:03 | 0.99083 | 9.128 | 0.2191 | 0.98 | 0.3447 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-13 | 04-19-11 | 0.5 | 1.021 | 151 | 6 | 6 | 1 | 526 | 4 | 802 | 2 | 1440 | 1440 | 0.5535 | 5-9-11 11:03 | 0.99083 | 9.146 | 0.2124 | 0.98 | 0.2918 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-14 | 04-20-11 | 0.5 | 1.018 | 1909 | 5 | 73 | 0 | 2771 | 4 | 799 | 5 | 1440 | 1440 | 0.5514 | 5-9-11 11:03 | 0.99083 | 9.119 | 0.2157 | 0.98 | 0.2860 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-15 | 04-20-11 | 0.5 | 1.022 | 1605 | 3 | 71 | 1 | 2410 | 7 | 687 | 1 | 1440 | 1440 | 0.4764 | 5-9-11 11:03 | 0.99083 | 9.155 | 0.219 | 0.98 | 0.2425 | 1.0000 | 1.0000 | 1.0000 |
| ARS1-B11-01663-16 | 04-20-11 | 0.1 | 1.007 | 172295 | 18 | 92451 | 1 | 115017 | 7 | 105 | 1 | 1440 | 1440 | 0.0722 | 5-9-11 11:03 | 0.99083 | 9.021 | 0.2172 | 0.98 | 0.0376 | 1.0000 | 1.0000 | 1.0000 |

| Sample ID | daeom. (K) | Y | U-238 activity | U-238 1.96s cnt uncert | U-238 1.96s TPU | U-238 MDC | U-238 DLC | U-235 activity | U-235 1.96s cnt uncert | U-235 1.96s TPU | U-235 MDC | U-235 DLC | U-234 activity | U-234 1.96s cnt uncert | U-234 1.96s TPU | U-234 MDC | U-234 DLC | Reporting Units |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01663-01 | 0.38330 | 78.34% | 151.72428 | 1.027366534 | 18.80509464 | 0.015332575 | 0.004212638 | 4.136997752 | 0.183054169 | 0.538813605 | 0.019536257 | 0.006919361 | 55.67066027 | 0.622992862 | 6.844575575 | 0.019559384 | 0.007311125 | pCi/L |
| ARS1-B11-01663-02 | 0.37126 | 77.86% | 276.12155 | 1.408606389 | 33.8369036 | 0.01737684 | 0.006153908 | 0.965357142 | 0.240757229 | 0.883795374 | 0.005887369 | 0 | 86.24489962 | 0.778084541 | 10.58893829 | 0.022519945 | 0.008760381 | pCi/L |
| ARS1-B11-01663-03 | 0.24488 | 49.42% | 0.0340308 | 0.023582138 | 0.023967382 | 0.03053927 | 0.011426994 | 0.003295725 | 0.006455701 | 0.006468284 | 0.008925995 | 0 | 0.025574223 | 0.022963626 | 0.025176125 | 0.03414308 | 0.013221199 | pCi/L |
| ARS1-B11-01663-04 | 0.05052 | 21.33% | 15.382313 | 0.904502139 | 2.089306452 | 0.165171202 | 0.063959118 | 0.3831772 | 0.159582622 | 0.166116757 | 0.117551782 | 0.039142345 | 7.796102268 | 0.6456768 | 1.152401072 | 0.148330092 | 0.055301232 | pCi/L |
| ARS1-B11-01663-05 | 0.12050 | 48.25% | 61.484613 | 1.16703194 | 7.617931461 | 0.062059875 | 0.023221178 | 2.342651151 | 0.246829623 | 0.378411244 | 0.062180655 | 0.022020021 | 68.30045004 | 1.231215582 | 8.452671456 | 0.062164252 | 0.023267717 | pCi/L |
| ARS1-B11-01663-06 | 0.13260 | 55.36% | 56.910781 | 1.074547522 | 7.050383609 | 0.181241663 | 0.083524659 | 2.457327806 | 0.241983865 | 0.386106287 | 0.073084367 | 0.028300403 | 66.54909452 | 1.158803292 | 8.230078838 | 0.074026261 | 0.029902736 | pCi/L |
| ARS1-B11-01663-07 | 0.00005 | 0.11% | 46957.821 | 1566.941014 | 5959.090992 | 177.9768401 | 70.59886867 | 34178.29655 | 1454.143933 | 4450.032705 | 146.4348349 | 51.85905349 | 19786.28924 | 1019.482076 | 2628.352112 | 163.3970156 | 63.272101 | pCi/L |
| ARS1-B11-01663-08 | 0.20970 | 88.69% | 2.2453031 | 0.169260573 | 0.322837407 | 0.02438294 | 0.007704176 | 0.111542456 | 0.040597304 | 0.042832855 | 0.010423448 | 0 | 4.108047413 | 0.229209003 | 0.532742063 | 0.030826947 | 0.010917186 | pCi/L |
| ARS1-B11-01663-09 | 0.05599 | 22.62% | 15.527241 | 0.860785207 | 2.086007316 | 0.091312609 | 0.028851663 | 0.8134391 | 0.213009115 | 0.258100686 | 0.035035172 | 0 | 17.90702582 | 0.925227891 | 2.379715999 | 0.091495614 | 0.028909487 | pCi/L |
| ARS1-B11-01663-10 | 0.17024 | 73.10% | 108.47947 | 1.304072131 | 13.74579759 | 0.053494839 | 0.021220037 | 5.088401421 | 0.304321364 | 0.693364413 | 0.012839449 | 0 | 117.488934 | 1.358439121 | 14.44902464 | 0.049112554 | 0.019017817 | pCi/L |
| ARS1-B11-01663-11 | 0.11293 | 46.12% | 58.133767 | 1.1721106 | 7.213603139 | 0.057125311 | 0.0202306 | 2.578201862 | 0.265961876 | 0.412773571 | 0.019354169 | 0 | 71.13185224 | 1.298258035 | 8.805665145 | 0.088918616 | 0.035110634 | pCi/L |
| ARS1-B11-01663-12 | 0.08216 | 33.78% | 0.7944766 | 0.178417863 | 0.207211906 | 0.15332949 | 0.065212449 | 0.029449056 | 0.033324743 | 0.033519238 | 0.026602313 | 0 | 4.39531649 | 0.583931278 | 0.661067943 | 0.13440014 | 0.055724822 | pCi/L |
| ARS1-B11-01663-13 | 0.06742 | 28.60% | 1.4914672 | 0.252949355 | 0.312121315 | 0.145297818 | 0.058692716 | 0.059812855 | 0.062033976 | 0.062464752 | 0.04807757 | 0.027829503 | 5.387257184 | 0.465683888 | 0.807424991 | 0.12400522 | 0.048018446 | pCi/L |
| ARS1-B11-01663-14 | 0.06711 | 28.03% | 19.690556 | 0.887482217 | 2.569019612 | 0.145965632 | 0.058962478 | 0.877281372 | 0.201248516 | 0.328119381 | 0.032567569 | 0 | 28.68784213 | 1.070474406 | 3.671981563 | 0.124573168 | 0.048219147 | pCi/L |
| ARS1-B11-01663-15 | 0.05776 | 23.76% | 19.261106 | 0.944969513 | 2.540558926 | 0.129475284 | 0.048446257 | 0.977492856 | 0.252240454 | 0.261264819 | 0.102814969 | 0.032486016 | 28.94956207 | 1.160807424 | 3.739763181 | 0.180950458 | 0.074151194 | pCi/L |
| ARS1-B11-01663-16 | 0.00178 | 3.69% | 67310.894 | 317.8872814 | 8247.491314 | 8.771510841 | 3.856339065 | 41952.88419 | 270.4388835 | 5143.711327 | 3.341147945 | 1.055688542 | 45025.98129 | 260.2422994 | 5518.997813 | 5.980294031 | 2.409669625 | pCi/L |

='U_615'!---

350001073

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01721-07 | B11-01721 | A14A | 12212 | Th | 5-9-11 1105 | CE | 86400 |
| 11-01721-08 | ↓ | A14B ~~A14~~ CE 5-9-11 | 12194 | ↓ | ↓ | CE | ↓ |
| 11-01721-09 | ↓ | A15A | 12195 | ↓ | ↓ | CE | ↓ |
| 11-01721-10 | ↓ | A15B | 12196 | ↓ | ↓ | CE | ↓ |
| 11-01721-11 | ↓ | A16A | 12197 | ↓ | ↓ | CE | ↓ |
| 11-01663-01 | B11-01663 | A21A | 12225 | U | ↓ | CE | ↓ |
| 11-01663-02 | ↓ | A21B | 12226 | ↓ | ↓ | CE | ↓ |
| 11-01663-03 | ↓ | A22A | 12204 | ↓ | ↓ | CE | ↓ |
| 11-01663-04 | ↓ | A23B | 12205 | ↓ | ↓ | CE | ↓ |
| 11-01663-05 | ↓ | A24A | 12203 | ↓ | ↓ | CE | ↓ |
| 11-01663-06 | ↓ | A24B | 12206 | ↓ | ↓ | CE | ↓ |
| 11-01663-07 | ↓ | A25A | 12202 | ↓ | ↓ | CE | ↓ |
| 11-01663-08 | ↓ | A25B | 12201 | ↓ | ↓ | CE | ↓ |
| 11-01663-09 | ↓ | A31A | 12214 | ↓ | ↓ | CE | ↓ |
| 11-01663-10 | ↓ | A31B | 12227 | ↓ | ↓ | CE | ↓ |



Reviewed By: YSW Initials Date: 5-10-11

350001074

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01663-11 | B11-01663 | A32B | 12215 | U | 5-9-11 1105 | | 82400 |
| 11-01663-12 | " | A33A | 12216 | " | " | | " |
| 11-01663-13 | " | A33B | 12219 | " | " | | " |
| 11-01663-14 | " | A34B | 12218 | " | " | | " |
| 11-01663-15 | " | A35A | 12220 | " | " | | " |
| 11-01663-16 | " | A36B | 12217 | " | " | | " |

Data unavailable LSW 5-10-11

LSW 5-10-11

350001075



Reviewed By: LSW Date: 5-10-11
Initials

American Radiation Services
Baton Rouge Laboratory

# Blank Population Analysis

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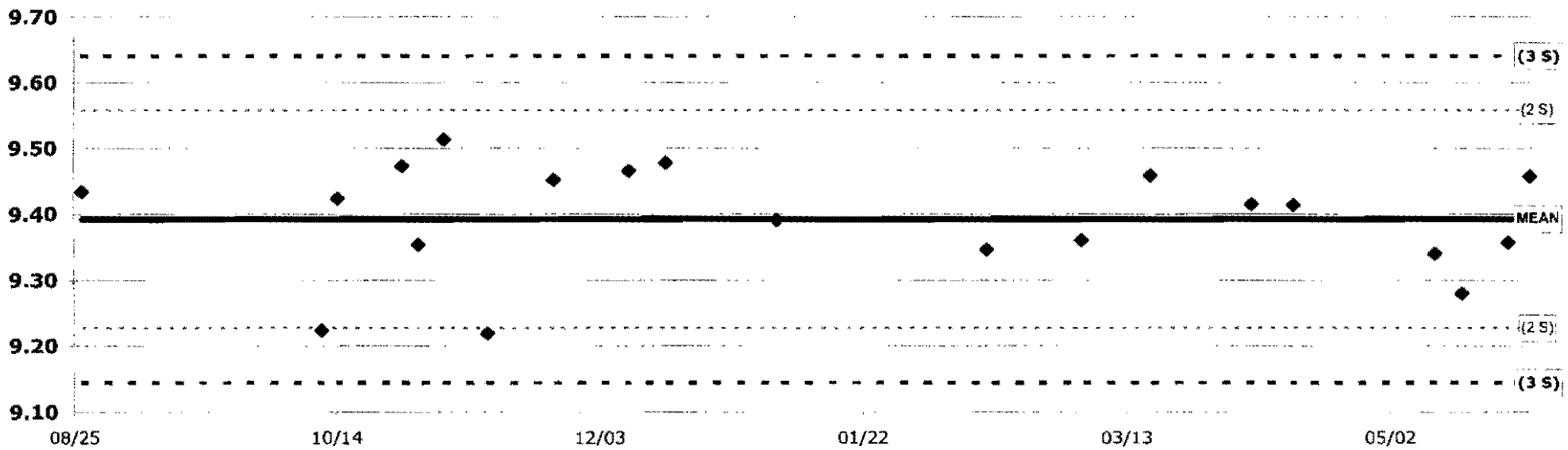
| | | Statistical Quality Control(SQC) Rules Analysis | |
|---|---|---|---|
| Population Size | 20 | One or more points outside of the control limits. | OK |
| Last Data Point Value | 9.46 | A run of eight points on one side of the center line | OK |
| NSD | 0.7795 | 2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits | OK |
| Average | 9.3928 | Four of five consecutive points beyond the 1-sigma limits. | OK |
| Upper Control Limit (UCL) | 9.6409 | A trend of seven points in a row upward or downward. | OK |
| Standard Deviation | 0.0827 | Several points near a warning or control limit. | OK |
| Lower Control Limit (LCL) | 9.1447 | | |

## Batch ARS1-B11-01984 - BLK Population for Isotope - U-232

Process Date Range: 08/26/10 - 05/28/11

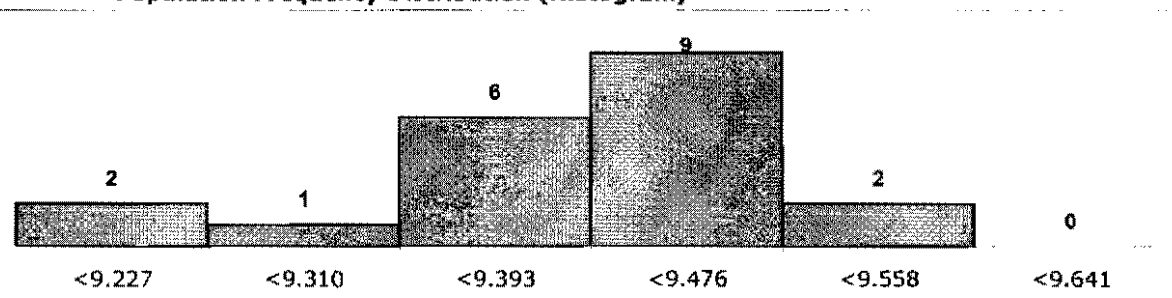



ARS INTERNATIONAL

Statistical Process Control

| Bin | Frequency |
|---|---|
| <9.227 | 2 |
| <9.310 | 1 |
| <9.393 | 6 |
| <9.476 | 9 |
| <9.558 | 2 |
| <9.641 | 0 |

Population Frequency Distribution (Histogram)




3500010076

American Radiation Services
Baton Rouge Laboratory

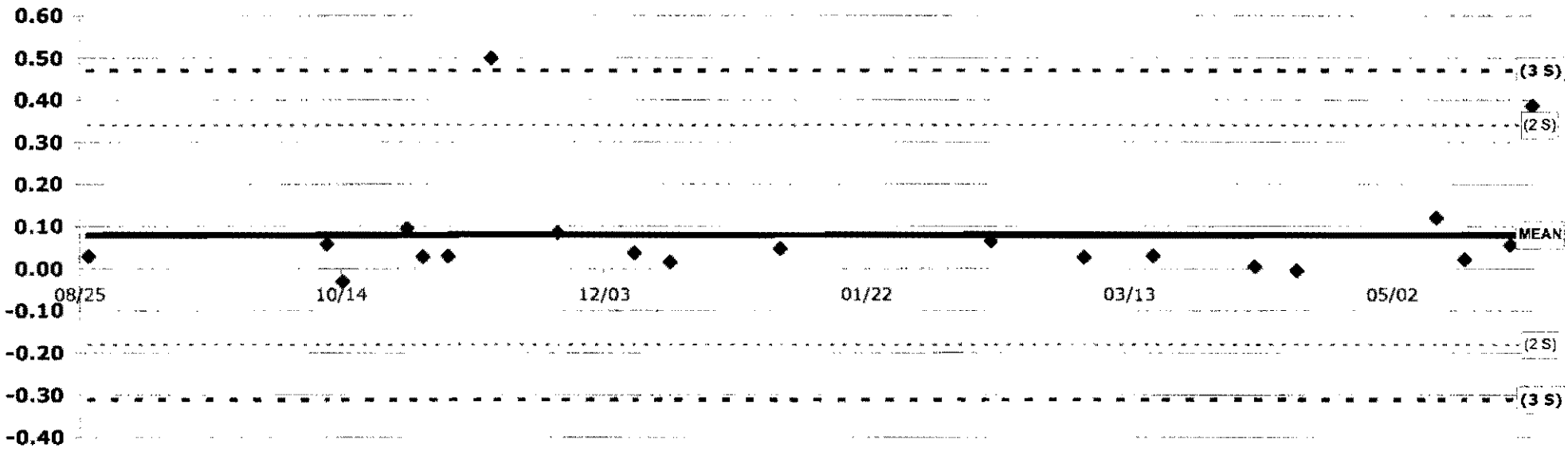
# Blank Population Analysis

Printed: 6/2/2011 4:44 PM


| | | Statistical Quality Control(SQC) Rules Analysis | |
|---|---|---|---|
| Population Size | 20 | One or more points outside of the control limits. | OUT OF CONTROL |
| Last Data Point Value | 0.39 | A run of eight points on one side of the center line | INVESTIGATE |
| NSD | 2.3522 | 2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits | OK |
| Average | 0.0799 | Four of five consecutive points beyond the 1-sigma limits. | OK |
| Upper Control Limit (UCL) | 0.4704 | A trend of seven points in a row upward or downward. | OK |
| Standard Deviation | 0.1302 | Several points near a warning or control limit. | OK |
| Lower Control Limit (LCL) | -0.3107 | | |

**Batch ARS1-B11-01984 - BLK Population for Isotope - U-234**

Process Date Range: 08/26/10 - 05/28/11

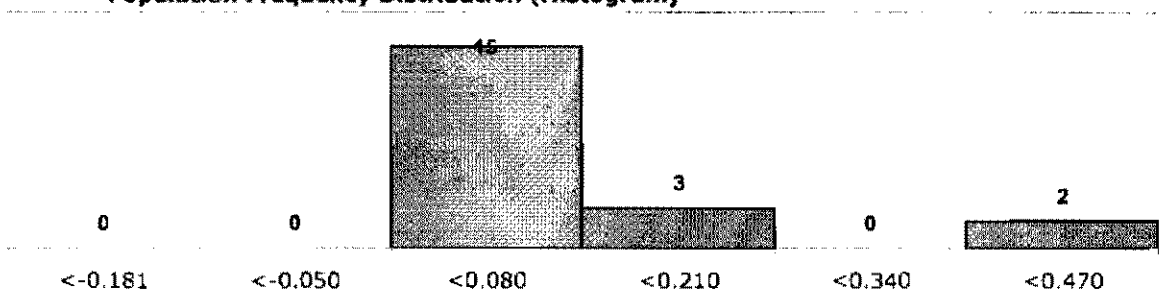



ARS INTERNATIONAL

Statistical Process Control

| Bin | Frequency |
|---|---|
| <-0.181 | 0 |
| <-0.050 | 0 |
| <0.080 | 15 |
| <0.210 | 3 |
| <0.340 | 0 |
| <0.470 | 2 |

**Population Frequency Distribution (Histogram)**




3500010077

American Radiation Services
Baton Rouge Laboratory

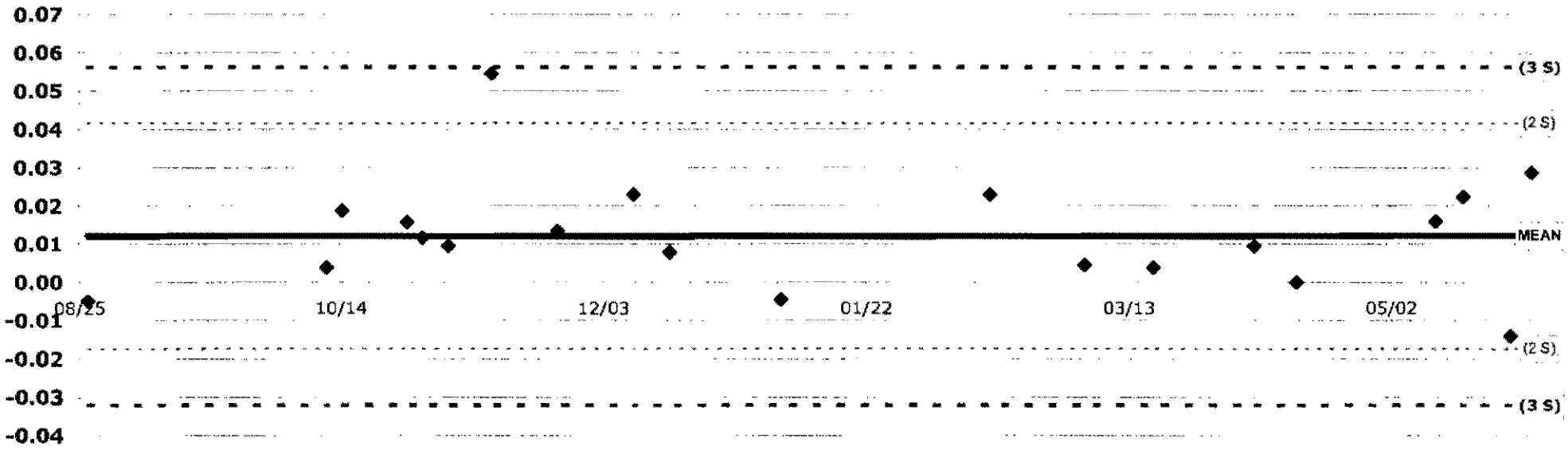
# Blank Population Analysis

Printed: 6/2/2011 4:44 PM


| | | Statistical Quality Control(SQC) Rules Analysis | |
|---|---|---|---|
| Population Size | 20 | | |
| Last Data Point Value | 0.03 | One or more points outside of the control limits. | OK |
| NSD | 1.1202 | A run of eight points on one side of the center line | OK |
| Average | 0.0121 | 2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits | OK |
| Upper Control Limit (UCL) | 0.0563 | Four of five consecutive points beyond the 1-sigma limits. | OK |
| Standard Deviation | 0.0147 | A trend of seven points in a row upward or downward. | OK |
| Lower Control Limit (LCL) | -0.0320 | Several points near a warning or control limit. | OK |

## Batch ARS1-B11-01984 - BLK Population for Isotope - U-235

Process Date Range: 08/26/10 - 05/28/11



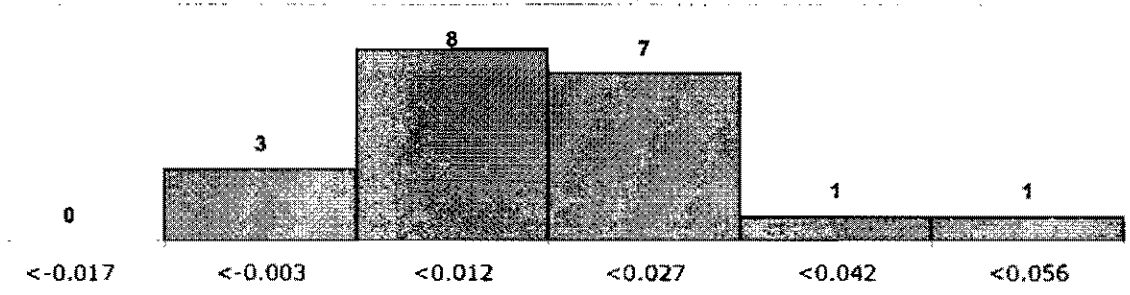

ARS INTERNATIONAL

Statistical Process Control

350001078

| Bin | Frequency |
|---|---|
| <-0.017 | 0 |
| <-0.003 | 3 |
| <0.012 | 8 |
| <0.027 | 7 |
| <0.042 | 1 |
| <0.056 | 1 |

Population Frequency Distribution (Histogram)



American Radiation Services
Baton Rouge Laboratory

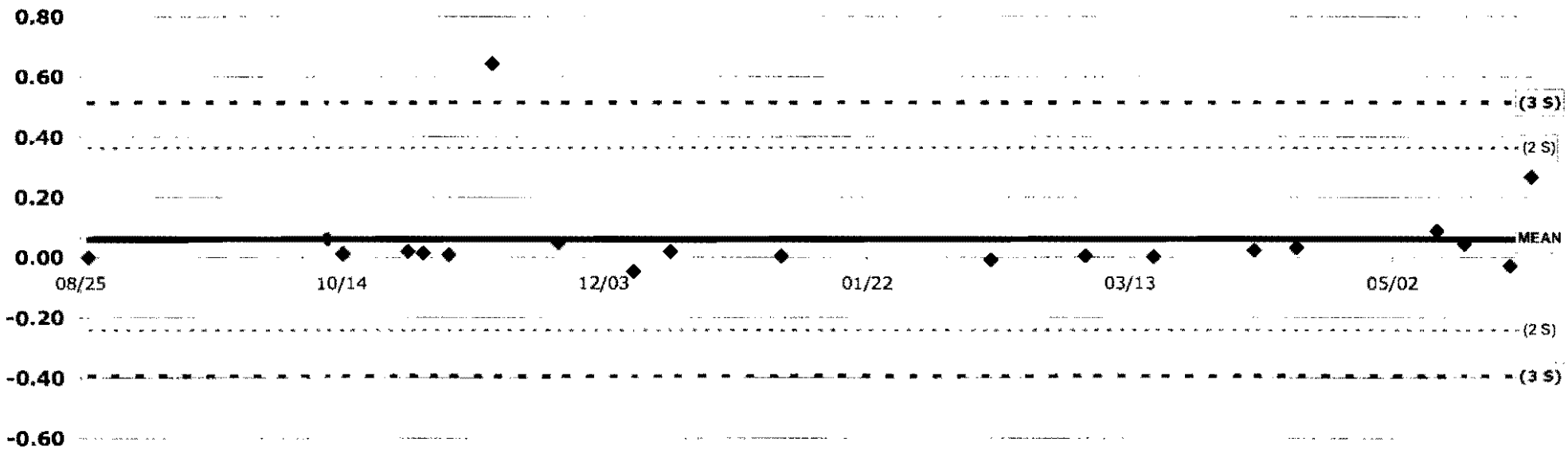
# Blank Population Analysis

Printed: 6/2/2011 4:44 PM


| | | Statistical Quality Control(SQC) Rules Analysis | |
|---|---|---|---|
| Population Size | 20 | | |
| Last Data Point Value | 0.27 | One or more points outside of the control limits. | OUT OF CONTROL |
| NSD | 1.3610 | A run of eight points on one side of the center line | INVESTIGATE |
| Average | 0.0610 | 2 of 3 consecutive points outside the Warning limits but still inside the Ctrl limits | OK |
| Upper Control Limit (UCL) | 0.5150 | Four of five consecutive points beyond the 1-sigma limits. | OK |
| Standard Deviation | 0.1514 | A trend of seven points in a row upward or downward. | OK |
| Lower Control Limit (LCL) | -0.3931 | Several points near a warning or control limit. | OK |

## Batch ARS1-B11-01984 - BLK Population for Isotope - U-238

Process Date Range: 08/26/10 - 05/28/11

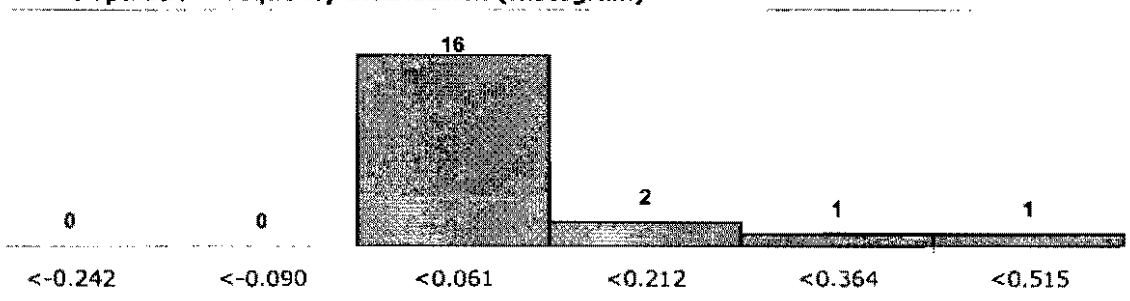



ARS INTERNATIONAL

Statistical Process Control

| Bin | Frequency |
|---|---|
| <-0.242 | 0 |
| <-0.090 | 0 |
| <0.061 | 16 |
| <0.212 | 2 |
| <0.364 | 1 |
| <0.515 | 1 |

Population Frequency Distribution (Histogram)




350001078

ARS
AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767
1 (800) 401-4277 • Fax (225) 381-2996

# American Radiation Services Analytical Reports

for

# Summit Environmental Technologies

# Thorium Alpha Spectroscopy Samples

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3023.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015600 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.003362** | **0.003362** | **OK** |
| **CU** | **0.004659** | **0.004659** | **OK** |
| **TPU** | **0.004677** | **0.004677** | **OK** |
| **MDA** | **0.004555** | **0.004555** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.234865** | **0.234865** | **OK** |
| **BP DL** | **0.115403** | **0.115403** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **0.999196** | **0.999196** | **OK** |
| **Tracer DPM** | **11.379151** | **11.379151** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.881920** | **0.881920** | **OK** |
| **Chem Rec Factor** | **1.233454** | **1.233454** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.413125** | **0.413125** | **OK** |
| **K MDA** | **594.900019** | **594.900019** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-01 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_1A | | |
| **Instr keV** | 4.88256979 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

350001081

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3355.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 14.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3073.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015600 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **5.589063** | **5.589063** | **OK** |
| **CU** | **0.190313** | **0.190313** | **OK** |
| **TPU** | **0.701794** | **0.701794** | **OK** |
| **MDA** | **0.033657** | **0.033657** | **OK** |
| **DL** | **0.014562** | **0.014562** | **OK** |
| **BP MDA** | **0.380659** | **0.380659** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.329861** | **2.329861** | **OK** |
| **BKG Count Rate** | **0.009722** | **0.009722** | **OK** |
| **Net Count Rate** | **2.320139** | **2.320139** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.379151** | **11.379151** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.881920** | **0.881920** | **OK** |
| **Chem Rec Factor** | **1.233454** | **1.233454** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.415121** | **0.415121** | **OK** |
| **K MDA** | **597.774624** | **597.774624** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 40.06654739 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SOL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 4.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2209 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3073.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015600 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.001670** | **-0.001670** | **OK** |
| **CU** | **0.009817** | **0.009817** | **OK** |
| **TPU** | **0.009819** | **0.009819** | **OK** |
| **MDA** | **0.021894** | **0.021894** | **OK** |
| **DL** | **0.008685** | **0.008685** | **OK** |
| **BP MDA** | **0.064883** | **0.064883** | **OK** |
| **BP DL** | **0.030244** | **0.030244** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002778** | **0.002778** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.379151** | **11.379151** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.881920** | **0.881920** | **OK** |
| **Chem Rec Factor** | **1.233454** | **1.233454** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.415953** | **0.415953** | **OK** |
| **K MDA** | **598.972582** | **598.972582** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 4.88256979 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3051.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.001701** | **-0.001701** | **OK** |
| **CU** | **0.007454** | **0.007454** | **OK** |
| **TPU** | **0.007457** | **0.007457** | **OK** |
| **MDA** | **0.018315** | **0.018315** | **OK** |
| **DL** | **0.006853** | **0.006853** | **OK** |
| **BP MDA** | **0.234919** | **0.234919** | **OK** |
| **BP DL** | **0.115403** | **0.115403** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **0.999196** | **0.999196** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.963510** | **0.963510** | **OK** |
| **Chem Rec Factor** | **1.347566** | **1.347566** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.408321** | **0.408321** | **OK** |
| **K MDA** | **587.981888** | **587.981888** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-02 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_1B | | |
| **Instr keV** | 4.88326931 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDA **Date:** 6-2-11

350001084

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3404.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3051.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **5.752991** | **5.752991** | **OK** |
| **CU** | **0.193692** | **0.193692** | **OK** |
| **TPU** | **0.721784** | **0.721784** | **OK** |
| **MDA** | **0.022196** | **0.022196** | **OK** |
| **DL** | **0.008805** | **0.008805** | **OK** |
| **BP MDA** | **0.380712** | **0.380712** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.363889** | **2.363889** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **2.360417** | **2.360417** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer ΔE** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.963510** | **0.963510** | **OK** |
| **Chem Rec Factor** | **1.347566** | **1.347566** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.410294** | **0.410294** | **OK** |
| **K MDA** | **590.823064** | **590.823064** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-02 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_1B | | |
| **Instr keV** | 27.36777115 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

350001085

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 51319444444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 3051.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.001689** | **-0.001689** | **OK** |
| **CU** | **0.007403** | **0.007403** | **OK** |
| **TPU** | **0.007406** | **0.007406** | **OK** |
| **MDA** | **0.018190** | **0.018190** | **OK** |
| **DL** | **0.006806** | **0.006806** | **OK** |
| **BP MDA** | **0.064936** | **0.064936** | **OK** |
| **BP DL** | **0.030244** | **0.030244** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer dt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.963510** | **0.963510** | **OK** |
| **Chem Rec Factor** | **1.347566** | **1.347566** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.411116** | **0.411116** | **OK** |
| **K MDA** | **592.007090** | **592.007090** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_18 |
| **Instr keV** | |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 17.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2847.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014700 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.029089** | **0.029089** | **OK** |
| **CU** | **0.015118** | **0.015118** | **OK** |
| **TPU** | **0.015521** | **0.015521** | **OK** |
| **MDA** | **0.013386** | **0.013386** | **OK** |
| **DL** | **0.004229** | **0.004229** | **OK** |
| **BP MDA** | **0.235237** | **0.235237** | **OK** |
| **BP DL** | **0.115403** | **0.115403** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.011806** | **0.011806** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.011111** | **0.011111** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **0.999196** | **0.999196** | **OK** |
| **Tracer DPM** | **11.369067** | **11.369067** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.800580** | **0.800580** | **OK** |
| **Chem Rec Factor** | **1.119693** | **1.119693** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.381975** | **0.381975** | **OK** |
| **K MDA** | **550.043283** | **550.043283** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 10.64367199 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 30.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2847.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014700 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.043423** | **0.043423** | **OK** |
| **CU** | **0.021277** | **0.021277** | **OK** |
| **TPU** | **0.021915** | **0.021915** | **OK** |
| **MDA** | **0.025524** | **0.025524** | **OK** |
| **DL** | **0.010310** | **0.010310** | **OK** |
| **BP MDA** | **0.381029** | **0.381029** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.020833** | **0.020833** | **OK** |
| **BKG Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Net Count Rate** | **0.016667** | **0.016667** | **OK** |
| **Δ t 1 (t2 - t1)** | **0.810440** | **0.810440** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.369067** | **11.369067** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.800580** | **0.800580** | **OK** |
| **Chem Rec Factor** | **1.119693** | **1.119693** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.383820** | **0.383820** | **OK** |
| **K MDA** | **552.701137** | **552.701137** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 7.859941959 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDH **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 15.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-4-11 8:24 AM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2847.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014700 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| ACT | 0.023474 | 0.023474 | OK |
| CU | 0.014592 | 0.014592 | OK |
| TPU | 0.014865 | 0.014865 | OK |
| MDA | 0.016775 | 0.016775 | OK |
| DL | 0.005941 | 0.005941 | OK |
| BP MDA | 0.065252 | 0.065252 | OK |
| BP DL | 0.030244 | 0.030244 | OK |
| | | | |
| DL QSAS | | | |
| Gross Count Rate | 0.010417 | 0.010417 | OK |
| BKG Count Rate | 0.001389 | 0.001389 | OK |
| Net Count Rate | 0.009028 | 0.009028 | OK |
| Δ t 1 (t2 - t1) | 0.810440 | 0.810440 | OK |
| DF | 1.000000 | 1.000000 | OK |
| Tracer DPM | 11.369067 | 11.369067 | OK |
| Tracer Δt | 226.642361 | 226.642361 | OK |
| Tracer DF | 0.999941 | 0.999941 | OK |
| Tracer Recovery | 0.800580 | 0.800580 | OK |
| Chem Rec Factor | 1.119693 | 1.119693 | OK |
| Sys Err | 0.061664 | 0.061664 | OK |
| K | 0.384589 | 0.384589 | OK |
| K MDA | 553.808766 | 553.808766 | OK |

| Batch Identifiers and Other Related Information | |
|---|---|
| Batch | ARS1-B11-01657 |
| Batch ID | ARS1-B11-01657-03 |
| Analysis Code | |
| SDG | QC Sample |
| Fraction | N/A QC Sample |
| Client | QC Sample |
| Client Profile | |
| Client ID | N/A QC Sample |
| Instr File Name | ApexAlpha |
| Instr Detector | A_1_2A |
| Instr keV | 24.5623188 |
| | |
| | |
| Version/Date | 2.0 -- 4/20/2006 |

Reviewed by: _____ Date: 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 12.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-13-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2692.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.043964** | **0.043964** | **OK** |
| **CU** | **0.024875** | **0.024875** | **OK** |
| **TPU** | **0.025436** | **0.025436** | **OK** |
| **MDA** | **0.009928** | **0.009928** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.477388** | **0.477388** | **OK** |
| **BP DL** | **0.234233** | **0.234233** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.008333** | **0.008333** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.008333** | **0.008333** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **0.984576** | **0.984576** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.794701** | **0.794701** | **OK** |
| **Chem Rec Factor** | **1.111470** | **1.111470** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.189550** | **0.189550** | **OK** |
| **K MDA** | **272.951707** | **272.951707** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 001 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-1-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_28 |
| **Instr keV** | 6.518549919 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDR **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 36.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2892.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.122151** | **0.122151** | **OK** |
| **CU** | **0.043408** | **0.043408** | **OK** |
| **TPU** | **0.045850** | **0.045850** | **OK** |
| **MDA** | **0.033376** | **0.033376** | **OK** |
| **DL** | **0.011820** | **0.011820** | **OK** |
| **BP MDA** | **0.761987** | **0.761987** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.025000** | **0.025000** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.023611** | **0.023611** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.794701** | **0.794701** | **OK** |
| **Chem Rec Factor** | **1.111470** | **1.111470** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.193294** | **0.193294** | **OK** |
| **K MDA** | **278.343190** | **278.343190** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 001 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-1-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2B |
| **Instr keV** | 11.00005245 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2892.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.007171** | **0.007171** | **OK** |
| **CU** | **0.019877** | **0.019877** | **OK** |
| **TPU** | **0.019896** | **0.019896** | **OK** |
| **MDA** | **0.038612** | **0.038612** | **OK** |
| **DL** | **0.014447** | **0.014447** | **OK** |
| **BP MDA** | **0.130433** | **0.130433** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.794701** | **0.794701** | **OK** |
| **Chem Rec Factor** | **1.111470** | **1.111470** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.193681** | **0.193681** | **OK** |
| **K MDA** | **278.901102** | **278.901102** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 001 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-1-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_28 |
| **Instr keV** | 9.777824402 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDK **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi ... UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2456.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805S5.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.012825** | **0.012825** | **OK** |
| **CU** | **0.014513** | **0.014513** | **OK** |
| **TPU** | **0.014596** | **0.014596** | **OK** |
| **MDA** | **0.011586** | **0.011586** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.478118** | **0.478118** | **OK** |
| **BP DL** | **0.233768** | **0.233768** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **0.986532** | **0.986532** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.703374** | **0.703374** | **OK** |
| **Chem Rec Factor** | **0.983740** | **0.983740** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.162440** | **0.162440** | **OK** |
| **K MDA** | **233.913072** | **233.913072** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-05 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 002 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-2-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3A |
| **Instr keV** | 9.822584152 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- uCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2456.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.004201** | **0.004201** | **OK** |
| **CU** | **0.027306** | **0.027306** | **OK** |
| **TPU** | **0.027311** | **0.027311** | **OK** |
| **MDA** | **0.055086** | **0.055086** | **OK** |
| **DL** | **0.021851** | **0.021851** | **OK** |
| **BP MDA** | **0.763635** | **0.763635** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004167** | **0.004167** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.703374** | **0.703374** | **OK** |
| **Chem Rec Factor** | **0.983740** | **0.983740** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.165320** | **0.165320** | **OK** |
| **K MDA** | **238.060416** | **238.060416** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-05 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 002 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-2-110421 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_3A | | |
| **Instr keV** | 7.366938114 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 4.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 21.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2456.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.071268** | **-0.071268** | **OK** |
| **CU** | **0.041084** | **0.041084** | **OK** |
| **TPU** | **0.041977** | **0.041977** | **OK** |
| **MDA** | **0.100746** | **0.100746** | **OK** |
| **DL** | **0.044692** | **0.044692** | **OK** |
| **BP MDA** | **0.132078** | **0.132078** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002778** | **0.002778** | **OK** |
| **BKG Count Rate** | **0.014583** | **0.014583** | **OK** |
| **Net Count Rate** | **-0.011806** | **-0.011806** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.703374** | **0.703374** | **OK** |
| **Chem Rec Factor** | **0.983740** | **0.983740** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.165651** | **0.165651** | **OK** |
| **K MDA** | **238.537573** | **238.537573** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-05 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 002 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-2-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3A |
| **Instr keV** | 4.911292076 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2486.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.019000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.008448** | **0.008448** | **OK** |
| **CU** | **0.011709** | **0.011709** | **OK** |
| **TPU** | **0.011753** | **0.011753** | **OK** |
| **MDA** | **0.011447** | **0.011447** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.477980** | **0.477980** | **OK** |
| **BP DL** | **0.233768** | **0.233768** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **0.986532** | **0.986532** | **OK** |
| **Tracer DPM** | **11.417246** | **11.417246** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732778** | **0.732778** | **OK** |
| **Chem Rec Factor** | **1.024864** | **1.024864** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.164399** | **0.164399** | **OK** |
| **K MDA** | **236.734468** | **236.734468** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00097 |
| **Fraction** | 003 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-2-2-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3B |
| **Instr keV** | 9.827695847 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDH **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 15.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2486.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Per Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.019000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **0 Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.041506** | **0.041506** | **OK** |
| **CU** | **0.036381** | **0.036381** | **OK** |
| **TPU** | **0.036725** | **0.036725** | **OK** |
| **MDA** | **0.054430** | **0.054430** | **OK** |
| **DL** | **0.021591** | **0.021591** | **OK** |
| **BP MDA** | **0.763499** | **0.763499** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.010417** | **0.010417** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.006944** | **0.006944** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.417246** | **11.417246** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732778** | **0.732778** | **OK** |
| **Chem Rec Factor** | **1.024864** | **1.024864** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.167314** | **0.167314** | **OK** |
| **K MDA** | **240.931837** | **240.931837** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 003 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-2-2-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_38 |
| **Instr keV** | 4.913847923 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

350001097

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2486.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.019000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.004142** | **-0.004142** | **OK** |
| **CU** | **0.018154** | **0.018154** | **OK** |
| **TPU** | **0.018161** | **0.018161** | **OK** |
| **MDA** | **0.044607** | **0.044607** | **OK** |
| **DL** | **0.016691** | **0.016691** | **OK** |
| **BP MDA** | **0.131942** | **0.131942** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.417246** | **11.417246** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732778** | **0.732778** | **OK** |
| **Chem Rec Factor** | **1.024864** | **1.024864** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.167649** | **0.167649** | **OK** |
| **K MDA** | **241.414749** | **241.414749** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 003 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-2-2-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3B |
| **Instr keV** | 4.913847923 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 16.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2992.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.247162** | **0.247162** | **OK** |
| **CU** | **0.146807** | **0.146807** | **OK** |
| **TPU** | **0.149815** | **0.149815** | **OK** |
| **MDA** | **0.164010** | **0.164010** | **OK** |
| **DL** | **0.058083** | **0.058083** | **OK** |
| **BP MDA** | **2.380508** | **2.380508** | **OK** |
| **BP DL** | **1.168840** | **1.168840** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.011111** | **0.011111** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.009722** | **0.009722** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **0.986532** | **0.986532** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.799758** | **0.799758** | **OK** |
| **Chem Rec Factor** | **1.118542** | **1.118542** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.039335** | **0.039335** | **OK** |
| **K MDA** | **56.642926** | **56.642926** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-07 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 004 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | JPOP41S-110421 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_4A | | |
| **Instr keV** | 6.138088703 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDR **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 89.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2992.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.491833** | **1.491833** | **OK** |
| **CU** | **0.326116** | **0.326116** | **OK** |
| **TPU** | **0.372640** | **0.372640** | **OK** |
| **MDA** | **0.186806** | **0.186806** | **OK** |
| **DL** | **0.069898** | **0.069898** | **OK** |
| **BP MDA** | **3.808266** | **3.808266** | **OK** |
| **BP DL** | **1.884672** | **1.884672** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.061806** | **0.061806** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.059722** | **0.059722** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.799758** | **0.799758** | **OK** |
| **Chem Rec Factor** | **1.118542** | **1.118542** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.040033** | **0.040033** | **OK** |
| **K MDA** | **57.647221** | **57.647221** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-07 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 004 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | JPOP41S-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4A |
| **Instr keV** | 17.800457 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDN **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2992.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **0 Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.086561** | **0.086561** | **OK** |
| **CU** | **0.089775** | **0.089775** | **OK** |
| **TPU** | **0.090383** | **0.090383** | **OK** |
| **MDA** | **0.127466** | **0.127466** | **OK** |
| **DL** | **0.040275** | **0.040275** | **OK** |
| **BP MDA** | **0.650500** | **0.650500** | **OK** |
| **BP DL** | **0.302441** | **0.302441** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004167** | **0.004167** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Δ t 1 (t2 - t1)** | **13.661111** | **13.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.799758** | **0.799758** | **OK** |
| **Chem Rec Factor** | **1.118542** | **1.118542** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.040113** | **0.040113** | **OK** |
| **K MDA** | **57.762767** | **57.762767** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-07 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 004 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | JPOP41S-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4A |
| **Instr keV** | 7.365706444 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDK **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2094.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.043250** | **0.043250** | **OK** |
| **CU** | **0.028257** | **0.028257** | **OK** |
| **TPU** | **0.028736** | **0.028736** | **OK** |
| **MDA** | **0.013023** | **0.013023** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.480019** | **0.480019** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.006250** | **0.006250** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **0.985554** | **0.985554** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.588207** | **0.588207** | **OK** |
| **Chem Rec Factor** | **0.822667** | **0.822667** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.144509** | **0.144509** | **OK** |
| **K MDA** | **208.092380** | **208.092380** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-08 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 005 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MD-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_48 |
| **Instr keV** | |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDh **Date:** 6-2-11

350001102

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 88.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2094.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.418525** | **0.418525** | **OK** |
| **CU** | **0.092062** | **0.092062** | **OK** |
| **TPU** | **0.105043** | **0.105043** | **OK** |
| **MDA** | **0.053024** | **0.053024** | **OK** |
| **DL** | **0.019840** | **0.019840** | **OK** |
| **BP MDA** | **0.765595** | **0.765595** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.061111** | **0.061111** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.059028** | **0.059028** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.588207** | **0.588207** | **OK** |
| **Chem Rec Factor** | **0.822667** | **0.822667** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.141038** | **0.141038** | **OK** |
| **K MDA** | **203.094377** | **203.094377** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-08 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 005 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MD-SW-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_4B | | |
| **Instr keV** | 17.11597824 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

350001103

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2094.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.018000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.019656** | **0.019656** | **OK** |
| **CU** | **0.027242** | **0.027242** | **OK** |
| **TPU** | **0.027345** | **0.027345** | **OK** |
| **MDA** | **0.045651** | **0.045651** | **OK** |
| **DL** | **0.016167** | **0.016167** | **OK** |
| **BP MDA** | **0.134034** | **0.134034** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004167** | **0.004167** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.406041** | **11.406041** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.588207** | **0.588207** | **OK** |
| **Chem Rec Factor** | **0.822667** | **0.822667** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.141320** | **0.141320** | **OK** |
| **K MDA** | **203.501455** | **203.501455** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 005 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MD-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4B |
| **Instr keV** | 9.780558586 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SCL **Date:** 6-2-11

350001104

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2628.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.007968** | **0.007968** | **OK** |
| **CU** | **0.022086** | **0.022086** | **OK** |
| **TPU** | **0.022107** | **0.022107** | **OK** |
| **MDA** | **0.042902** | **0.042902** | **OK** |
| **DL** | **0.016053** | **0.016053** | **OK** |
| **BP MDA** | **0.477792** | **0.477792** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **0.985554** | **0.985554** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.766225** | **0.766225** | **OK** |
| **Chem Rec Factor** | **1.071644** | **1.071644** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.174313** | **0.174313** | **OK** |
| **K MDA** | **251.010084** | **251.010084** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-09 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-I1-00897 |
| **Fraction** | 006 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-3-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_SA |
| **Instr keV** | 4.889725208 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDA **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 168.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2628.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.645252** | **0.645252** | **OK** |
| **CU** | **0.100230** | **0.100230** | **OK** |
| **TPU** | **0.126995** | **0.126995** | **OK** |
| **MDA** | **0.042113** | **0.042113** | **OK** |
| **DL** | **0.015757** | **0.015757** | **OK** |
| **BP MDA** | **0.762849** | **0.762849** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.116667** | **0.116667** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.114583** | **0.114583** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.766225** | **0.766225** | **OK** |
| **Chem Rec Factor** | **1.071644** | **1.071644** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.177579** | **0.177579** | **OK** |
| **K MDA** | **255.714238** | **255.714238** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-09 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 006 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-3-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_5A | | |
| **Instr keV** | 31.78321457 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 10.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2628.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.55556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.031222** | **0.031222** | **OK** |
| **CU** | **0.026499** | **0.026499** | **OK** |
| **TPU** | **0.026766** | **0.026766** | **OK** |
| **MDA** | **0.036257** | **0.036257** | **OK** |
| **DL** | **0.012840** | **0.012840** | **OK** |
| **BP MDA** | **0.131293** | **0.131293** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006944** | **0.006944** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.005556** | **0.005556** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.766225** | **0.766225** | **OK** |
| **Chem Rec Factor** | **1.071644** | **1.071644** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.177935** | **0.177935** | **OK** |
| **K MDA** | **256.226786** | **256.226786** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-09 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 006 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-3-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_5A | | |
| **Instr keV** | 9.779450417 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2560.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.000000** | **0.000000** | **OK** |
| **CU** | **0.016045** | **0.016045** | **OK** |
| **TPU** | **0.016045** | **0.016045** | **OK** |
| **MDA** | **0.038024** | **0.038024** | **OK** |
| **DL** | **0.013466** | **0.013466** | **OK** |
| **BP MDA** | **0.478088** | **0.478088** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **0.985554** | **0.985554** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.762094** | **0.762094** | **OK** |
| **Chem Rec Factor** | **1.065865** | **1.065865** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.169664** | **0.169664** | **OK** |
| **K MDA** | **244.316482** | **244.316482** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-10 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 007 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-4-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_SB |
| **Instr keV** | 4.906514168 |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDH **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 38.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2560.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.128568** | **0.128568** | **OK** |
| **CU** | **0.052236** | **0.052236** | **OK** |
| **TPU** | **0.054498** | **0.054498** | **OK** |
| **MDA** | **0.056678** | **0.056678** | **OK** |
| **DL** | **0.022895** | **0.022895** | **OK** |
| **BP MDA** | **0.763139** | **0.763139** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.026389** | **0.026389** | **OK** |
| **BKG Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Net Count Rate** | **0.022222** | **0.022222** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.762094** | **0.762094** | **OK** |
| **Chem Rec Factor** | **1.065865** | **1.065865** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.172844** | **0.172844** | **OK** |
| **K MDA** | **248.895192** | **248.895192** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-10 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00397 |
| **Fraction** | 007 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-4-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_5B |
| **Instr keV** | 10.42634296 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDA **Date:** 6-2-11

350001109

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2560.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.008019** | **0.008019** | **OK** |
| **CU** | **0.015718** | **0.015718** | **OK** |
| **TPU** | **0.015748** | **0.015748** | **OK** |
| **MDA** | **0.029523** | **0.029523** | **OK** |
| **DL** | **0.009328** | **0.009328** | **OK** |
| **BP MDA** | **0.131583** | **0.131583** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.372428** | **11.372428** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.762094** | **0.762094** | **OK** |
| **Chem Rec Factor** | **1.065865** | **1.065865** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.173190** | **0.173190** | **OK** |
| **K MDA** | **249.394072** | **249.394072** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-10 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 007 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-4-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_50 |
| **Instr keV** | 4.906514168 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2767.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.026390** | **0.026390** | **OK** |
| **CU** | **0.028618** | **0.028618** | **OK** |
| **TPU** | **0.028796** | **0.028796** | **OK** |
| **MDA** | **0.045299** | **0.045299** | **OK** |
| **DL** | **0.017541** | **0.017541** | **OK** |
| **BP MDA** | **0.477213** | **0.477213** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **0.985554** | **0.985554** | **OK** |
| **Tracer DPM** | **11.327611** | **11.327611** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.752864** | **0.752864** | **OK** |
| **Chem Rec Factor** | **1.052957** | **1.052957** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.184202** | **0.184202** | **OK** |
| **K MDA** | **265.251369** | **265.251369** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-11 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 008 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-6-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_6A | | |
| **Instr keV** | 4.886059284 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 186.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2767.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.673519** | **0.673519** | **OK** |
| **CU** | **0.099980** | **0.099980** | **OK** |
| **TPU** | **0.128927** | **0.128927** | **OK** |
| **MDA** | **0.044465** | **0.044465** | **OK** |
| **DL** | **0.017218** | **0.017218** | **OK** |
| **BP MDA** | **0.762280** | **0.762280** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.129167** | **0.129167** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.126389** | **0.126389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.327611** | **11.327611** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.752864** | **0.752864** | **OK** |
| **Chem Rec Factor** | **1.052957** | **1.052957** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.187654** | **0.187654** | **OK** |
| **K MDA** | **270.222417** | **270.222417** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 008 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-6-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | 15.74396896 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDH **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 14.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2767.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.040626** | **0.040626** | **OK** |
| **CU** | **0.029846** | **0.029846** | **OK** |
| **TPU** | **0.030247** | **0.030247** | **OK** |
| **MDA** | **0.039772** | **0.039772** | **OK** |
| **DL** | **0.014882** | **0.014882** | **OK** |
| **BP MDA** | **0.130725** | **0.130725** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.009722** | **0.009722** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.007639** | **0.007639** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661111** | **14.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.327611** | **11.327611** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.752864** | **0.752864** | **OK** |
| **Chem Rec Factor** | **1.052957** | **1.052957** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.188031** | **0.188031** | **OK** |
| **K MDA** | **270.764045** | **270.764045** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 008 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-6-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | 7.329089165 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDH **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2643.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.035638** | **0.035638** | **OK** |
| **CU** | **0.023284** | **0.023284** | **OK** |
| **TPU** | **0.023679** | **0.023679** | **OK** |
| **MDA** | **0.010731** | **0.010731** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.478191** | **0.478191** | **OK** |
| **BP DL** | **0.234233** | **0.234233** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.006250** | **0.006250** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **0.984576** | **0.984576** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.719742** | **0.719742** | **OK** |
| **Chem Rec Factor** | **1.006632** | **1.006632** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.175374** | **0.175374** | **OK** |
| **K MDA** | **252.538325** | **252.538325** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-12 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 009 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-7-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_68 | | |
| **Instr keV** | 6.124101639 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 127.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.990000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2643.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2880555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.485387** | **0.485387** | **OK** |
| **CU** | **0.086443** | **0.086443** | **OK** |
| **TPU** | **0.104469** | **0.104469** | **OK** |
| **MDA** | **0.036074** | **0.036074** | **OK** |
| **DL** | **0.012775** | **0.012775** | **OK** |
| **BP MDA** | **0.762774** | **0.762774** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.088194** | **0.088194** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.086806** | **0.086806** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.719742** | **0.719742** | **OK** |
| **Chem Rec Factor** | **1.006632** | **1.006632** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.178838** | **0.178838** | **OK** |
| **K MDA** | **257.526592** | **257.526592** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 009 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-7-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6B |
| **Instr keV** | 14.93114376 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 10.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:52 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2643.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.038753** | **0.038753** | **OK** |
| **CU** | **0.024020** | **0.024020** | **OK** |
| **TPU** | **0.024472** | **0.024472** | **OK** |
| **MDA** | **0.010502** | **0.010502** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.131219** | **0.131219** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006944** | **0.006944** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.006944** | **0.006944** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661111** | **15.661111** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer At** | **226.642361** | **226.642361** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.719742** | **0.719742** | **OK** |
| **Chem Rec Factor** | **1.006632** | **1.006632** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.179196** | **0.179196** | **OK** |
| **K MDA** | **258.042779** | **258.042779** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-12 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-I1-00897 | | |
| **Fraction** | 009 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-7-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_6B | | |
| **Instr keV** | 7.348922253 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDA **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2588.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.004019** | **0.004019** | **OK** |
| **CU** | **0.017612** | **0.017612** | **OK** |
| **TPU** | **0.017619** | **0.017619** | **OK** |
| **MDA** | **0.037332** | **0.037332** | **OK** |
| **DL** | **0.013221** | **0.013221** | **OK** |
| **BP MDA** | **0.478350** | **0.478350** | **OK** |
| **BP DL** | **0.234233** | **0.234233** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661806** | **15.661806** | **OK** |
| **DF** | **0.984575** | **0.984575** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.721378** | **0.721378** | **OK** |
| **Chem Rec Factor** | **1.008920** | **1.008920** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.172810** | **0.172810** | **OK** |
| **K MDA** | **248.847021** | **248.847021** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 010 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-8 110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 9.816235542 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 241.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.993000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2588.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.937885** | **0.937885** | **OK** |
| **CU** | **0.120649** | **0.120649** | **OK** |
| **TPU** | **0.165545** | **0.165545** | **OK** |
| **MDA** | **0.042437** | **0.042437** | **OK** |
| **DL** | **0.015879** | **0.015879** | **OK** |
| **BP MDA** | **0.762930** | **0.762930** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.167361** | **0.167361** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.165278** | **0.165278** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661806** | **15.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.721378** | **0.721378** | **OK** |
| **Chem Rec Factor** | **1.008920** | **1.008920** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176224** | **0.176224** | **OK** |
| **K MDA** | **253.762550** | **253.762550** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-13 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 010 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-8-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_1A | | |
| **Instr keV** | 42.05364609 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDR **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2588.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.011798** | **0.011798** | **OK** |
| **CU** | **0.020394** | **0.020394** | **OK** |
| **TPU** | **0.020444** | **0.020444** | **OK** |
| **MDA** | **0.036536** | **0.036536** | **OK** |
| **DL** | **0.012939** | **0.012939** | **OK** |
| **BP MDA** | **0.131375** | **0.131375** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.661806** | **15.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.721378** | **0.721378** | **OK** |
| **Chem Rec Factor** | **1.008920** | **1.008920** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176577** | **0.176577** | **OK** |
| **K MDA** | **254.271193** | **254.271193** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00497 |
| **Fraction** | 010 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-8-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 4.908117771 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

350001119

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2543.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.004057** | **-0.004057** | **OK** |
| **CU** | **0.017782** | **0.017782** | **OK** |
| **TPU** | **0.017788** | **0.017788** | **OK** |
| **MDA** | **0.043692** | **0.043692** | **OK** |
| **DL** | **0.016348** | **0.016348** | **OK** |
| **BP MDA** | **0.477992** | **0.477992** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **0.985553** | **0.985553** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732892** | **0.732892** | **OK** |
| **Chem Rec Factor** | **1.025024** | **1.025024** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.171162** | **0.171162** | **OK** |
| **K MDA** | **246.472842** | **246.472842** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-14 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 011 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-MD-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_18 | | |
| **Instr keV** | 4.879087925 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDK **Date:** 6-2-11

350001120

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 175.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2543.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.692973** | **0.692973** | **OK** |
| **CU** | **0.103557** | **0.103557** | **OK** |
| **TPU** | **0.133186** | **0.133186** | **OK** |
| **MDA** | **0.029323** | **0.029323** | **OK** |
| **DL** | **0.009265** | **0.009265** | **OK** |
| **BP MDA** | **0.763044** | **0.763044** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.121528** | **0.121528** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.120833** | **0.120833** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732892** | **0.732892** | **OK** |
| **Chem Rec Factor** | **1.025024** | **1.025024** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.174370** | **0.174370** | **OK** |
| **K MDA** | **251.092137** | **251.092137** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-14 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 011 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-MD-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_1B | | |
| **Instr keV** | 9.75817585 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

350001121

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 7.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2543.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.023848** | **0.023848** | **OK** |
| **CU** | **0.022034** | **0.022034** | **OK** |
| **TPU** | **0.022222** | **0.022222** | **OK** |
| **MDA** | **0.029264** | **0.029264** | **OK** |
| **DL** | **0.009247** | **0.009247** | **OK** |
| **BP MDA** | **0.131488** | **0.131488** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004861** | **0.004861** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.732892** | **0.732892** | **OK** |
| **Chem Rec Factor** | **1.025024** | **1.025024** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.174719** | **0.174719** | **OK** |
| **K MDA** | **251.595421** | **251.595421** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-14 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 011 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-MD-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_16 | | |
| **Instr keV** | 7.318632126 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

350001122

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 4.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2326.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.009227** | **0.009227** | **OK** |
| **CU** | **0.022150** | **0.022150** | **OK** |
| **TPU** | **0.022179** | **0.022179** | **OK** |
| **MDA** | **0.042862** | **0.042862** | **OK** |
| **DL** | **0.015179** | **0.015179** | **OK** |
| **BP MDA** | **0.479500** | **0.479500** | **OK** |
| **BP DL** | **0.234000** | **0.234000** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002778** | **0.002778** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **0.985553** | **0.985553** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.644495** | **0.644495** | **OK** |
| **Chem Rec Factor** | **0.901391** | **0.901391** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.150517** | **0.150517** | **OK** |
| **K MDA** | **216.744575** | **216.744575** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-811-01657 |
| **Batch ID** | ARS1-811-01657-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 012 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-MD-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDK **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 201.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi ... UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2326.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.858538** | **0.858538** | **OK** |
| **CU** | **0.122300** | **0.122300** | **OK** |
| **TPU** | **0.160387** | **0.160387** | **OK** |
| **MDA** | **0.052364** | **0.052364** | **OK** |
| **DL** | **0.020277** | **0.020277** | **OK** |
| **BP MDA** | **0.764061** | **0.764061** | **OK** |
| **BP DL** | **0.376934** | **0.376934** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.139583** | **0.139583** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.136806** | **0.136806** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.644495** | **0.644495** | **OK** |
| **Chem Rec Factor** | **0.901391** | **0.901391** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.159347** | **0.159347** | **OK** |
| **K MDA** | **229.459888** | **229.459888** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 012 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-MD-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 18.86896133 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi --- UCF = | 2.220 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2326.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.001000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sa | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.008699** | **0.008699** | **OK** |
| **CU** | **0.012056** | **0.012056** | **OK** |
| **TPU** | **0.012102** | **0.012102** | **OK** |
| **MDA** | **0.011787** | **0.011787** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.132503** | **0.132503** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.215567** | **11.215567** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.644495** | **0.644495** | **OK** |
| **Chem Rec Factor** | **0.901391** | **0.901391** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.159667** | **0.159667** | **OK** |
| **K MDA** | **229.919812** | **229.919812** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01657 | | |
| **Batch ID** | ARS1-B11-01657-15 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 012 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | MW-MD-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_2A | | |
| **Instr keV** | 4.902958393 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.213413 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2819.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.213413 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.037393** | **0.037393** | **OK** |
| **CU** | **0.073290** | **0.073290** | **OK** |
| **TPU** | **0.073430** | **0.073430** | **OK** |
| **MDA** | **0.137658** | **0.137658** | **OK** |
| **DL** | **0.043495** | **0.043495** | **OK** |
| **BP MDA** | **2.385650** | **2.385650** | **OK** |
| **BP DL** | **1.170002** | **1.170002** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **0.985553** | **0.985553** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer δi** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.800269** | **0.800269** | **OK** |
| **Chem Rec Factor** | **1.119257** | **1.119257** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.037143** | **0.037143** | **OK** |
| **K MDA** | **53.485906** | **53.485906** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-16 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 013 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | NPOP20E-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_3B |
| **Instr keV** | 4.919867039 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDA **Date:** 6-2-11

350001126

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 104.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.213413 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi ··· UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2819.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.213413 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26820555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.853608** | **1.853608** | **OK** |
| **CU** | **0.372087** | **0.372087** | **OK** |
| **TPU** | **0.434324** | **0.434324** | **OK** |
| **MDA** | **0.197635** | **0.197635** | **OK** |
| **DL** | **0.073950** | **0.073950** | **OK** |
| **BP MDA** | **3.810991** | **3.810991** | **OK** |
| **BP DL** | **1.884672** | **1.884672** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.072222** | **0.072222** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.070139** | **0.070139** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer Δt** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.800269** | **0.800269** | **OK** |
| **Chem Rec Factor** | **1.119257** | **1.119257** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.037839** | **0.037839** | **OK** |
| **K MDA** | **54.488317** | **54.488317** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-16 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 013 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | NPOP20E-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_3B |
| **Instr keV** | 8.375487328 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDM **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 13.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 7.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.213413 |
| Sample Aliquot | 0.100000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-5-11 3:53 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2819.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.022000 |
| Tracer EFF | 0.213413 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.109895** | **0.109895** | **OK** |
| **CU** | **0.160545** | **0.160545** | **OK** |
| **TPU** | **0.161094** | **0.161094** | **OK** |
| **MDA** | **0.275105** | **0.275105** | **OK** |
| **DL** | **0.112735** | **0.112735** | **OK** |
| **BP MDA** | **0.653219** | **0.653219** | **OK** |
| **BP DL** | **0.302441** | **0.302441** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.009028** | **0.009028** | **OK** |
| **BKG Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.661806** | **14.661806** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.450859** | **11.450859** | **OK** |
| **Tracer At** | **226.643056** | **226.643056** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.800269** | **0.800269** | **OK** |
| **Chem Rec Factor** | **1.119257** | **1.119257** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.037915** | **0.037915** | **OK** |
| **K MDA** | **54.597532** | **54.597532** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01657 |
| **Batch ID** | ARS1-B11-01657-16 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 013 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | NPDP20E-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_3b |
| **Instr keV** | 9.839734077 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** SDL **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2629.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012100 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | OK |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | 0.017648 | 0.017648 | OK |
| **CU** | 0.011530 | 0.011530 | OK |
| **TPU** | 0.011726 | 0.011726 | OK |
| **MDA** | 0.005314 | 0.005314 | OK |
| **DL** | 0.000000 | 0.000000 | OK |
| **BP MDA** | 0.233892 | 0.233892 | OK |
| **BP DL** | 0.114535 | 0.114535 | OK |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | 0.006250 | 0.006250 | OK |
| **BKG Count Rate** | 0.000000 | 0.000000 | OK |
| **Net Count Rate** | 0.006250 | 0.006250 | OK |
| **Δ t 1 (t2 - t1)** | 2.086597 | 2.086597 | OK |
| **DF** | 0.997931 | 0.997931 | OK |
| **Tracer DPM** | 11.339936 | 11.339936 | OK |
| **Tracer Δt** | 227.920139 | 227.920139 | OK |
| **Tracer DF** | 0.999941 | 0.999941 | OK |
| **Tracer Recovery** | 0.756981 | 0.756981 | OK |
| **Chem Rec Factor** | 1.058714 | 1.058714 | OK |
| **Sys Err** | 0.061664 | 0.061664 | OK |
| **K** | 0.354150 | 0.354150 | OK |
| **K MDA** | 509.975892 | 509.975892 | OK |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 4.88256979 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2973.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 14.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2629.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012100 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **5.767024** | **5.767024** | **OK** |
| **CU** | **0.208776** | **0.208776** | **OK** |
| **TPU** | **0.727601** | **0.727601** | **OK** |
| **MDA** | **0.039212** | **0.039212** | **OK** |
| **DL** | **0.016965** | **0.016965** | **OK** |
| **BP MDA** | **0.370878** | **0.370878** | **OK** |
| **BP DL** | **0.183191** | **0.183191** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.064583** | **2.064583** | **OK** |
| **BKG Count Rate** | **0.009722** | **0.009722** | **OK** |
| **Net Count Rate** | **2.054861** | **2.054861** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.339936** | **11.339936** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.756981** | **0.756981** | **OK** |
| **Chem Rec Factor** | **1.058714** | **1.058714** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.356312** | **0.356312** | **OK** |
| **K MDA** | **513.089608** | **513.089608** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-01 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_1A | | |
| **Instr keV** | 40.10710144 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 59.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2629.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012100 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.105034** | **0.105034** | **OK** |
| **CU** | **0.030499** | **0.030499** | **OK** |
| **TPU** | **0.033035** | **0.033035** | **OK** |
| **MDA** | **0.025508** | **0.025508** | **OK** |
| **DL** | **0.010118** | **0.010118** | **OK** |
| **BP MDA** | **0.065327** | **0.065327** | **OK** |
| **BP DL** | **0.030092** | **0.030092** | **OK** |
| | | | |
| **OL QSAS** | | | |
| **Gross Count Rate** | **0.040972** | **0.040972** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.037500** | **0.037500** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.339936** | **11.339936** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.756981** | **0.756981** | **OK** |
| **Chem Rec Factor** | **1.058714** | **1.058714** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.357026** | **0.357026** | **OK** |
| **K MDA** | **514.117870** | **514.117870** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 7.323854446 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 17.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2603.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008300 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.027772** | **0.027772** | **OK** |
| **GU** | **0.017388** | **0.017388** | **OK** |
| **TPU** | **0.017709** | **0.017709** | **OK** |
| **MDA** | **0.021362** | **0.021362** | **OK** |
| **DL** | **0.007993** | **0.007993** | **OK** |
| **BP MDA** | **0.233954** | **0.233954** | **OK** |
| **BP DL** | **0.114535** | **0.114535** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.011806** | **0.011806** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.009722** | **0.009722** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **0.997931** | **0.997931** | **OK** |
| **Tracer DPM** | **11.297359** | **11.297359** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.827103** | **0.827103** | **OK** |
| **Chem Rec Factor** | **1.156787** | **1.156787** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.350070** | **0.350070** | **OK** |
| **K MDA** | **504.100470** | **504.100470** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 8.545721054 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** JLW **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3263.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi ··· UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2603.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008300 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **6.423776** | **6.423776** | **OK** |
| **CII** | **0.220921** | **0.220921** | **OK** |
| **TPU** | **0.807201** | **0.807201** | **OK** |
| **MDA** | **0.025857** | **0.025857** | **OK** |
| **DL** | **0.010257** | **0.010257** | **OK** |
| **BP MDA** | **0.370940** | **0.370940** | **OK** |
| **BP DL** | **0.183191** | **0.183191** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.265972** | **2.265972** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **2.262500** | **2.262500** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.297359** | **11.297359** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.827103** | **0.827103** | **OK** |
| **Chem Rec Factor** | **1.156787** | **1.156787** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.352207** | **0.352207** | **OK** |
| **K MDA** | **507.178313** | **507.178313** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 38.83237839 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 57.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2603.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008300 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.106258** | **0.106258** | **OK** |
| **CU** | **0.029875** | **0.029875** | **OK** |
| **TPU** | **0.032518** | **0.032518** | **OK** |
| **MDA** | **0.021190** | **0.021190** | **OK** |
| **DL** | **0.007929** | **0.007929** | **OK** |
| **BP MDA** | **0.065388** | **0.065388** | **OK** |
| **BP DL** | **0.030092** | **0.030092** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.039583** | **0.039583** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.037500** | **0.037500** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.297359** | **11.297359** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.827103** | **0.827103** | **OK** |
| **Chem Rec Factor** | **1.156787** | **1.156787** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.352913** | **0.352913** | **OK** |
| **K MDA** | **508.194729** | **508.194729** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 4.88326931 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2608.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.006200 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.003942** | **0.003942** | **OK** |
| **CU** | **0.007727** | **0.007727** | **OK** |
| **TPU** | **0.007742** | **0.007742** | **OK** |
| **MDA** | **0.014514** | **0.014514** | **OK** |
| **DL** | **0.004586** | **0.004586** | **OK** |
| **BP MDA** | **0.233920** | **0.233920** | **OK** |
| **BP DL** | **0.114535** | **0.114535** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **0.997931** | **0.997931** | **OK** |
| **Tracer DPM** | **11.273830** | **11.273830** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.739306** | **0.739306** | **OK** |
| **Chem Rec Factor** | **1.033994** | **1.033994** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.352293** | **0.352293** | **OK** |
| **K MDA** | **507.301313** | **507.301313** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 4.912463665 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 148.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2608.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.006200 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | 0.278214 | 0.278214 | OK |
| **CU** | 0.047655 | 0.047655 | OK |
| **TPU** | 0.058323 | 0.058323 | OK |
| **MDA** | 0.027639 | 0.027639 | OK |
| **DL** | 0.011165 | 0.011165 | OK |
| **BP MDA** | 0.370906 | 0.370906 | OK |
| **BP DL** | 0.183191 | 0.183191 | OK |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | 0.102778 | 0.102778 | OK |
| **BKG Count Rate** | 0.004167 | 0.004167 | OK |
| **Net Count Rate** | 0.098611 | 0.098611 | OK |
| **Δ t 1 (t2 - t1)** | 2.086597 | 2.086597 | OK |
| **DF** | 1.000000 | 1.000000 | OK |
| **Tracer DPM** | 11.273830 | 11.273830 | OK |
| **Tracer Δt** | 227.920139 | 227.920139 | OK |
| **Tracer DF** | 0.999941 | 0.999941 | OK |
| **Tracer Recovery** | 0.739306 | 0.739306 | OK |
| **Chem Rec Factor** | 1.033994 | 1.033994 | OK |
| **Sys Err** | 0.061664 | 0.061664 | OK |
| **K** | 0.354444 | 0.354444 | OK |
| **K MDA** | 510.398698 | 510.398698 | OK |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-03 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_2A | | |
| **Instr keV** | 10.43898487 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 25.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5/4/11 8:27 AM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2609.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.006200 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.044973** | **0.044973** | **OK** |
| **CU** | **0.019914** | **0.019914** | **OK** |
| **TPU** | **0.020642** | **0.020642** | **OK** |
| **MDA** | **0.018165** | **0.018165** | **OK** |
| **DL** | **0.006433** | **0.006433** | **OK** |
| **BP MDA** | **0.065355** | **0.065355** | **OK** |
| **BP DL** | **0.030092** | **0.030092** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.017361** | **0.017361** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.015972** | **0.015972** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.086597** | **2.086597** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.273830** | **11.273830** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.739306** | **0.739306** | **OK** |
| **Chem Rec Factor** | **1.033994** | **1.033994** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.355154** | **0.355154** | **OK** |
| **K MDA** | **511.421568** | **511.421568** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-03 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_2A | | |
| **Instr keV** | 4.912463665 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 933.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.005200 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.033889** | **0.033889** | **OK** |
| **CU** | **0.038349** | **0.038349** | **OK** |
| **TPU** | **0.038567** | **0.038567** | **OK** |
| **MDA** | **0.030613** | **0.030613** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.494098** | **0.494098** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **OL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.262626** | **11.262626** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.257813** | **0.257813** | **OK** |
| **Chem Rec Factor** | **0.360578** | **0.360578** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.061476** | **0.061476** | **OK** |
| **K MDA** | **88.525310** | **88.525310** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2B |
| **Instr keV** | 4.888912201 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-1-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 144.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 933.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.005200 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.572557** | **1.572557** | **OK** |
| **CU** | **0.262271** | **0.262271** | **OK** |
| **TPU** | **0.323897** | **0.323897** | **OK** |
| **MDA** | **0.102881** | **0.102881** | **OK** |
| **DL** | **0.036435** | **0.036435** | **OK** |
| **BP MDA** | **0.761205** | **0.761205** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.100000** | **0.100000** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.098611** | **0.098611** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.262626** | **11.262626** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.257813** | **0.257813** | **OK** |
| **Chem Rec Factor** | **0.360578** | **0.360578** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.062707** | **0.062707** | **OK** |
| **K MDA** | **90.298799** | **90.298799** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2B |
| **Instr keV** | 6.844477177 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 933.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.005200 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.088418** | **0.088418** | **OK** |
| **CU** | **0.081053** | **0.081053** | **OK** |
| **TPU** | **0.081754** | **0.081754** | **OK** |
| **MDA** | **0.119019** | **0.119019** | **OK** |
| **DL** | **0.044534** | **0.044534** | **OK** |
| **BP MDA** | **0.150063** | **0.150063** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.005556** | **0.005556** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.262626** | **11.262626** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.257813** | **0.257813** | **OK** |
| **Chem Rec Factor** | **0.360578** | **0.360578** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.062833** | **0.062833** | **OK** |
| **K MDA** | **90.479795** | **90.479795** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_28 |
| **Instr keV** | 4.888912201 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 7.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 897.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.078779** | **0.078779** | **OK** |
| **CU** | **0.058360** | **0.058360** | **OK** |
| **TPU** | **0.059132** | **0.059132** | **OK** |
| **MDA** | **0.030499** | **0.030499** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.493984** | **0.493984** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004861** | **0.004861** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.258777** | **0.258777** | **OK** |
| **Chem Rec Factor** | **0.361926** | **0.361926** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.061706** | **0.061706** | **OK** |
| **K MDA** | **88.856435** | **88.856435** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-05 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 015 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | BB-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3A |
| **Instr keV** | |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

350001141

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 98.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 897.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.061832** | **1.061832** | **OK** |
| **CU** | **0.227116** | **0.227116** | **OK** |
| **TPU** | **0.260866** | **0.260866** | **OK** |
| **MDA** | **0.149729** | **0.149729** | **OK** |
| **DL** | **0.059393** | **0.059393** | **OK** |
| **BP MDA** | **0.762135** | **0.762135** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.068056** | **0.068056** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.064583** | **0.064583** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.258777** | **0.258777** | **OK** |
| **Chem Rec Factor** | **0.361926** | **0.361926** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.060823** | **0.060823** | **OK** |
| **K MDA** | **87.584480** | **87.584480** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-05 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00097 |
| **Fraction** | 015 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3A |
| **Instr keV** | 10.43649578 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 26.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 21.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 897.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.079763** | **0.079763** | **OK** |
| **CU** | **0.156335** | **0.156335** | **OK** |
| **TPU** | **0.156632** | **0.156632** | **OK** |
| **MDA** | **0.273833** | **0.273833** | **OK** |
| **DL** | **0.121477** | **0.121477** | **OK** |
| **BP MDA** | **0.150991** | **0.150991** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.019444** | **0.019444** | **OK** |
| **BKG Count Rate** | **0.014583** | **0.014583** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.258777** | **0.258777** | **OK** |
| **Chem Rec Factor** | **0.361926** | **0.361926** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.060944** | **0.060944** | **OK** |
| **K MDA** | **87.760036** | **87.760036** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-05 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 015 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3A |
| **Instr keV** | 4.911292076 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 594.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.052681** | **0.052681** | **OK** |
| **CU** | **0.059614** | **0.059614** | **OK** |
| **TPU** | **0.059953** | **0.059953** | **OK** |
| **MDA** | **0.047589** | **0.047589** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.510614** | **0.510614** | **OK** |
| **BP DL** | **0.232011** | **0.232011** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **0.985282** | **0.985282** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.176493** | **0.176493** | **OK** |
| **Chem Rec Factor** | **0.246844** | **0.246844** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.039546** | **0.039546** | **OK** |
| **K MDA** | **56.946406** | **56.946406** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-06 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 016 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RB-02-110421 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_38 | | |
| **Instr keV** | 4.913847923 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-21-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 44.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 594.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.672070** | **0.672070** | **OK** |
| **CU** | **0.236431** | **0.236431** | **OK** |
| **TPU** | **0.249995** | **0.249995** | **OK** |
| **MDA** | **0.225986** | **0.225986** | **OK** |
| **DL** | **0.089643** | **0.089643** | **OK** |
| **BP MDA** | **0.777894** | **0.777894** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.030556** | **0.030556** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.027083** | **0.027083** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.176493** | **0.176493** | **OK** |
| **Chem Rec Factor** | **0.246844** | **0.246844** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.040298** | **0.040298** | **OK** |
| **K MDA** | **58.029629** | **58.029629** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 016 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-02-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_38 |
| **Instr keV** | 6.55179739 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 8.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 594.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.007000 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.085991** | **0.085991** | **OK** |
| **CU** | **0.111798** | **0.111798** | **OK** |
| **TPU** | **0.112280** | **0.112280** | **OK** |
| **MDA** | **0.185203** | **0.185203** | **OK** |
| **DL** | **0.069298** | **0.069298** | **OK** |
| **BP MDA** | **0.166718** | **0.166718** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.005556** | **0.005556** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.282793** | **11.282793** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.176493** | **0.176493** | **OK** |
| **Chem Rec Factor** | **0.246844** | **0.246844** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.040379** | **0.040379** | **OK** |
| **K MDA** | **58.145943** | **58.145943** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 016 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-02-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3B |
| **Instr keV** | 7.370771885 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2662.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.004000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.027277** | **0.027277** | **OK** |
| **CU** | **0.025331** | **0.025331** | **OK** |
| **TPU** | **0.025545** | **0.025545** | **OK** |
| **MDA** | **0.036201** | **0.036201** | **OK** |
| **DL** | **0.012820** | **0.012820** | **OK** |
| **BP MDA** | **0.474046** | **0.474046** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.249180** | **11.249180** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.726312** | **0.726312** | **OK** |
| **Chem Rec Factor** | **1.015821** | **1.015821** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.178212** | **0.178212** | **OK** |
| **K MDA** | **256.624738** | **256.624738** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-07 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 017 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-JM-SW-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_4A | | |
| **Instr keV** | 7.365706444 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6/7/11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 231.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2662.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.004000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.871007** | **0.871007** | **OK** |
| **CU** | **0.114538** | **0.114538** | **OK** |
| **TPU** | **0.155566** | **0.155566** | **OK** |
| **MDA** | **0.041139** | **0.041139** | **OK** |
| **DL** | **0.015393** | **0.015393** | **OK** |
| **BP MDA** | **0.741546** | **0.741546** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.160417** | **0.160417** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.158333** | **0.158333** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.249180** | **11.249180** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.726312** | **0.726312** | **OK** |
| **Chem Rec Factor** | **1.015821** | **1.015821** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.181782** | **0.181782** | **OK** |
| **K MDA** | **261.765880** | **261.765880** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-07 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-I1-00397 |
| **Fraction** | 017 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-02-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4A |
| **Instr keV** | 29.46282578 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 30.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0245 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2662.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.004000 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.110564** | **0.110564** | **OK** |
| **CU** | **0.041606** | **0.041606** | **OK** |
| **TPU** | **0.043699** | **0.043699** | **OK** |
| **MDA** | **0.028071** | **0.028071** | **OK** |
| **DL** | **0.008869** | **0.008869** | **OK** |
| **BP MDA** | **0.130443** | **0.130443** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.020833** | **0.020833** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.020139** | **0.020139** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.249180** | **11.249180** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.726312** | **0.726312** | **OK** |
| **Chem Rec Factor** | **1.015821** | **1.015821** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.182146** | **0.182146** | **OK** |
| **K MDA** | **262.290566** | **262.290566** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-07 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 017 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-02-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4A |
| **Instr keV** | 4.910470963 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2578.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.036490** | **0.036490** | **OK** |
| **CU** | **0.023640** | **0.023640** | **OK** |
| **TPU** | **0.024244** | **0.024244** | **OK** |
| **MDA** | **0.010987** | **0.010987** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.474473** | **0.474473** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.006250** | **0.006250** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.338815** | **11.338815** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.728653** | **0.728653** | **OK** |
| **Chem Rec Factor** | **1.019095** | **1.019095** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.171282** | **0.171282** | **OK** |
| **K MDA** | **246.645943** | **246.645943** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-08 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 018 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_48 |
| **Instr keV** | 4.890279293 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-24

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 140.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.993000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2578.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.544543** | **0.544543** | **OK** |
| **CU** | **0.093161** | **0.093161** | **OK** |
| **TPU** | **0.114063** | **0.114063** | **OK** |
| **MDA** | **0.042804** | **0.042804** | **OK** |
| **DL** | **0.016016** | **0.016016** | **OK** |
| **BP MDA** | **0.741965** | **0.741965** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.097222** | **0.097222** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.095139** | **0.095139** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.338815** | **11.338815** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.728653** | **0.728653** | **OK** |
| **Chem Rec Factor** | **1.019095** | **1.019095** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.174713** | **0.174713** | **OK** |
| **K MDA** | **251.587173** | **251.587173** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 018 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM_IM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_48 |
| **Instr keV** | 9.780558586 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2 11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 37.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2578.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.138839** | **0.138839** | **OK** |
| **CU** | **0.048555** | **0.048555** | **OK** |
| **TPU** | **0.051372** | **0.051372** | **OK** |
| **MDA** | **0.036852** | **0.036852** | **OK** |
| **DL** | **0.013051** | **0.013051** | **OK** |
| **BP MDA** | **0.130861** | **0.130861** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.025694** | **0.025694** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.024306** | **0.024306** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.338815** | **11.338815** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.728653** | **0.728653** | **OK** |
| **Chem Rec Factor** | **1.019095** | **1.019095** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.175064** | **0.175064** | **OK** |
| **K MDA** | **252.091457** | **252.091457** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-08 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 01B |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_48 |
| **Instr keV** | 6.112849236 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** KEW **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 19.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2359.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.071111** | **0.071111** | **OK** |
| **CU** | **0.040859** | **0.040859** | **OK** |
| **TPU** | **0.041753** | **0.041753** | **OK** |
| **MDA** | **0.047861** | **0.047861** | **OK** |
| **DL** | **0.017908** | **0.017908** | **OK** |
| **BP MDA** | **0.475990** | **0.475990** | **OK** |
| **BP DL** | **0.232472** | **0.232472** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.013194** | **0.013194** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.011111** | **0.011111** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **0.983328** | **0.983328** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.688384** | **0.688384** | **OK** |
| **Chem Rec Factor** | **0.962775** | **0.962775** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.156250** | **0.156250** | **OK** |
| **K MDA** | **225.000525** | **225.000525** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-09 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 019 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-SW-BG-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_5A |
| **Instr keV** | 4.889725208 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 170.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2359.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.726921** | **0.726921** | **OK** |
| **CU** | **0.112215** | **0.112215** | **OK** |
| **TPU** | **0.142516** | **0.142516** | **OK** |
| **MDA** | **0.046875** | **0.046875** | **OK** |
| **DL** | **0.017539** | **0.017539** | **OK** |
| **BP MDA** | **0.742990** | **0.742990** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.118056** | **0.118056** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.115972** | **0.115972** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.688384** | **0.688384** | **OK** |
| **Chem Rec Factor** | **0.962775** | **0.962775** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.159539** | **0.159539** | **OK** |
| **K MDA** | **229.736021** | **229.736021** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-09 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 019 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-SW-BG-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_5A | | |
| **Instr keV** | 7.843934059 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-7-11

350001154

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 31.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2359.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.125979** | **0.125979** | **OK** |
| **CU** | **0.048912** | **0.048912** | **OK** |
| **TPU** | **0.051227** | **0.051227** | **OK** |
| **MDA** | **0.040357** | **0.040357** | **OK** |
| **DL** | **0.014292** | **0.014292** | **OK** |
| **BP MDA** | **0.131884** | **0.131884** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.021528** | **0.021528** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.020139** | **0.020139** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.688384** | **0.688384** | **OK** |
| **Chem Rec Factor** | **0.962775** | **0.962775** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.159859** | **0.159859** | **OK** |
| **K MDA** | **230.196512** | **230.196512** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-09 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 019 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-SW-BG-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_5A |
| **Instr keV** | 4.889725208 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 8.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2399.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.010000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.026114** | **0.026114** | **OK** |
| **CU** | **0.026976** | **0.026976** | **OK** |
| **TPU** | **0.027160** | **0.027160** | **OK** |
| **MDA** | **0.040433** | **0.040433** | **OK** |
| **DL** | **0.014319** | **0.014319** | **OK** |
| **BP MDA** | **0.475280** | **0.475280** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.005556** | **0.005556** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.316407** | **11.316407** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.717607** | **0.717607** | **OK** |
| **Chem Rec Factor** | **1.003646** | **1.003646** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.159558** | **0.159558** | **OK** |
| **K MDA** | **229.762965** | **229.762965** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-10 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00097 | | |
| **Fraction** | 020 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JM-SW-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_58 | | |
| **Instr keV** | 4.906514168 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-21

350001156

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 183.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2399.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.010000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.755229** | **0.755229** | **OK** |
| **CU** | **0.114972** | **0.114972** | **OK** |
| **TPU** | **0.146800** | **0.146800** | **OK** |
| **MDA** | **0.060192** | **0.060192** | **OK** |
| **DL** | **0.024314** | **0.024314** | **OK** |
| **BP MDA** | **0.742757** | **0.742757** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.127083** | **0.127083** | **OK** |
| **BKG Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Net Count Rate** | **0.122917** | **0.122917** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.316407** | **11.316407** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.717607** | **0.717607** | **OK** |
| **Chem Rec Factor** | **1.003646** | **1.003646** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.162754** | **0.162754** | **OK** |
| **K MDA** | **234.365967** | **234.365967** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-10 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 020 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-IM-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_5B |
| **Instr keV** | 21.26156235 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 19.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2399.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.010000 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.076649** | **0.076649** | **OK** |
| **CU** | **0.037326** | **0.037326** | **OK** |
| **TPU** | **0.038458** | **0.038458** | **OK** |
| **MDA** | **0.031353** | **0.031353** | **OK** |
| **DL** | **0.009906** | **0.009906** | **OK** |
| **BP MDA** | **0.131651** | **0.131651** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.013194** | **0.013194** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.012500** | **0.012500** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.316407** | **11.316407** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.717607** | **0.717607** | **OK** |
| **Chem Rec Factor** | **1.003646** | **1.003646** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.163080** | **0.163080** | **OK** |
| **K MDA** | **234.835732** | **234.835732** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-10 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00857 | | |
| **Fraction** | 020 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JN-SW-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_58 | | |
| **Instr keV** | 4.906514168 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-21

350001158

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 57.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2428.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.226013** | **0.226013** | **OK** |
| **CU** | **0.065280** | **0.065280** | **OK** |
| **TPU** | **0.070765** | **0.070765** | **OK** |
| **MDA** | **0.051239** | **0.051239** | **OK** |
| **DL** | **0.019841** | **0.019841** | **OK** |
| **BP MDA** | **0.475042** | **0.475042** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.039583** | **0.039583** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.036806** | **0.036806** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.226772** | **11.226772** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.666426** | **0.666426** | **OK** |
| **Chem Rec Factor** | **0.932065** | **0.932065** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.162847** | **0.162847** | **OK** |
| **K MDA** | **234.499623** | **234.499623** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-11 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 021 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JM-SW-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_6A | | |
| **Instr keV** | 11.6043911 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-24

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2428.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 2680555.555556 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2428.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.256728 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-229 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | 10.113654 | 10.113654 | OK |
| **CU** | 0.403286 | 0.403286 | OK |
| **TPU** | 1.287151 | 1.287151 | OK |
| **MDA** | 0.050132 | 0.050132 | OK |
| **DL** | 0.019413 | 0.019413 | OK |
| **BP MDA** | 1.086795 | 1.086795 | OK |
| **BP DL** | 0.538900 | 0.538900 | OK |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | 1.686111 | 1.686111 | OK |
| **BKG Count Rate** | 0.002778 | 0.002778 | OK |
| **Net Count Rate** | 1.683333 | 1.683333 | OK |
| **Δ t 1 (t2 - t1)** | 15.938889 | 15.938889 | OK |
| **DF** | 0.999996 | 0.999996 | OK |
| **Tracer DPM** | 11.226772 | 11.226772 | OK |
| **Tracer Δt** | 227.920139 | 227.920139 | OK |
| **Tracer DF** | 0.999941 | 0.999941 | OK |
| **Tracer Recovery** | 0.666426 | 0.666426 | OK |
| **Chem Rec Factor** | 0.932065 | 0.932065 | OK |
| **Sys Err** | 0.061664 | 0.061664 | OK |
| **K** | 0.166442 | 0.166442 | OK |
| **K MDA** | 239.675980 | 239.675980 | OK |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 021 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | 39.12591553 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 37.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2428.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.141858** | **0.141858** | **OK** |
| **CU** | **0.051720** | **0.051720** | **OK** |
| **TPU** | **0.054488** | **0.054488** | **OK** |
| **MDA** | **0.044931** | **0.044931** | **OK** |
| **DL** | **0.016812** | **0.016812** | **OK** |
| **BP MDA** | **0.131418** | **0.131418** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.025694** | **0.025694** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.023611** | **0.023611** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.226772** | **11.226772** | **OK** |
| **Tracer ΔL** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.666426** | **0.666426** | **OK** |
| **Chem Rec Factor** | **0.932065** | **0.932065** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.166442** | **0.166442** | **OK** |
| **K MDA** | **239.676968** | **239.676968** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 021 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | 6.107573986 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 25.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- uCi = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.944000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2487.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.104096** | **0.104096** | **OK** |
| **CU** | **0.040806** | **0.040806** | **OK** |
| **TPU** | **0.042701** | **0.042701** | **OK** |
| **MDA** | **0.011284** | **0.011284** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.475230** | **0.475230** | **OK** |
| **BP DL** | **0.232472** | **0.232472** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.017361** | **0.017361** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.017361** | **0.017361** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **0.983328** | **0.983328** | **OK** |
| **Tracer DPM** | **11.226772** | **11.226772** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.685339** | **0.685339** | **OK** |
| **Chem Rec Factor** | **0.958516** | **0.958516** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.166779** | **0.166779** | **OK** |
| **K MDA** | **240.162321** | **240.162321** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1 11-00897 |
| **Fraction** | 022 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-01-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_68 |
| **Instr keV** | 14.69784451 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 265.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2487.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.072520** | **1.072520** | **OK** |
| **CU** | **0.130605** | **0.130605** | **OK** |
| **TPU** | **0.184012** | **0.184012** | **OK** |
| **MDA** | **0.037885** | **0.037885** | **OK** |
| **DL** | **0.013417** | **0.013417** | **OK** |
| **BP MDA** | **0.742245** | **0.742245** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.184028** | **0.184028** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.182639** | **0.182639** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.226772** | **11.226772** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.685339** | **0.685339** | **OK** |
| **Chem Rec Factor** | **0.958516** | **0.958516** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.170290** | **0.170290** | **OK** |
| **K MDA** | **245.216921** | **245.216921** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 022 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-01-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_68 |
| **Instr keV** | 7.144785881 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 27.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2487.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.002000 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.109886** | **0.109886** | **OK** |
| **CU** | **0.041449** | **0.041449** | **OK** |
| **TPU** | **0.043525** | **0.043525** | **OK** |
| **MDA** | **0.011029** | **0.011029** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.131141** | **0.131141** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.018750** | **0.018750** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.018750** | **0.018750** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.226772** | **11.226772** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.685339** | **0.685339** | **OK** |
| **Chem Rec Factor** | **0.958516** | **0.958516** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.170631** | **0.170631** | **OK** |
| **K MDA** | **245.708442** | **245.708442** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-12 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 022 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-SW-01-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_68 | | |
| **Instr keV** | 6.124101639 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-21

350001164

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 41.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2507.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.161190** | **0.161190** | **OK** |
| **CU** | **0.053121** | **0.053121** | **OK** |
| **TPU** | **0.056580** | **0.056580** | **OK** |
| **MDA** | **0.038396** | **0.038396** | **OK** |
| **DL** | **0.013598** | **0.013598** | **OK** |
| **BP MDA** | **0.475146** | **0.475146** | **OK** |
| **BP DL** | **0.232472** | **0.232472** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.028472** | **0.028472** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.027083** | **0.027083** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **0.983328** | **0.983328** | **OK** |
| **Tracer DPM** | **11.237976** | **11.237976** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.702275** | **0.702275** | **OK** |
| **Chem Rec Factor** | **0.982203** | **0.982203** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.168021** | **0.168021** | **OK** |
| **K MDA** | **241.950394** | **241.950394** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-13 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 023 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-SW-BG-041911 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_1A | | |
| **Instr keV** | 7.157671928 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

350001165

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 300.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2507.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | 1.202222 | 1.202222 | OK |
| **CU** | 0.138104 | 0.138104 | OK |
| **TPU** | 0.200462 | 0.200462 | OK |
| **MDA** | 0.043591 | 0.043591 | OK |
| **DL** | 0.016311 | 0.016311 | OK |
| **BP MDA** | 0.742164 | 0.742164 | OK |
| **BP DL** | 0.366383 | 0.366383 | OK |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | 0.208333 | 0.208333 | OK |
| **BKG Count Rate** | 0.002083 | 0.002083 | OK |
| **Net Count Rate** | 0.206250 | 0.206250 | OK |
| **Δ t 1 (t2 - t1)** | 16.938889 | 16.938889 | OK |
| **DF** | 1.000000 | 1.000000 | OK |
| **Tracer DPM** | 11.237976 | 11.237976 | OK |
| **Tracer Δt** | 227.920139 | 227.920139 | OK |
| **Tracer DF** | 0.999941 | 0.999941 | OK |
| **Tracer Recovery** | 0.702275 | 0.702275 | OK |
| **Chem Rec Factor** | 0.982203 | 0.982203 | OK |
| **Sys Err** | 0.061664 | 0.061664 | OK |
| **K** | 0.171557 | 0.171557 | OK |
| **K MDA** | 247.042627 | 247.042627 | OK |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-13 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00397 | | |
| **Fraction** | 023 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-SW-BG-041911 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_1A | | |
| **Instr keV** | 54.97091675 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 20.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/19/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2507.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.072716** | **0.072716** | **OK** |
| **CU** | **0.037139** | **0.037139** | **OK** |
| **TPU** | **0.038164** | **0.038164** | **OK** |
| **MDA** | **0.037530** | **0.037530** | **OK** |
| **DL** | **0.013291** | **0.013291** | **OK** |
| **BP MDA** | **0.131059** | **0.131059** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.013889** | **0.013889** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.012500** | **0.012500** | **OK** |
| **Δ t 1 (t2 - t1)** | **16.938889** | **16.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.237976** | **11.237976** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.702275** | **0.702275** | **OK** |
| **Chem Rec Factor** | **0.982203** | **0.982203** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.171901** | **0.171901** | **OK** |
| **K MDA** | **247.537808** | **247.537808** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00097 |
| **Fraction** | 023 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-BG-041911 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 5.726137161 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 23.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.075415** | **0.075415** | **OK** |
| **CU** | **0.037685** | **0.037685** | **OK** |
| **TPU** | **0.038772** | **0.038772** | **OK** |
| **MDA** | **0.040607** | **0.040607** | **OK** |
| **DL** | **0.015194** | **0.015194** | **OK** |
| **BP MDA** | **0.473244** | **0.473244** | **OK** |
| **BP DL** | **0.232011** | **0.232011** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.015972** | **0.015972** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.013889** | **0.013889** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **0.985282** | **0.985282** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer λt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.788787** | **0.788787** | **OK** |
| **Chem Rec Factor** | **1.103199** | **1.103199** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.184165** | **0.184165** | **OK** |
| **K MDA** | **265.197473** | **265.197473** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-14 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 024 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | SPOP35-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_18 |
| **Instr keV** | 7.318632126 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 161.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.592062** | **0.592062** | **OK** |
| **CU** | **0.092313** | **0.092313** | **OK** |
| **TPU** | **0.116799** | **0.116799** | **OK** |
| **MDA** | **0.027245** | **0.027245** | **OK** |
| **DL** | **0.008609** | **0.008609** | **OK** |
| **BP MDA** | **0.741222** | **0.741222** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.111806** | **0.111806** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.111111** | **0.111111** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.788787** | **0.788787** | **OK** |
| **Chem Rec Factor** | **1.103199** | **1.103199** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.187668** | **0.187668** | **OK** |
| **K MDA** | **270.242006** | **270.242006** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01660 | | |
| **Batch ID** | ARS1-B11-01660-14 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 024 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | SPOP35-110421 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_2_18 | | |
| **Instr keV** | 8.538403511 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 28.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/21/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.008000 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.099711** | **0.099711** | **OK** |
| **CU** | **0.038979** | **0.038979** | **OK** |
| **TPU** | **0.040800** | **0.040800** | **OK** |
| **MDA** | **0.027191** | **0.027191** | **OK** |
| **DL** | **0.008591** | **0.008591** | **OK** |
| **BP MDA** | **0.130119** | **0.130119** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.019444** | **0.019444** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.018750** | **0.018750** | **OK** |
| **Δ t 1 (t2 - t1)** | **14.938889** | **14.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.293998** | **11.293998** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.788787** | **0.788787** | **OK** |
| **Chem Rec Factor** | **1.103199** | **1.103199** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.188044** | **0.188044** | **OK** |
| **K MDA** | **270.783675** | **270.783675** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-14 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 024 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | SPOP35-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1B |
| **Instr keV** | 4.879087925 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.108902 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.012318** | **0.012318** | **OK** |
| **CU** | **0.021293** | **0.021293** | **OK** |
| **TPU** | **0.021345** | **0.021345** | **OK** |
| **MDA** | **0.038145** | **0.038145** | **OK** |
| **DL** | **0.013509** | **0.013509** | **OK** |
| **BP MDA** | **0.474613** | **0.474613** | **OK** |
| **BP DL** | **0.232241** | **0.232241** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **0.984304** | **0.984304** | **OK** |
| **Tracer DPM** | **11.237976** | **11.237976** | **OK** |
| **Tracer Δt** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.697757** | **0.697757** | **OK** |
| **Chem Rec Factor** | **0.975883** | **0.975883** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.169128** | **0.169128** | **OK** |
| **K MDA** | **243.543679** | **243.543679** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 4.902958393 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** _____

350001171

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 261.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.174543 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **1.034527** | **1.034527** | **OK** |
| **CU** | **0.128436** | **0.128436** | **OK** |
| **TPU** | **0.179246** | **0.179246** | **OK** |
| **MDA** | **0.048367** | **0.048367** | **OK** |
| **DL** | **0.018729** | **0.018729** | **OK** |
| **BP MDA** | **0.742103** | **0.742103** | **OK** |
| **BP DL** | **0.366383** | **0.366383** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.181250** | **0.181250** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.178472** | **0.178472** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.237976** | **11.237976** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.697757** | **0.697757** | **OK** |
| **Chem Rec Factor** | **0.975883** | **0.975883** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.172516** | **0.172516** | **OK** |
| **K MDA** | **248.422760** | **248.422760** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 17.97751427 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 26.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4/20/11 12:00 PM |
| Midpoint Count Date (t2) | 5/6/11 10:32 AM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9/20/10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.003000 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028672 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.104451** | **0.104451** | **OK** |
| **CU** | **0.040150** | **0.040150** | **OK** |
| **TPU** | **0.042088** | **0.042088** | **OK** |
| **MDA** | **0.010887** | **0.010887** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.130998** | **0.130998** | **OK** |
| **BP DL** | **0.060185** | **0.060185** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.018056** | **0.018056** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.018056** | **0.018056** | **OK** |
| **Δ t 1 (t2 - t1)** | **15.938889** | **15.938889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.237976** | **11.237976** | **OK** |
| **Tracer At** | **227.920139** | **227.920139** | **OK** |
| **Tracer DF** | **0.999941** | **0.999941** | **OK** |
| **Tracer Recovery** | **0.697757** | **0.697757** | **OK** |
| **Chem Rec Factor** | **0.975883** | **0.975883** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.172862** | **0.172862** | **OK** |
| **K MDA** | **248.920701** | **248.920701** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01660 |
| **Batch ID** | ARS1-B11-01660-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 4.902958393 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2864.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.035500 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.011049** | **0.011049** | **OK** |
| **CU** | **0.008841** | **0.008841** | **OK** |
| **TPU** | **0.008941** | **0.008941** | **OK** |
| **MDA** | **0.004990** | **0.004990** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.235603** | **0.235603** | **OK** |
| **BP OL** | **0.115554** | **0.115554** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004167** | **0.004167** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **0.997885** | **0.997885** | **OK** |
| **Tracer DPM** | **11.602118** | **11.602118** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.806091** | **0.806091** | **OK** |
| **Chem Rec Factor** | **1.127399** | **1.127399** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.377108** | **0.377108** | **OK** |
| **K MDA** | **543.035699** | **543.035699** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 4.88256979 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3721.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 14.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2864.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.035500 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **6.784696** | **6.784696** | **OK** |
| **CU** | **0.219235** | **0.219235** | **OK** |
| **TPU** | **0.848803** | **0.848803** | **OK** |
| **MDA** | **0.036823** | **0.036823** | **OK** |
| **DL** | **0.015931** | **0.015931** | **OK** |
| **BP MDA** | **0.381085** | **0.381085** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.584028** | **2.584028** | **OK** |
| **BKG Count Rate** | **0.009722** | **0.009722** | **OK** |
| **Net Count Rate** | **2.574306** | **2.574306** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.602118** | **11.602118** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.806091** | **0.806091** | **OK** |
| **Chem Rec Factor** | **1.127399** | **1.127399** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.379428** | **0.379428** | **OK** |
| **K MDA** | **546.376690** | **546.376690** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-01 | | |
| **Analysis Code** | | | |
| **SDG** | QC Sample | | |
| **Fraction** | N/A QC Sample | | |
| **Client** | QC Sample | | |
| **Client Profile** | | | |
| **Client ID** | N/A QC Sample | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_1A | | |
| **Instr keV** | 53.68243408 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-24

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 30.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212453 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2864.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.035500 |
| Tracer EFF | 0.212453 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.045664** | **0.045664** | **OK** |
| **CU** | **0.021180** | **0.021180** | **OK** |
| **TPU** | **0.021887** | **0.021887** | **OK** |
| **MDA** | **0.023954** | **0.023954** | **OK** |
| **DL** | **0.009502** | **0.009502** | **OK** |
| **BP MDA** | **0.065308** | **0.065308** | **OK** |
| **BP DL** | **0.030244** | **0.030244** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.020833** | **0.020833** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.017361** | **0.017361** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.602118** | **11.602118** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.806091** | **0.806091** | **OK** |
| **Chem Rec Factor** | **1.127399** | **1.127399** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.380189** | **0.380189** | **OK** |
| **K MDA** | **547.471663** | **547.471663** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-01 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1A |
| **Instr keV** | 4.88256979 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 4.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2469.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.024900 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.002127** | **0.002127** | **OK** |
| **CU** | **0.011028** | **0.011028** | **OK** |
| **TPU** | **0.011031** | **0.011031** | **OK** |
| **MDA** | **0.022902** | **0.022902** | **OK** |
| **DL** | **0.008569** | **0.008569** | **OK** |
| **BP MDA** | **0.236376** | **0.236376** | **OK** |
| **BP DL** | **0.115554** | **0.115554** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002778** | **0.002778** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **0.997885** | **0.997885** | **OK** |
| **Tracer DPM** | **11.483352** | **11.483352** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.771547** | **0.771547** | **OK** |
| **Chem Rec Factor** | **1.079086** | **1.079086** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.326541** | **0.326541** | **OK** |
| **K MDA** | **470.218378** | **470.218378** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 9.76653862 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6/2/11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3028.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2469.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Rel Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.024900 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.215000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **6.389616** | **6.389616** | **OK** |
| **CU** | **0.228154** | **0.228154** | **OK** |
| **TPU** | **0.805250** | **0.805250** | **OK** |
| **MDA** | **0.027718** | **0.027718** | **OK** |
| **DL** | **0.010995** | **0.010995** | **OK** |
| **BP MDA** | **0.381853** | **0.381853** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **2.102778** | **2.102778** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **2.099306** | **2.099306** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.483352** | **11.483352** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.771547** | **0.771547** | **OK** |
| **Chem Rec Factor** | **1.079086** | **1.079086** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.328550** | **0.328550** | **OK** |
| **K MDA** | **473.111365** | **473.111365** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-0198S-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 30.33912277 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 13.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.192201 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2469.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 17.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.024900 |
| Tracer EFF | 0.192201 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.021094** | **0.021094** | **OK** |
| **CU** | **0.016538** | **0.016538** | **OK** |
| **TPU** | **0.016733** | **0.016733** | **OK** |
| **MDA** | **0.022716** | **0.022716** | **OK** |
| **DL** | **0.008500** | **0.008500** | **OK** |
| **BP MDA** | **0.066075** | **0.066075** | **OK** |
| **BP DL** | **0.030244** | **0.030244** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.009028** | **0.009028** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.006944** | **0.006944** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133484** | **2.133484** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.483352** | **11.483352** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.771547** | **0.771547** | **OK** |
| **Chem Rec Factor** | **1.079086** | **1.079086** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.329208** | **0.329208** | **OK** |
| **K MDA** | **474.059510** | **474.059510** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-02 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_1B |
| **Instr keV** | 7.324903965 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 8.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2751.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.026100 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680355.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.013338** | **0.013338** | **OK** |
| **CU** | **0.011204** | **0.011204** | **OK** |
| **TPU** | **0.011319** | **0.011319** | **OK** |
| **MDA** | **0.014029** | **0.014029** | **OK** |
| **DL** | **0.004433** | **0.004433** | **OK** |
| **BP MDA** | **0.235776** | **0.235776** | **OK** |
| **BP DL** | **0.115554** | **0.115554** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.005556** | **0.005556** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133472** | **2.133472** | **OK** |
| **DF** | **0.997885** | **0.997885** | **OK** |
| **Tracer DPM** | **11.496797** | **11.496797** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.764892** | **0.764892** | **OK** |
| **Chem Rec Factor** | **1.069778** | **1.069778** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.364468** | **0.364468** | **OK** |
| **K MDA** | **524.833449** | **524.833449** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 4.912463665 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 80.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2751.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.026100 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.140135** | **0.140135** | **OK** |
| **CU** | **0.034421** | **0.034421** | **OK** |
| **TPU** | **0.038362** | **0.038362** | **OK** |
| **MDA** | **0.026714** | **0.026714** | **OK** |
| **DL** | **0.010791** | **0.010791** | **OK** |
| **BP MDA** | **0.381257** | **0.381257** | **OK** |
| **BP DL** | **0.188467** | **0.188467** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.055556** | **0.055556** | **OK** |
| **BKG Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Net Count Rate** | **0.051389** | **0.051389** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133472** | **2.133472** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.496797** | **11.496797** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.764892** | **0.764892** | **OK** |
| **Chem Rec Factor** | **1.069778** | **1.069778** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.366710** | **0.366710** | **OK** |
| **K MDA** | **528.062447** | **528.062447** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 7.204946995 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216391 |
| Sample Aliquot | 1.000000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 5-26-11 10:55 AM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2751.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 11.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.026100 |
| Tracer EFF | 0.216391 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.017009** | **0.017009** | **OK** |
| **CU** | **0.013356** | **0.013356** | **OK** |
| **TPU** | **0.013513** | **0.013513** | **OK** |
| **MDA** | **0.017557** | **0.017557** | **OK** |
| **DL** | **0.006218** | **0.006218** | **OK** |
| **BP MDA** | **0.065480** | **0.065480** | **OK** |
| **BP DL** | **0.030244** | **0.030244** | **OK** |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.006250** | **0.006250** | **OK** |
| **Δ t 1 (t2 - t1)** | **2.133472** | **2.133472** | **OK** |
| **QF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.496797** | **11.496797** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.764892** | **0.764892** | **OK** |
| **Chem Rec Factor** | **1.069778** | **1.069778** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.367445** | **0.367445** | **OK** |
| **K MDA** | **529.120716** | **529.120716** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-03 |
| **Analysis Code** | |
| **SDG** | QC Sample |
| **Fraction** | N/A QC Sample |
| **Client** | QC Sample |
| **Client Profile** | |
| **Client ID** | N/A QC Sample |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2A |
| **Instr keV** | 4.912463665 |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 3.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 666.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.049812** | **0.049812** | **OK** |
| **CU** | **0.056367** | **0.056367** | **OK** |
| **TPU** | **0.056688** | **0.056688** | **OK** |
| **MDA** | **0.044997** | **0.044997** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.522979** | **0.522979** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.002083** | **0.002083** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.179298** | **0.179298** | **OK** |
| **Chem Rec Factor** | **0.250766** | **0.250766** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.041824** | **0.041824** | **OK** |
| **K MDA** | **60.226691** | **60.226691** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2B |
| **Instr keV** | 4.888912201 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 15.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 666.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.207010** | **0.207010** | **OK** |
| **CU** | **0.128685** | **0.128685** | **OK** |
| **TPU** | **0.131095** | **0.131095** | **OK** |
| **MDA** | **0.147933** | **0.147933** | **OK** |
| **DL** | **0.052390** | **0.052390** | **OK** |
| **BP MDA** | **0.795405** | **0.795405** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.010417** | **0.010417** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.009028** | **0.009028** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.179298** | **0.179298** | **OK** |
| **Chem Rec Factor** | **0.250766** | **0.250766** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.043610** | **0.043610** | **OK** |
| **K MDA** | **62.798771** | **62.798771** | **OK** |
| | | | |

| **Batch Identifiers and Other Related Information** | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_28 |
| **Instr keV** | 5.703730583 |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 2.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.219564 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 666.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 15.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.025000 |
| Tracer EFF | 0.219564 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.015892** | **-0.015892** | **OK** |
| **CU** | **0.069650** | **0.069650** | **OK** |
| **TPU** | **0.069676** | **0.069676** | **OK** |
| **MDA** | **0.171138** | **0.171138** | **OK** |
| **DL** | **0.064035** | **0.064035** | **OK** |
| **BP MDA** | **0.163784** | **0.163784** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.001389** | **0.001389** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **-0.000694** | **-0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.484472** | **11.484472** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.179298** | **0.179298** | **OK** |
| **Chem Rec Factor** | **0.250766** | **0.250766** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.043698** | **0.043698** | **OK** |
| **K MDA** | **62.924680** | **62.924680** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-04 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 014 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | PR-SW-01-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_2B |
| **Instr keV** | 4.888912201 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 7.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 862.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.017200 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.087618** | **0.087618** | **OK** |
| **CU** | **0.064908** | **0.064908** | **OK** |
| **TPU** | **0.065766** | **0.065766** | **OK** |
| **MDA** | **0.033921** | **0.033921** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.511903** | **0.511903** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004861** | **0.004861** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.397078** | **11.397078** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.246132** | **0.246132** | **OK** |
| **Chem Rec Factor** | **0.344240** | **0.344240** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.055481** | **0.055481** | **OK** |
| **K MDA** | **79.892562** | **79.892562** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-05 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 015 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | SS-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_3A | | |
| **Instr keV** | 4.911292076 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 49.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 862.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.017200 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26830555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.528183** | **0.528183** | **OK** |
| **CU** | **0.172896** | **0.172896** | **OK** |
| **TPU** | **0.184304** | **0.184304** | **OK** |
| **MDA** | **0.157421** | **0.157421** | **OK** |
| **DL** | **0.062445** | **0.062445** | **OK** |
| **BP MDA** | **0.784783** | **0.784783** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.034028** | **0.034028** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.030556** | **0.030556** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.397078** | **11.397078** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.246132** | **0.246132** | **OK** |
| **Chem Rec Factor** | **0.344240** | **0.344240** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.057850** | **0.057850** | **OK** |
| **K MDA** | **83.304505** | **83.304505** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-05 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 015 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RB-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_3A | | |
| **Instr keV** | 9.822584152 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** RLW **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 21.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.212170 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 862.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.017200 |
| Tracer EFF | 0.212170 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **-0.143762** | **-0.143762** | **OK** |
| **CU** | **0.128611** | **0.128611** | **OK** |
| **TPU** | **0.129779** | **0.129779** | **OK** |
| **MDA** | **0.287902** | **0.287902** | **OK** |
| **DL** | **0.127718** | **0.127718** | **OK** |
| **BP MDA** | **0.153183** | **0.153183** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.014583** | **0.014583** | **OK** |
| **Net Count Rate** | **-0.008333** | **-0.008333** | **OK** |
| **$\Delta$ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.397078** | **11.397078** | **OK** |
| **Tracer $\Delta$t** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.246132** | **0.246132** | **OK** |
| **Chem Rec Factor** | **0.344240** | **0.344240** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.057966** | **0.057966** | **OK** |
| **K MDA** | **83.471528** | **83.471528** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-05 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 015 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RB-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_3A | | |
| **Instr keV** | 4.911292076 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 10.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 4220.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.025370** | **0.025370** | **OK** |
| **CU** | **0.015724** | **0.015724** | **OK** |
| **TPU** | **0.016020** | **0.016020** | **OK** |
| **MDA** | **0.006875** | **0.006875** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.484383** | **0.484383** | **OK** |
| **BP DL** | **0.239268** | **0.239268** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006944** | **0.006944** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.006944** | **0.006944** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **0.963857** | **0.963857** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **1.248809** | **1.248809** | **OK** |
| **Chem Rec Factor** | **1.746586** | **1.746586** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.273731** | **0.273731** | **OK** |
| **K MDA** | **394.172756** | **394.172756** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 016 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-02-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_36 |
| **Instr keV** | 4.913847923 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 150.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 5.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- tICF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 4220.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.353143** | **0.353143** | **OK** |
| **CU** | **0.059430** | **0.059430** | **OK** |
| **TPU** | **0.073168** | **0.073168** | **OK** |
| **MDA** | **0.031938** | **0.031938** | **OK** |
| **DL** | **0.012669** | **0.012669** | **OK** |
| **BP MDA** | **0.758852** | **0.758852** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.104167** | **0.104167** | **OK** |
| **BKG Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Net Count Rate** | **0.100694** | **0.100694** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **1.248809** | **1.248809** | **OK** |
| **Chem Rec Factor** | **1.746586** | **1.746586** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.285138** | **0.285138** | **OK** |
| **K MDA** | **410.598826** | **410.598826** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-06 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 016 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RB-02-110421 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_3B | | |
| **Instr keV** | 41.76770782 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.206113 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 4220.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.015500 |
| Tracer EFF | 0.206113 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2690553.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.019445** | **0.019445** | **OK** |
| **CU** | **0.017825** | **0.017825** | **OK** |
| **TPU** | **0.017979** | **0.017979** | **OK** |
| **MDA** | **0.026175** | **0.026175** | **OK** |
| **DL** | **0.009794** | **0.009794** | **OK** |
| **BP MDA** | **0.127304** | **0.127304** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.005556** | **0.005556** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.378031** | **11.378031** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **1.248809** | **1.248809** | **OK** |
| **Chem Rec Factor** | **1.746586** | **1.746586** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.285710** | **0.285710** | **OK** |
| **K MDA** | **411.422054** | **411.422054** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-06 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00397 |
| **Fraction** | 016 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RB-02-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_3B |
| **Instr keV** | 4.913847923 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

350001191

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 8.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014600 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.023327** | **0.023327** | **OK** |
| **CU** | **0.024097** | **0.024097** | **OK** |
| **TPU** | **0.024262** | **0.024262** | **OK** |
| **MDA** | **0.036119** | **0.036119** | **OK** |
| **DL** | **0.012791** | **0.012791** | **OK** |
| **BP MDA** | **0.488519** | **0.488519** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.005556** | **0.005556** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.367947** | **11.367947** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.744146** | **0.744146** | **OK** |
| **Chem Rec Factor** | **1.040763** | **1.040763** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.178617** | **0.178617** | **OK** |
| **K MDA** | **257.208578** | **257.208578** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-07 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 017 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-JM-SW-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_L_4A | | |
| **Instr keV** | 7.365706444 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 71.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014600 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.253549** | **0.253549** | **OK** |
| **CU** | **0.062867** | **0.062867** | **OK** |
| **TPU** | **0.069938** | **0.069938** | **OK** |
| **MDA** | **0.040153** | **0.040153** | **OK** |
| **DL** | **0.015024** | **0.015024** | **OK** |
| **BP MDA** | **0.762356** | **0.762356** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.049306** | **0.049306** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.047222** | **0.047222** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.367947** | **11.367947** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.744146** | **0.744146** | **OK** |
| **Chem Rec Factor** | **1.040763** | **1.040763** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.186245** | **0.186245** | **OK** |
| **K MDA** | **268.193094** | **268.193094** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-07 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 017 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-JM-SW-02-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_4A | | |
| **Instr keV** | 6.301770687 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 7.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2756.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014600 |
| Tracer EFF | 0.225930 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.022327** | **0.022327** | **OK** |
| **CU** | **0.020629** | **0.020629** | **OK** |
| **TPU** | **0.020805** | **0.020805** | **OK** |
| **MDA** | **0.027398** | **0.027398** | **OK** |
| **DL** | **0.008657** | **0.008657** | **OK** |
| **BP MDA** | **0.130801** | **0.130801** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004861** | **0.004861** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.367947** | **11.367947** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.744146** | **0.744146** | **OK** |
| **Chem Rec Factor** | **1.040763** | **1.040763** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.186619** | **0.186619** | **OK** |
| **K MDA** | **268.730813** | **268.730813** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-07 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 017 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-02-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4A |
| **Instr keV** | 4.910470963 |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225930 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi := UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2609.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.019655** | **0.019655** | **OK** |
| **CU** | **0.017229** | **0.017229** | **OK** |
| **TPU** | **0.017392** | **0.017392** | **OK** |
| **MDA** | **0.010653** | **0.010653** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.488636** | **0.488636** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.003472** | **0.003472** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.735975** | **0.735975** | **OK** |
| **Chem Rec Factor** | **1.029335** | **1.029335** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176656** | **0.176656** | **OK** |
| **K MDA** | **254.384327** | **254.384327** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-08 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 018 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_48 |
| **Instr keV** | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 56.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2609.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.208567** | **0.208567** | **OK** |
| **CU** | **0.059249** | **0.059249** | **OK** |
| **TPU** | **0.064385** | **0.064385** | **OK** |
| **MDA** | **0.042378** | **0.042378** | **OK** |
| **DL** | **0.015857** | **0.015857** | **OK** |
| **BP MDA** | **0.762916** | **0.762916** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.038889** | **0.038889** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.036806** | **0.036806** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.735975** | **0.735975** | **OK** |
| **Chem Rec Factor** | **1.029335** | **1.029335** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176469** | **0.176469** | **OK** |
| **K MDA** | **254.115102** | **254.115102** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-08 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 018 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-IM-SW-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_48 | | |
| **Instr keV** | 7.335418701 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-24

350001196

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.216447 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2609.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.014000 |
| Tracer EFF | 0.216447 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.035346** | **0.035346** | **OK** |
| **CU** | **0.027754** | **0.027754** | **OK** |
| **TPU** | **0.028081** | **0.028081** | **OK** |
| **MDA** | **0.036485** | **0.036485** | **OK** |
| **DL** | **0.012921** | **0.012921** | **OK** |
| **BP MDA** | **0.131360** | **0.131360** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.006250** | **0.006250** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.361224** | **11.361224** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.735975** | **0.735975** | **OK** |
| **Chem Rec Factor** | **1.029335** | **1.029335** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176823** | **0.176823** | **OK** |
| **K MDA** | **254.624595** | **254.624595** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-08 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 018 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_4B |
| **Instr keV** | 7.335418701 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2727.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013800 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.023572** | **0.023572** | **OK** |
| **CU** | **0.026674** | **0.026674** | **OK** |
| **TPU** | **0.026826** | **0.026826** | **OK** |
| **MDA** | **0.042307** | **0.042307** | **OK** |
| **DL** | **0.015830** | **0.015830** | **OK** |
| **BP MDA** | **0.489104** | **0.489104** | **OK** |
| **BP DL** | **0.239743** | **0.239743** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.961946** | **0.961946** | **OK** |
| **Tracer DPM** | **11.358983** | **11.358983** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.796069** | **0.796069** | **OK** |
| **Chem Rec Factor** | **1.113383** | **1.113383** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176764** | **0.176764** | **OK** |
| **K MDA** | **254.539764** | **254.539764** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-09 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 019 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-SW-BG-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_5A | | |
| **Instr keV** | 4.889725208 | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

350001198

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 58.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi <-- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2727.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013800 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.207021** | **0.207021** | **OK** |
| **CU** | **0.057620** | **0.057620** | **OK** |
| **TPU** | **0.062818** | **0.062818** | **OK** |
| **MDA** | **0.040534** | **0.040534** | **OK** |
| **DL** | **0.015167** | **0.015167** | **OK** |
| **BP MDA** | **0.762452** | **0.762452** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.040278** | **0.040278** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.038194** | **0.038194** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.358983** | **11.358983** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.796069** | **0.796069** | **OK** |
| **Chem Rec Factor** | **1.113383** | **1.113383** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.184496** | **0.184496** | **OK** |
| **K MDA** | **265.673860** | **265.673860** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-09 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 019 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RM-SW-BG-110419 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_SA | | |
| **Instr keV** | 10.4314146 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.209210 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2727.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013800 |
| Tracer EFF | 0.209210 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.026295** | **0.026295** | **OK** |
| **CU** | **0.024419** | **0.024419** | **OK** |
| **TPU** | **0.024625** | **0.024625** | **OK** |
| **MDA** | **0.034898** | **0.034898** | **OK** |
| **DL** | **0.012359** | **0.012359** | **OK** |
| **BP MDA** | **0.130897** | **0.130897** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.358983** | **11.358983** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.796069** | **0.796069** | **OK** |
| **Chem Rec Factor** | **1.113383** | **1.113383** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.184866** | **0.184866** | **OK** |
| **K MDA** | **266.206534** | **266.206534** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-09 |
| **Analysis Code** | ASP-A-008 |
| **SOG** | ARS1-11-00897 |
| **Fraction** | 019 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RM-SW-BG-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_SA |
| **Instr keV** | 4.889725208 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-024e |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2652.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013200 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| ACT | 0.016146 | 0.016146 | OK |
| CU | 0.022377 | 0.022377 | OK |
| TPU | 0.022462 | 0.022462 | OK |
| MDA | 0.037499 | 0.037499 | OK |
| DL | 0.013280 | 0.013280 | OK |
| BP MDA | 0.488921 | 0.488921 | OK |
| BP DL | 0.239505 | 0.239505 | OK |
| | | | |
| DL QSAS | | | |
| Gross Count Rate | 0.004167 | 0.004167 | OK |
| BKG Count Rate | 0.001389 | 0.001389 | OK |
| Net Count Rate | 0.002778 | 0.002778 | OK |
| Δ t 1 (t2 - t1) | 38.088889 | 38.088889 | OK |
| DF | 0.962901 | 0.962901 | OK |
| Tracer DPM | 11.352261 | 11.352261 | OK |
| Tracer Δt | 250.070139 | 250.070139 | OK |
| Tracer DF | 0.999935 | 0.999935 | OK |
| Tracer Recovery | 0.790942 | 0.790942 | OK |
| Chem Rec Factor | 1.106213 | 1.106213 | OK |
| Sys Err | 0.061664 | 0.061664 | OK |
| K | 0.172039 | 0.172039 | OK |
| K MDA | 247.736864 | 247.736864 | OK |

| Batch Identifiers and Other Related Information | |
|---|---|
| Batch | ARS1-B11-01985 |
| Batch ID | ARS1-B11-01985-10 |
| Analysis Code | ASP-A-008 |
| SDG | ARS1-11-00897 |
| Fraction | 020 |
| Client | Summit Environmental Technologies |
| Client Profile | Cuyahoga Falls |
| Client ID | RP-JM-SW-01-110420 |
| Instr File Name | ApexAlpha |
| Instr Detector | A_1_5B |
| Instr keV | 4.906514168 |
| | |
| | |
| Version/Date | 2.0 -- 4/20/2006 |

Reviewed by: _____ Date: 6/7/1

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 73.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 6.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2652.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013200 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.259371** | **0.259371** | **OK** |
| **CU** | **0.067440** | **0.067440** | **OK** |
| **TPU** | **0.074369** | **0.074369** | **OK** |
| **MDA** | **0.054611** | **0.054611** | **OK** |
| **DL** | **0.022060** | **0.022060** | **OK** |
| **BP MDA** | **0.762743** | **0.762743** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.050694** | **0.050694** | **OK** |
| **BKG Count Rate** | **0.004167** | **0.004167** | **OK** |
| **Net Count Rate** | **0.046528** | **0.046528** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.352261** | **11.352261** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.790942** | **0.790942** | **OK** |
| **Chem Rec Factor** | **1.106213** | **1.106213** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.179387** | **0.179387** | **OK** |
| **K MDA** | **258.316876** | **258.316876** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-10 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 020 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JM-SW-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_SB | | |
| **Instr keV** | 12.67516136 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | 5-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2652.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 5.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013200 |
| Tracer EFF | 0.204735 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | 0.030908 | 0.030908 | OK |
| **CU** | 0.023946 | 0.023946 | OK |
| **TPU** | 0.024236 | 0.024236 | OK |
| **MDA** | 0.028446 | 0.028446 | OK |
| **DL** | 0.008988 | 0.008988 | OK |
| **BP MDA** | 0.131187 | 0.131187 | OK |
| **BP DL** | 0.060488 | 0.060488 | OK |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | 0.006250 | 0.006250 | OK |
| **BKG Count Rate** | 0.000694 | 0.000694 | OK |
| **Net Count Rate** | 0.005556 | 0.005556 | OK |
| **Δ t 1 (t2 - t1)** | 38.088889 | 38.088889 | OK |
| **DF** | 1.000000 | 1.000000 | OK |
| **Tracer DPM** | 11.352261 | 11.352261 | OK |
| **Tracer Δt** | 250.070139 | 250.070139 | OK |
| **Tracer DF** | 0.999935 | 0.999935 | OK |
| **Tracer Recovery** | 0.790942 | 0.790942 | OK |
| **Chem Rec Factor** | 1.106213 | 1.106213 | OK |
| **Sys Err** | 0.061664 | 0.061664 | OK |
| **K** | 0.179746 | 0.179746 | OK |
| **K MDA** | 258.834793 | 258.834793 | OK |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-I0 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 020 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JM-SW-01-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_58 | | |
| **Instr keV** | 4.906514168 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-7-11

350001203

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.204735 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2616.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012900 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.004494** | **0.004494** | **OK** |
| **CU** | **0.026426** | **0.026426** | **OK** |
| **TPU** | **0.026432** | **0.026432** | **OK** |
| **MDA** | **0.054001** | **0.054001** | **OK** |
| **DL** | **0.020911** | **0.020911** | **OK** |
| **BP MDA** | **0.490162** | **0.490162** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.348899** | **11.348899** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.710389** | **0.710389** | **OK** |
| **Chem Rec Factor** | **0.993551** | **0.993551** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.154518** | **0.154518** | **OK** |
| **K MDA** | **222.506143** | **222.506143** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 021 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 62.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.993000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2616.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012900 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.227472** | **0.227472** | **OK** |
| **CU** | **0.062449** | **0.062449** | **OK** |
| **TPU** | **0.068233** | **0.068233** | **OK** |
| **MDA** | **0.047124** | **0.047124** | **OK** |
| **DL** | **0.018248** | **0.018248** | **OK** |
| **BP MDA** | **0.762680** | **0.762680** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.043056** | **0.043056** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.040278** | **0.040278** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.348899** | **11.348899** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.710389** | **0.710389** | **OK** |
| **Chem Rec Factor** | **0.993551** | **0.993551** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.177067** | **0.177067** | **OK** |
| **K MDA** | **254.976773** | **254.976773** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-11 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 021 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | BP-JM-SW-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6A |
| **Instr keV** | 14.25100708 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 15.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.225003 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2616.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 4.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012900 |
| Tracer EFF | 0.225003 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.029816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.046969** | **0.046969** | **OK** |
| **CU** | **0.032548** | **0.032548** | **OK** |
| **TPU** | **0.033039** | **0.033039** | **OK** |
| **MDA** | **0.042150** | **0.042150** | **OK** |
| **DL** | **0.015771** | **0.015771** | **OK** |
| **BP MDA** | **0.131324** | **0.131324** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.010417** | **0.010417** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.008333** | **0.008333** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.348899** | **11.348899** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.710389** | **0.710389** | **OK** |
| **Chem Rec Factor** | **0.993551** | **0.993551** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.177422** | **0.177422** | **OK** |
| **K MDA** | **255.487994** | **255.487994** | **OK** |
| | | | |
| **Batch Identifiers and Other Related Information** | | | |
| **Batch** | ARS1-B11-01985 | | |
| **Batch ID** | ARS1-B11-01985-11 | | |
| **Analysis Code** | ASP-A-008 | | |
| **SDG** | ARS1-11-00897 | | |
| **Fraction** | 021 | | |
| **Client** | Summit Environmental Technologies | | |
| **Client Profile** | Cuyahoga Falls | | |
| **Client ID** | RP-JM-SW-110420 | | |
| **Instr File Name** | ApexAlpha | | |
| **Instr Detector** | A_1_GA | | |
| **Instr keV** | 4.886059284 | | |
| | | | |
| | | | |
| **Version/Date** | 2.0 -- 4/20/2006 | | |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 7.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2583.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013100 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.029004** | **0.029004** | **OK** |
| **CU** | **0.021487** | **0.021487** | **OK** |
| **TPU** | **0.021771** | **0.021771** | **OK** |
| **MDA** | **0.011229** | **0.011229** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.489686** | **0.489686** | **OK** |
| **BP DL** | **0.239743** | **0.239743** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004861** | **0.004861** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.961946** | **0.961946** | **OK** |
| **Tracer DPM** | **11.351140** | **11.351140** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.704020** | **0.704020** | **OK** |
| **Chem Rec Factor** | **0.984643** | **0.984643** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.167600** | **0.167600** | **OK** |
| **K MDA** | **241.344002** | **241.344002** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 022 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-01-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6B |
| **Instr keV** | 4.899281502 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

350001207

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 128.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2583.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013100 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.500197** | **0.500197** | **OK** |
| **CU** | **0.088715** | **0.088715** | **OK** |
| **TPU** | **0.107355** | **0.107355** | **OK** |
| **MDA** | **0.036880** | **0.036880** | **OK** |
| **DL** | **0.013061** | **0.013061** | **OK** |
| **BP MDA** | **0.763010** | **0.763010** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.088889** | **0.088889** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.087500** | **0.087500** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.351140** | **11.351140** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.704020** | **0.704020** | **OK** |
| **Chem Rec Factor** | **0.984643** | **0.984643** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.174931** | **0.174931** | **OK** |
| **K MDA** | **251.900888** | **251.900888** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 022 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-01-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_6B |
| **Instr keV** | 8.340443611 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 17.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.224300 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2583.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 2.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013100 |
| Tracer EFF | 0.224300 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.067352** | **0.067352** | **OK** |
| **CU** | **0.032017** | **0.032017** | **OK** |
| **TPU** | **0.033036** | **0.033036** | **OK** |
| **MDA** | **0.010737** | **0.010737** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.131453** | **0.131453** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.011806** | **0.011806** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.011806** | **0.011806** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.351140** | **11.351140** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.704020** | **0.704020** | **OK** |
| **Chem Rec Factor** | **0.984643** | **0.984643** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.175282** | **0.175282** | **OK** |
| **K MDA** | **252.405947** | **252.405947** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-12 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 022 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-01-110419 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_1_68 |
| **Instr keV** | 4.899281502 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

350001209

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 6.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2383.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013400 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.017964** | **0.017964** | **OK** |
| **CU** | **0.024897** | **0.024897** | **OK** |
| **TPU** | **0.024991** | **0.024991** | **OK** |
| **MDA** | **0.041721** | **0.041721** | **OK** |
| **DL** | **0.014775** | **0.014775** | **OK** |
| **BP MDA** | **0.490628** | **0.490628** | **OK** |
| **BP DL** | **0.239743** | **0.239743** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.004167** | **0.004167** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.961946** | **0.961946** | **OK** |
| **Tracer DPM** | **11.354501** | **11.354501** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.660679** | **0.660679** | **OK** |
| **Chem Rec Factor** | **0.924027** | **0.924027** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.154632** | **0.154632** | **OK** |
| **K MDA** | **222.669984** | **222.669984** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 023 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-BG-041911 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 4.908117771 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** dlw **Date:** 6-27

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 60.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.056330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2383.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013400 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.245256** | **0.245256** | **OK** |
| **CU** | **0.066938** | **0.066938** | **OK** |
| **TPU** | **0.073207** | **0.073207** | **OK** |
| **MDA** | **0.046335** | **0.046335** | **OK** |
| **DL** | **0.017338** | **0.017338** | **OK** |
| **BP MDA** | **0.763912** | **0.763912** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.041667** | **0.041667** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.039583** | **0.039583** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.354501** | **11.354501** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.660679** | **0.660679** | **OK** |
| **Chem Rec Factor** | **0.924027** | **0.924027** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.161396** | **0.161396** | **OK** |
| **K MDA** | **232.410030** | **232.410030** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 023 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-BG-041911 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 6.441904545 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 5.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.220520 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-19-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2383.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.013400 |
| Tracer EFF | 0.220520 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| 0 **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.012882** | **0.012882** | **OK** |
| **CU** | **0.022268** | **0.022268** | **OK** |
| **TPU** | **0.022322** | **0.022322** | **OK** |
| **MDA** | **0.039892** | **0.039892** | **OK** |
| **DL** | **0.014128** | **0.014128** | **OK** |
| **BP MDA** | **0.132354** | **0.132354** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.003472** | **0.003472** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Δ t 1 (t2 - t1)** | **39.088889** | **39.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.354501** | **11.354501** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.660679** | **0.660679** | **OK** |
| **Chem Rec Factor** | **0.924027** | **0.924027** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.161719** | **0.161719** | **OK** |
| **K MDA** | **232.876010** | **232.876010** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-13 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 023 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | RP-SW-BG-041911 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1A |
| **Instr keV** | 4.908117771 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-7-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 36.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 3.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2596.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012700 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.135673** | **0.135673** | **OK** |
| **CU** | **0.050323** | **0.050323** | **OK** |
| **TPU** | **0.052927** | **0.052927** | **OK** |
| **MDA** | **0.044274** | **0.044274** | **OK** |
| **DL** | **0.016566** | **0.016566** | **OK** |
| **BP MDA** | **0.488650** | **0.488650** | **OK** |
| **BP DL** | **0.239268** | **0.239268** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.025000** | **0.025000** | **OK** |
| **BKG Count Rate** | **0.002083** | **0.002083** | **OK** |
| **Net Count Rate** | **0.022917** | **0.022917** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **0.963857** | **0.963857** | **OK** |
| **Tracer DPM** | **11.346658** | **11.346658** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.739534** | **0.739534** | **OK** |
| **Chem Rec Factor** | **1.034313** | **1.034313** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.168911** | **0.168911** | **OK** |
| **K MDA** | **243.231313** | **243.231313** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-14 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 024 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | SPOR35-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1B |
| **Instr keV** | 11.46585655 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

350001213

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 142.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2596.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012700 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.556504** | **0.556504** | **OK** |
| **CU** | **0.092507** | **0.092507** | **OK** |
| **TPU** | **0.114374** | **0.114374** | **OK** |
| **MDA** | **0.029060** | **0.029060** | **OK** |
| **DL** | **0.009182** | **0.009182** | **OK** |
| **BP MDA** | **0.762948** | **0.762948** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.098611** | **0.098611** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.097917** | **0.097917** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.346658** | **11.346658** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.739534** | **0.739534** | **OK** |
| **Chem Rec Factor** | **1.034313** | **1.034313** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.175950** | **0.175950** | **OK** |
| **K MDA** | **253.367311** | **253.367311** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-14 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 024 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | SPOP35-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_1B |
| **Instr keV** | 31.91736603 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27

350001214

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 13.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 1.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.214772 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-21-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --> UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2596.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 1.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.012700 |
| Tracer EFF | 0.214772 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.047267** | **0.047267** | **OK** |
| **CU** | **0.028887** | **0.028887** | **OK** |
| **TPU** | **0.029446** | **0.029446** | **OK** |
| **MDA** | **0.029001** | **0.029001** | **OK** |
| **DL** | **0.009163** | **0.009163** | **OK** |
| **BP MDA** | **0.131391** | **0.131391** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.009028** | **0.009028** | **OK** |
| **BKG Count Rate** | **0.000694** | **0.000694** | **OK** |
| **Net Count Rate** | **0.008333** | **0.008333** | **OK** |
| **Δ t 1 (t2 - t1)** | **37.088889** | **37.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.346658** | **11.346658** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.739534** | **0.739534** | **OK** |
| **Chem Rec Factor** | **1.034313** | **1.034313** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.176302** | **0.176302** | **OK** |
| **K MDA** | **253.875298** | **253.875298** | **OK** |
| | | | |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-14 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 024 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | SPOP35-110421 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_16 |
| **Instr keV** | 4.879087925 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27-11

350001215

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 9.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 2.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.994000 |
| Halflife Days 1 - Result Isotope | 698.356481 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011100 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.109866 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-228 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.029618** | **0.029618** | **OK** |
| **CU** | **0.027505** | **0.027505** | **OK** |
| **TPU** | **0.027737** | **0.027737** | **OK** |
| **MDA** | **0.039308** | **0.039308** | **OK** |
| **DL** | **0.013921** | **0.013921** | **OK** |
| **BP MDA** | **0.489449** | **0.489449** | **OK** |
| **BP DL** | **0.239505** | **0.239505** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.006250** | **0.006250** | **OK** |
| **BKG Count Rate** | **0.001389** | **0.001389** | **OK** |
| **Net Count Rate** | **0.004861** | **0.004861** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.962901** | **0.962901** | **OK** |
| **Tracer DPM** | **11.328731** | **11.328731** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.692171** | **0.692171** | **OK** |
| **Chem Rec Factor** | **0.968071** | **0.968071** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.164125** | **0.164125** | **OK** |
| **K MDA** | **236.340585** | **236.340585** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 4.902958393 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-21

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 120.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 4.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi --- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 0.998000 |
| Halflife Days 1 - Result Isotope | 27534722.222222 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011100 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 26805555.5556 |
| Sb | 0.179570 |
| Activity Units | pCi |
| Aliquot Units | L |
| | |
| | |
| **Variables Intact Test** | **OK** |

| Isotope | TH-230 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.470714** | **0.470714** | **OK** |
| **CU** | **0.088566** | **0.088566** | **OK** |
| **TPU** | **0.105264** | **0.105264** | **OK** |
| **MDA** | **0.048758** | **0.048758** | **OK** |
| **DL** | **0.018880** | **0.018880** | **OK** |
| **BP MDA** | **0.763248** | **0.763248** | **OK** |
| **BP DL** | **0.376935** | **0.376935** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.083333** | **0.083333** | **OK** |
| **BKG Count Rate** | **0.002778** | **0.002778** | **OK** |
| **Net Count Rate** | **0.080556** | **0.080556** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **0.999999** | **0.999999** | **OK** |
| **Tracer DPM** | **11.328731** | **11.328731** | **OK** |
| **Tracer At** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.692171** | **0.692171** | **OK** |
| **Chem Rec Factor** | **0.968071** | **0.968071** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.171135** | **0.171135** | **OK** |
| **K MDA** | **246.433900** | **246.433900** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00097 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 9.805916786 |
| | |
| | |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-2-11

| Procedure | ARS-031 |
|---|---|
| **Variable** | **Value** |
| Counts | 11.000000 |
| Count Mins | 1440.000000 |
| BKG Counts | 0.000000 |
| BKG Mins | 1440.000000 |
| Instrument Efficiency | 0.223188 |
| Sample Aliquot | 0.500000 |
| Aliquot Conversion Factor | 1.000000 |
| Sample Collection Date (t1) | 4-20-11 12:00 PM |
| Midpoint Count Date (t2) | 5-28-11 2:08 PM |
| Activity Units = pCi -- UCF = | 2.2200 |
| CF | 1.9600 |
| Nuclide Abundance | 1.000000 |
| Halflife Days 1 - Result Isotope | 5131944444444.440000 |
| TPUF_Calibration Factor | 0.000000 |
| TPUF_Aliquoting Factor | 0.020000 |
| TPUF_Yield Factor | 0.058330 |
| TPUF_Decay Ingrowth Factor | 0.000000 |
| TPUF_Analysis Factor | 0.000000 |
| TPUF_Unassigned Factor | 0.000000 |
| Tracer ID | S-0246 |
| Tracer Std - Isotope | Th-229 |
| Tracer Counts | 2523.000000 |
| Tracer Count Mins | 1440.000000 |
| Tracer BKG Counts | 3.000000 |
| Tracer BKG Mins | 1440.000000 |
| Tracer Ref Date | 9-20-10 12:27 PM |
| Tracer DPM/g | 11.2044 |
| Tracer Net Wt Added g | 1.011100 |
| Tracer EFF | 0.223188 |
| Tracer Plating Rec | 0.715000 |
| Tracer Abundance | 1.000000 |
| Tracer Halflife Days | 2680555.5556 |
| Sb | 0.028816 |
| Activity Units | pCi |
| Aliquot Units | L |
| **Variables Intact Test** | **OK** |

| Isotope | TH-232 | | |
|---|---|---|---|
| **Calculated Values** | **Excel** | **VBA** | **V/V** |
| **ACT** | **0.044547** | **0.044547** | **OK** |
| **CU** | **0.026326** | **0.026326** | **OK** |
| **TPU** | **0.026871** | **0.026871** | **OK** |
| **MDA** | **0.010975** | **0.010975** | **OK** |
| **DL** | **0.000000** | **0.000000** | **OK** |
| **BP MDA** | **0.131692** | **0.131692** | **OK** |
| **BP DL** | **0.060488** | **0.060488** | **OK** |
| | | | |
| **DL QSAS** | | | |
| **Gross Count Rate** | **0.007639** | **0.007639** | **OK** |
| **BKG Count Rate** | **0.000000** | **0.000000** | **OK** |
| **Net Count Rate** | **0.007639** | **0.007639** | **OK** |
| **Δ t 1 (t2 - t1)** | **38.088889** | **38.088889** | **OK** |
| **DF** | **1.000000** | **1.000000** | **OK** |
| **Tracer DPM** | **11.328731** | **11.328731** | **OK** |
| **Tracer Δt** | **250.070139** | **250.070139** | **OK** |
| **Tracer DF** | **0.999935** | **0.999935** | **OK** |
| **Tracer Recovery** | **0.692171** | **0.692171** | **OK** |
| **Chem Rec Factor** | **0.968071** | **0.968071** | **OK** |
| **Sys Err** | **0.061664** | **0.061664** | **OK** |
| **K** | **0.171478** | **0.171478** | **OK** |
| **K MDA** | **246.927992** | **246.927992** | **OK** |

| Batch Identifiers and Other Related Information | |
|---|---|
| **Batch** | ARS1-B11-01985 |
| **Batch ID** | ARS1-B11-01985-15 |
| **Analysis Code** | ASP-A-008 |
| **SDG** | ARS1-11-00897 |
| **Fraction** | 025 |
| **Client** | Summit Environmental Technologies |
| **Client Profile** | Cuyahoga Falls |
| **Client ID** | MW-RM-110420 |
| **Instr File Name** | ApexAlpha |
| **Instr Detector** | A_2_2A |
| **Instr keV** | 4.902958393 |
| **Version/Date** | 2.0 -- 4/20/2006 |

**Reviewed by:** _____ **Date:** 6-27

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

# American Radiation Services Analytical Reports

for

# Summit Environmental Technologies

# Thorium Alpha Spectroscopy Laboratory Records

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01657**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **Method** | **ARS-031** | **Analysis** | | **ASP-A-008** | **Matrix** | **AQ** |
| | | | | **Description** | **Thorium in Water** | | | | | |
| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
| ARS1-B11-01657-01 | LCS | B-11678 | | | | | | | | |
| ARS1-B11-01657-02 | LCSD | B-11679 | | | | | | | | |
| ARS1-B11-01657-03 | MBL | | | | | | | | | |
| ARS1-B11-01657-04 | TRG | | | | **ARS1-11-00897** | 001 | 1 | MW-1-110419 | STD | 05/03/11 |
| ARS1-B11-01657-05 | TRG | | | | **ARS1-11-00897** | 002 | 1 | MW-2-110421 | STD | 05/03/11 |
| ARS1-B11-01657-06 | TRG | | | | **ARS1-11-00897** | 003 | 1 | MW-2-2-110421 | STD | 05/03/11 |
| ARS1-B11-01657-07 | TRG | | | | **ARS1-11-00897** | 004 | 1 | JPOP41S-110421 | STD | 05/03/11 |
| ARS1-B11-01657-08 | TRG | | | | **ARS1-11-00897** | 005 | 1 | MD-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01657-09 | TRG | | | | **ARS1-11-00897** | 006 | 1 | MW-3-110420 | STD | 05/03/11 |
| ARS1-B11-01657-10 | TRG | | | | **ARS1-11-00897** | 007 | 1 | MW-4-110420 | STD | 05/03/11 |
| ARS1-B11-01657-11 | TRG | | | | **ARS1-11-00897** | 008 | 1 | MW-6-110420 | STD | 05/03/11 |
| ARS1-B11-01657-12 | TRG | | | | **ARS1-11-00897** | 009 | 1 | MW-7-110419 | STD | 05/03/11 |
| ARS1-B11-01657-13 | TRG | | | | **ARS1-11-00897** | 010 | 1 | MW-8-110419 | STD | 05/03/11 |
| ARS1-B11-01657-14 | TRG | | | | **ARS1-11-00897** | 011 | 1 | MW-MD-02-110420 | STD | 05/03/11 |
| ARS1-B11-01657-15 | TRG | | | | **ARS1-11-00897** | 012 | 1 | MW-MD-110420 | STD | 05/03/11 |
| ARS1-B11-01657-16 | TRG | | | | **ARS1-11-00897** | 013 | 1 | NPOP20E-110420 | STD | 05/03/11 |

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# Technical Notes



| | |
|---|---|
| Batch | **ARS1-B11-01657** |
| Analysis Code | **ASP-A-008** |
| Procedure No. | **ARS-031** |
| Matrix | **AQ** |

| # | Date | Dept | Batch Technical Notes | User ID |
|---|---|---|---|---|
| 1 | 05/04/11 11:10 | **CHEMISTRY** | B11-01657-03,13,14,15 did not seem to plate well. There is a cloudy film that plated onto the disk. Tracer recovery/activity could be affected. | JBROWN |
| 2 | 05/06/11 14:52 | **COUNTROOM** | The following spectral anomalies were identified in the counting results for this batch. Heavy peak trailing was encountered on the Th-229 peak for B11-01657-02 thru -09 & -11 thru -16. This causes blending of the Th-229 & Th-230 peaks and likely caused false detection of Th-230 counts in each of the samples in question. Also, Th-232 was not identified in B11-01657-02. A small of amount of unidentified isotope was used in place for calculation purposes, but the centroid energy would be low out of acceptable range. | [illegible] |
| 3 | 05/06/11 16:36 | **MGMT** | The method blank for Th-230 failed evaluation criteria for samples ARS1-11-00897-002 and 003. However, review of the data shows that both samples have activities that are less than the MDC and are less than the value of the blank. The results can be reported. | VMULLIGAN |

| | | | |
|---|---|---|---|
| ARS INTERNATIONAL | | **ARS1-B11-01657** | |
| | | **ASP-A-008** | |
| | | **ARS-031** | |
| | | **AQ** | |
| | | | |
| 1 | 05/04/11 11:10 | **CHEMISTRY** | B11-01657-03,13,14,15 did not seem to plate well. There is a cloudy film that plated onto the disk. Tracer recovery/activity could be affected. | JBROWN |

# LCS Report
## Analytical Batch: ARS1-B11-01657



| BlindID | ABatch | ABatchSampleID | BlindGroup | StdID | Isotope | ExpectedAddition | ExpectedValue | EmptyWt | GrossWt | NetWt | UserID | ModDate | ExpectedValue_CT | MidPointCountDate | KnownValue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-11678 | ARS1-B11-01657 | ARS1-B11-01657-01 | B-Th230 | S-0231 | Th-230 | 1 | 5.656931968 | 13.2586 | 14.2942 | 1.0356 | VMULLIGAN | 4/28/2011 | 5.656930971 | 5/5/2011 | 5.858317714 |
| B-11679 | ARS1-B11-01657 | ARS1-B11-01657-02 | B-Th230 | S-0231 | Th-230 | 1 | 5.656931968 | 13.5466 | 14.5793 | 1.0327 | VMULLIGAN | 4/28/2011 | 5.656930971 | 5/5/2011 | 5.841912614 |

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| ID_31001_031 | ABatch | ABatchSampleID | ClientID | Aliquot | AliquotUnits | UserID | ModDate | IC_ID |
|---|---|---|---|---|---|---|---|---|
| 2930 | ARS1-B11-01657 | ARS1-B11-01657-01 | | 1 | L | JBROWN | 05/04/2011 08:24:58 | |
| 2931 | ARS1-B11-01657 | ARS1-B11-01657-02 | | 1 | L | JBROWN | 05/04/2011 08:24:58 | |
| 2932 | ARS1-B11-01657 | ARS1-B11-01657-03 | | 1 | L | JBROWN | 05/04/2011 08:24:58 | |
| 2933 | ARS1-B11-01657 | ARS1-B11-01657-04 | MW-1-110419 | 0.5 | L | JBROWN | 05/04/2011 08:24:58 | 86077 |
| 2934 | ARS1-B11-01657 | ARS1-B11-01657-05 | MW-2-110421 | 0.5 | L | JBROWN | 05/04/2011 08:24:58 | 86078 |
| 2935 | ARS1-B11-01657 | ARS1-B11-01657-06 | MW-2-2-110421 | 0.5 | L | JBROWN | 05/04/2011 08:24:58 | 86079 |
| 2936 | ARS1-B11-01657 | ARS1-B11-01657-07 | JPOP41S-110421 | 0.1 | L | JBROWN | 05/04/2011 08:24:59 | 86080 |
| 2937 | ARS1-B11-01657 | ARS1-B11-01657-08 | MD-SW-110420 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86081 |
| 2938 | ARS1-B11-01657 | ARS1-B11-01657-09 | MW-3-110420 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86082 |
| 2939 | ARS1-B11-01657 | ARS1-B11-01657-10 | MW-4-110420 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86083 |
| 2940 | ARS1-B11-01657 | ARS1-B11-01657-11 | MW-6-110420 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86084 |
| 2941 | ARS1-B11-01657 | ARS1-B11-01657-12 | MW-7-110419 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86085 |
| 2942 | ARS1-B11-01657 | ARS1-B11-01657-13 | MW-8-110419 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86086 |
| 2943 | ARS1-B11-01657 | ARS1-B11-01657-14 | MW-MD-02-110420 | 0.5 | L | JBROWN | 05/04/2011 08:24:59 | 86087 |
| 2944 | ARS1-B11-01657 | ARS1-B11-01657-15 | MW-MD-110420 | 0.5 | L | JBROWN | 05/04/2011 08:25:00 | 86088 |
| 2945 | ARS1-B11-01657 | ARS1-B11-01657-16 | NPOP20E-110420 | 0.1 | L | JBROWN | 05/04/2011 08:25:00 | 86089 |

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| ABatch | ABatchSampleID | ClientID | SampleType | EmptyWt | FilledWt | NetWt | Exp Val | StdID | Isotope | TracerDate | UserID | ModDate | HL days | Ref Date | Cert dpm/g | Curr ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657 | ARS1-B11-01657-01 | | LCS | 54.130 | 55.146 | 1.016 | 11.378 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-02 | | LCSD | 62.401 | 63.416 | 1.016 | 11.377 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-03 | | MBL | 78.677 | 79.692 | 1.015 | 11.368 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-04 | MW-1-110419 | TRG | 399.868 | 400.890 | 1.022 | 11.450 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-05 | MW-2-110421 | TRG | 450.683 | 451.701 | 1.018 | 11.405 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-06 | MW-2-2-110421 | TRG | 452.115 | 453.134 | 1.019 | 11.417 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-07 | JPOP41S-110421 | TRG | 199.054 | 200.079 | 1.025 | 11.484 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-08 | MD-SW-110420 | TRG | 454.322 | 455.340 | 1.018 | 11.405 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-09 | MW-3-110420 | TRG | 451.648 | 452.663 | 1.015 | 11.372 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-10 | MW-4-110420 | TRG | 383.457 | 384.472 | 1.015 | 11.372 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-11 | MW-6-110420 | TRG | 446.590 | 447.601 | 1.011 | 11.327 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-12 | MW-7-110419 | TRG | 449.039 | 450.053 | 1.014 | 11.361 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-13 | MW-8-110419 | TRG | 440.146 | 441.154 | 1.008 | 11.293 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-14 | MW-MD-02-110420 | TRG | 441.227 | 442.228 | 1.001 | 11.215 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-15 | MW-MD-110420 | TRG | 456.671 | 457.672 | 1.001 | 11.215 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01657 | ARS1-B11-01657-16 | NPOP20E-110420 | TRG | 196.164 | 197.186 | 1.022 | 11.450 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |

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# Technical Notes

| | |
|---|---|
| Batch | ARS1-B11-01657 |
| Analysis Code | ASP-A-008 |
| Procedure No | ARS-031 |
| Matrix | AQ |

| | Date | Dept | Batch Technical Notes | |
|---|---|---|---|---|
| 1 | 05/04/11 11:10 | CHEMISTRY | B11-01657-03,13,14,15 did not seem to plate well. There is a cloudy film that plated onto the disk. Tracer recovery/activity could be affected. | JBROWN |

5/5/2011 03:51:52

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/5/2011
Time : 03:51:52
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01657-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-12 | A_1_6B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-13 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-14 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-15 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01657-16 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-01 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-02 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-03 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-04 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-05 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-06 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-07 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-08 | A_3_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-09 | A_3_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-10 | A_3_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-11 | A_3_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-12 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01647-13 | A_3_6B | Shelf 2 | Alpha Analyst10139 | |

# ALPHA SPECTRUM ANALYSIS

Sample Description: LCS
Batch Identification: B11-01657
Sample Identification: 11-01657-01
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:07
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2125 +/- 0.0044 on 4/9/10 20:56:03
Effective Efficiency: 0.2125 +/- 0.0044

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

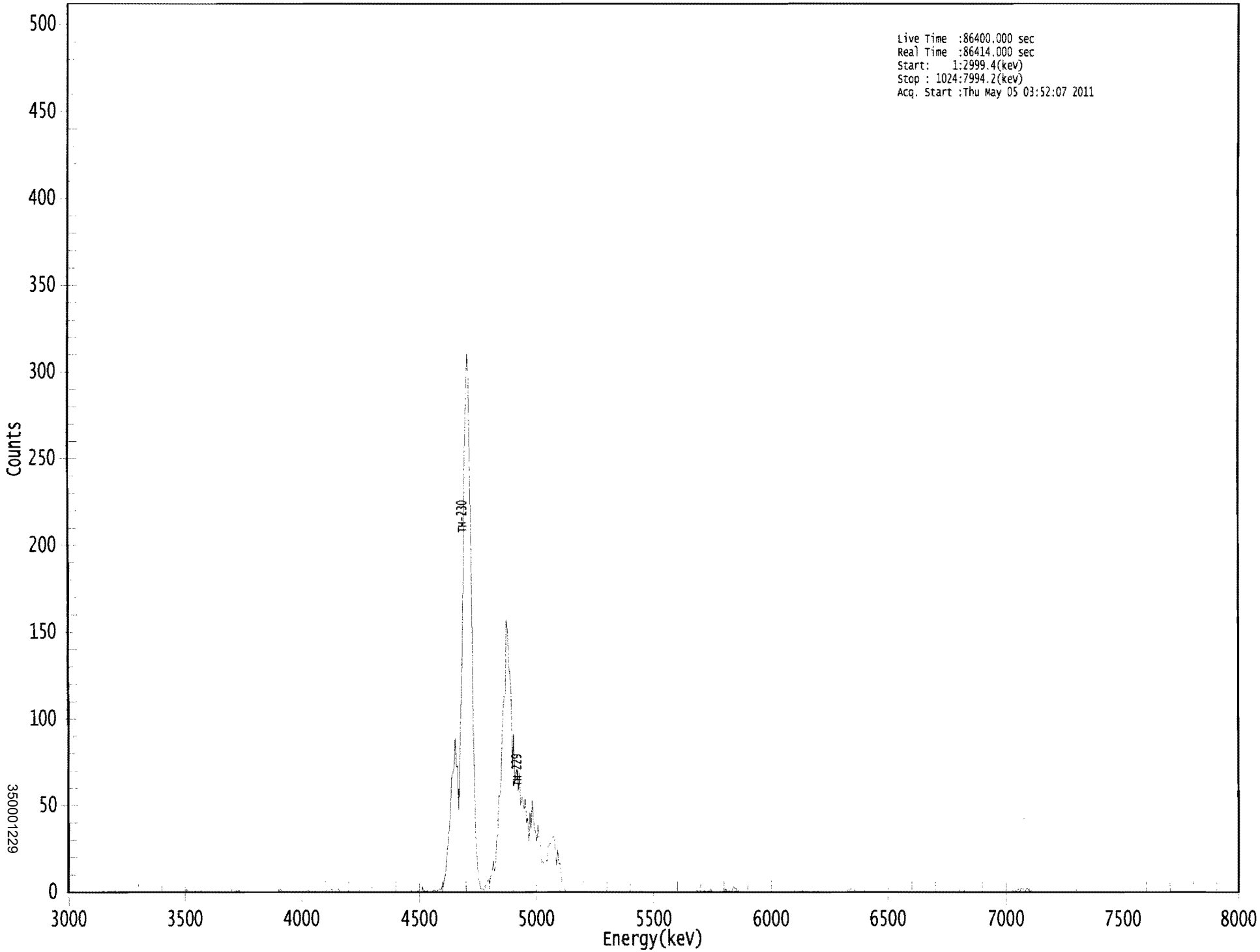
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5.458 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4.924 | 3073.00 | 55.43 | 0.00 | 0.00E+000 | 45.5 |
| TH-230 | 4.695 | 3355.00 | 57.92 | 0.00 | 0.00E+000 | 40.1 |
| TH-232 | 3.994 | 4.00 | 2.00 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.9465E-003 | 70.74 | 3.9867E-003 | 2.06 |
| TH-229 | 4.5465E+000 | 2.74 | 4.0035E-003 | 2.06 |
| TH-230 | 4.9488E+000 | 2.69 | 3.9915E-003 | 2.06 |
| TH-232 | 5.8896E-003 | 50.04 | 3.9843E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012136.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCSD
Batch Identification: B11-01657
Sample Identification: 11-01657-02
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:09
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1922 +/- 0.0040 on 4/9/10 20:56:53
Effective Efficiency: 0.1922 +/- 0.0040

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

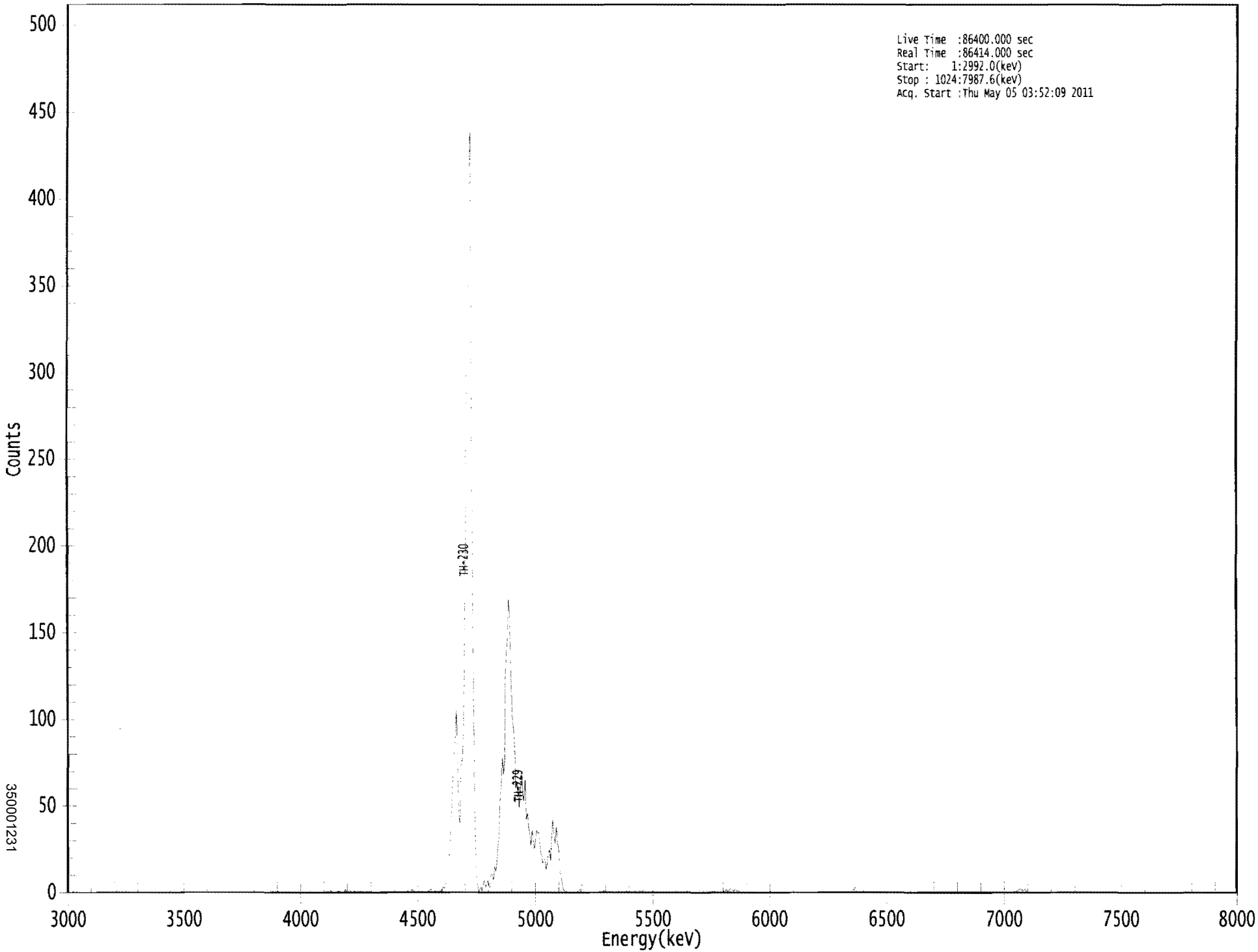
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5.385 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4.925 | 3051.00 | 55.24 | 0.00 | 0.00E+000 | 42.1 |
| TH-230 | 4.698 | 3404.00 | 58.34 | 0.00 | 0.00E+000 | 27.4 |
| <not ID'd> | 3.900 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 3.2570E-003 | 70.74 | 4.4068E-003 | 2.06 |
| TH-229 | 4.9895E+000 | 2.74 | 4.4254E-003 | 2.06 |
| TH-230 | 5.5501E+000 | 2.68 | 4.4121E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012137.CNF



# A L P H A S P E C T R U M A N A L Y S I S

Sample Description: MBL
Batch Identification: B11-01657
Sample Identification: 11-01657-03
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:10
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/9/10 20:57:28
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

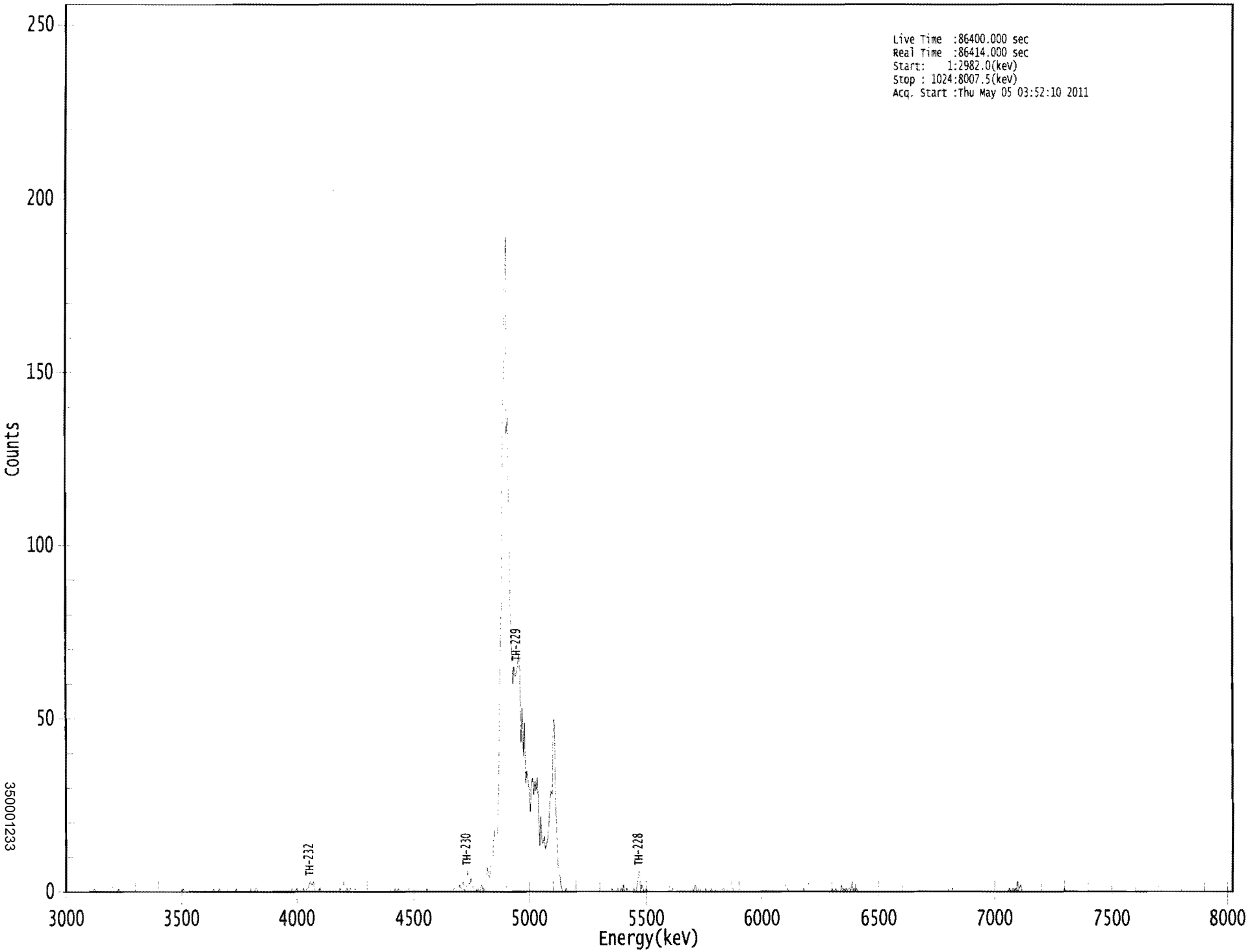
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5450.992 | 17.00 | 4.12 | 0.00 | 0.00E+000 | 10.6 |
| TH-229 | 4930.855 | 2847.00 | 53.36 | 0.00 | 0.00E+000 | 34.2 |
| TH-230 | 4715.654 | 30.00 | 5.48 | 0.00 | 0.00E+000 | 7.9 |
| TH-232 | 4038.881 | 15.00 | 3.87 | 0.00 | 0.00E+000 | 24.6 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.4590E-002 | 24.34 | 3.9142E-003 | 2.05 |
| TH-229 | 4.1354E+000 | 2.78 | 3.9307E-003 | 2.05 |
| TH-230 | 4.3446E-002 | 18.37 | 3.9189E-003 | 2.05 |
| TH-232 | 2.1684E-002 | 25.90 | 3.9118E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012138.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-001
Batch Identification: B11-01657
Sample Identification: 11-01657-04
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:12
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2196 +/- 0.0045 on 4/9/10 20:58:18
Effective Efficiency: 0.2196 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

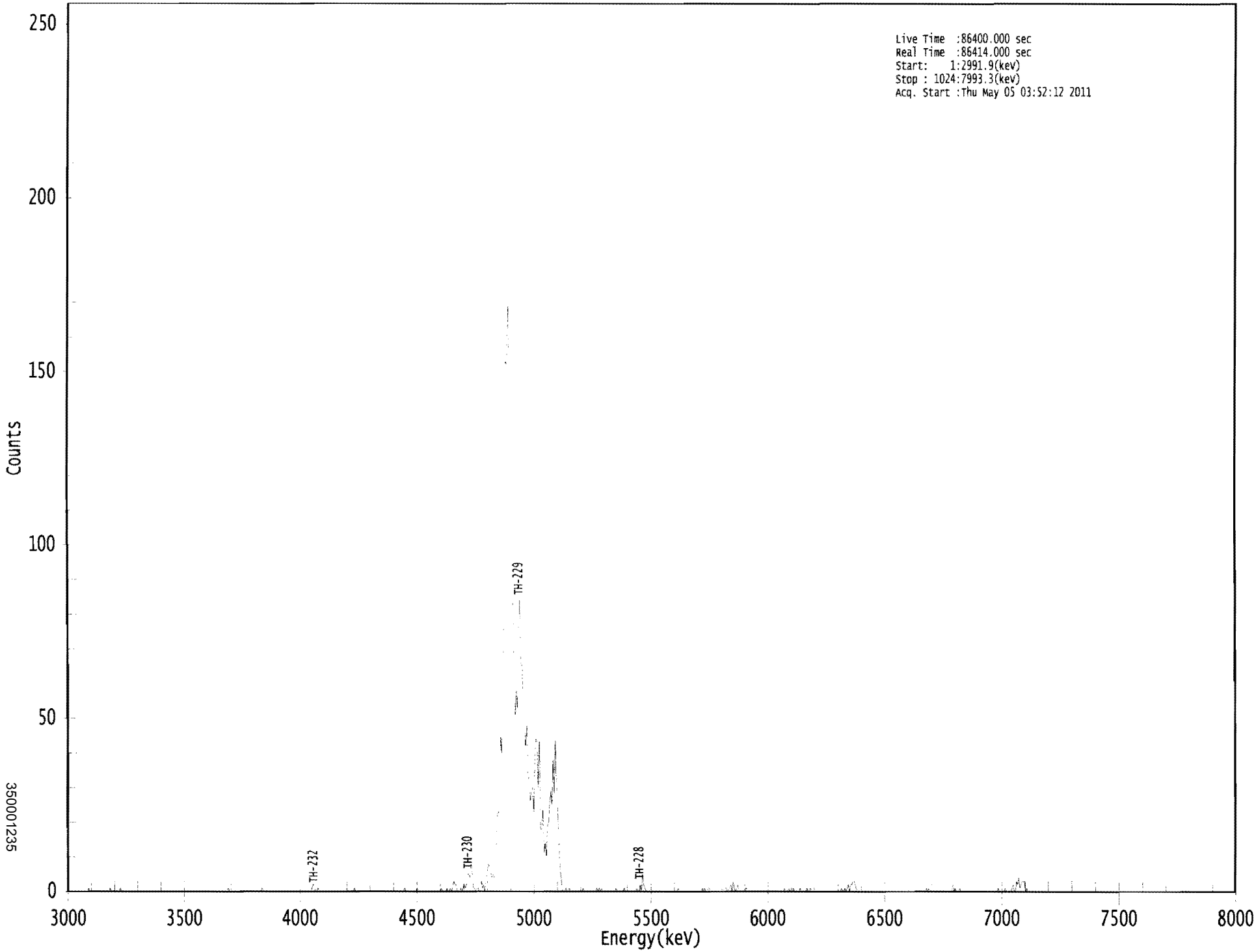
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5447.394 | 12.00 | 3.46 | 0.00 | 0.00E+000 | 6.5 |
| TH-229 | 4931.412 | 2892.00 | 53.78 | 0.00 | 0.00E+000 | 37.9 |
| TH-230 | 4714.464 | 36.00 | 6.00 | 0.00 | 0.00E+000 | 11.0 |
| TH-232 | 4051.854 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 9.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.7107E-002 | 28.94 | 3.8576E-003 | 2.05 |
| TH-229 | 4.1401E+000 | 2.77 | 3.8739E-003 | 2.05 |
| TH-230 | 5.1382E-002 | 16.79 | 3.8622E-003 | 2.05 |
| TH-232 | 7.1235E-003 | 44.77 | 3.8553E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012139.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-002
Batch Identification: B11-01657
Sample Identification: 11-01657-05
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:14
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2122 +/- 0.0044 on 4/11/10 09:13:21
Effective Efficiency: 0.2122 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

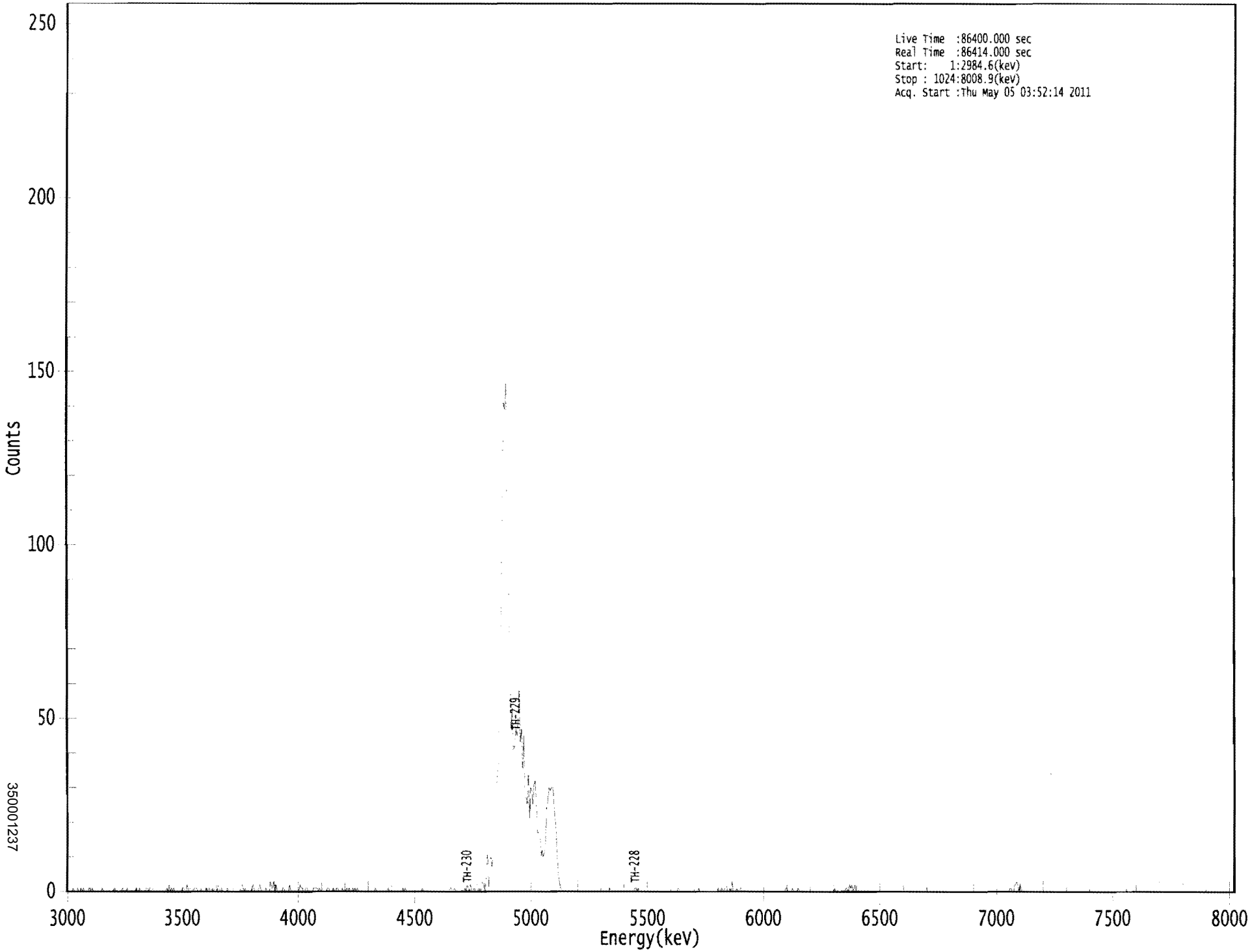
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5436.971 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 9.8 |
| TH-229 | 4923.315 | 2456.00 | 49.56 | 0.00 | 0.00E+000 | 37.3 |
| TH-230 | 4712.555 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 7.4 |
| TH-232 | 3933.706 | 4.00 | 2.00 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.4257E-003 | 57.77 | 3.9920E-003 | 2.06 |
| TH-229 | 3.6385E+000 | 2.88 | 4.0089E-003 | 2.06 |
| TH-230 | 8.8620E-003 | 40.88 | 3.9968E-003 | 2.06 |
| TH-232 | 5.8974E-003 | 50.04 | 3.9896E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012140.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-003
Batch Identification: B11-01657
Sample Identification: 11-01657-06
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:16
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2061 +/- 0.0042 on 4/11/10 09:13:55
Effective Efficiency: 0.2061 +/- 0.0042

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

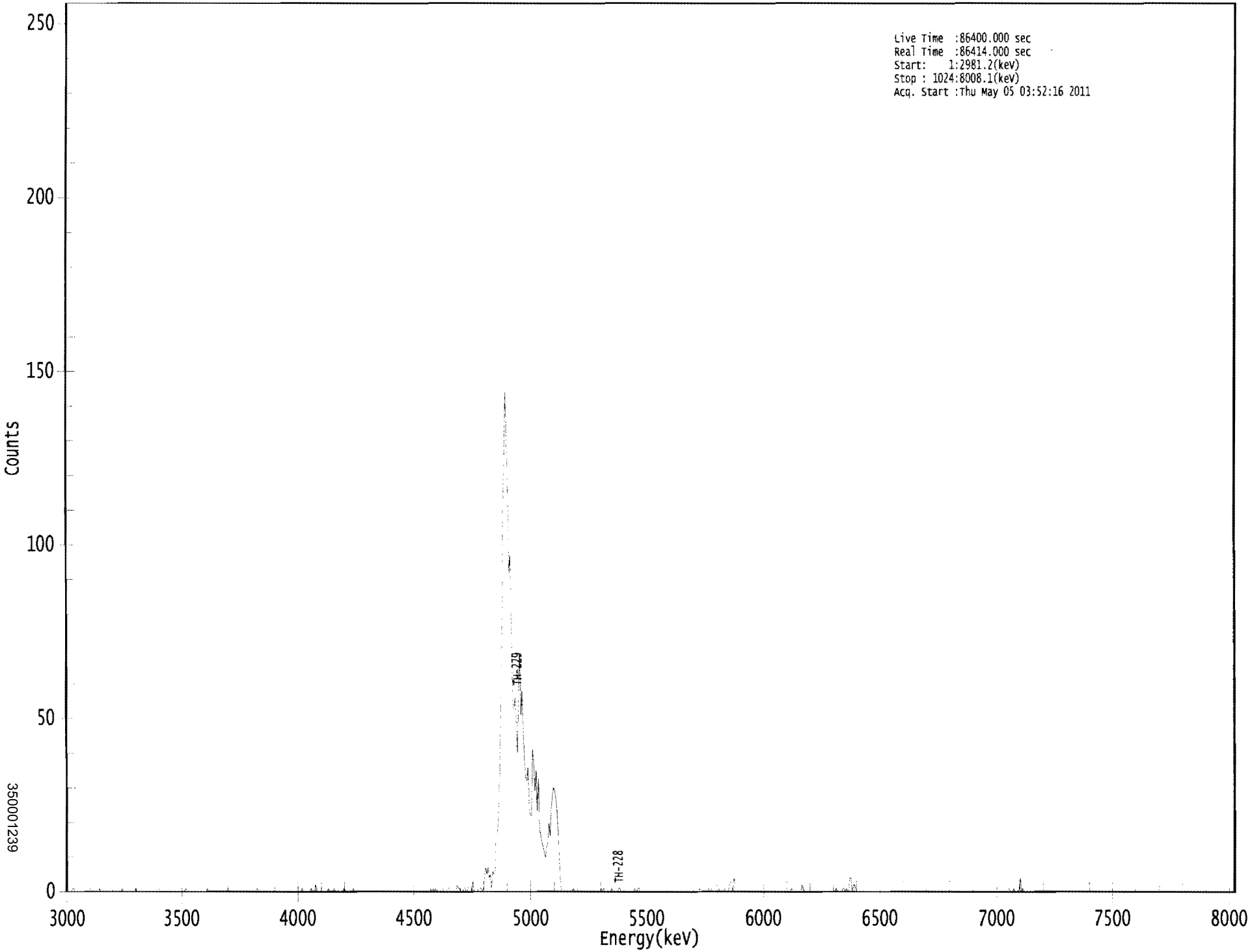
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5361.990 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 9.8 |
| TH-229 | 4930.082 | 2486.00 | 49.86 | 0.00 | 0.00E+000 | 41.9 |
| TH-230 | 4707.302 | 15.00 | 3.87 | 0.00 | 0.00E+000 | 4.9 |
| TH-232 | 4018.053 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 3.0372E-003 | 70.74 | 4.1093E-003 | 2.06 |
| TH-229 | 3.7911E+000 | 2.87 | 4.1267E-003 | 2.06 |
| TH-230 | 2.2806E-002 | 25.90 | 4.1143E-003 | 2.06 |
| TH-232 | 3.0353E-003 | 70.74 | 4.1069E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012141.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-004
Batch Identification: B11-01657
Sample Identification: 11-01657-07
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:18
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2259 +/- 0.0046 on 4/11/10 09:14:49
Effective Efficiency: 0.2259 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

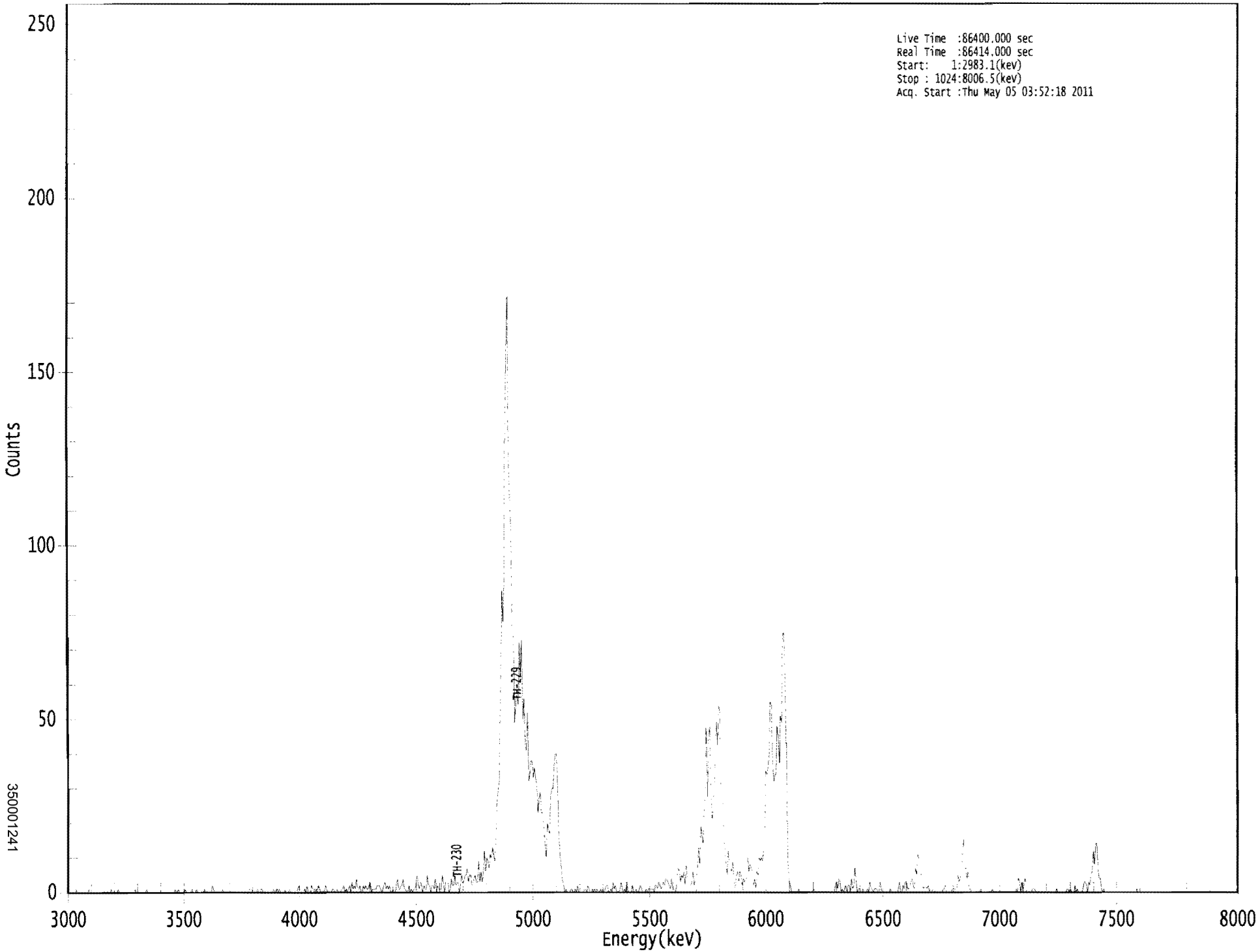
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5351.142 | 16.00 | 4.00 | 0.00 | 0.00E+000 | 6.1 |
| TH-229 | 4923.240 | 2992.00 | 54.70 | 0.00 | 0.00E+000 | 34.3 |
| TH-230 | 4660.738 | 89.00 | 9.43 | 0.00 | 0.00E+000 | 17.8 |
| TH-232 | 3994.625 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 7.4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.2166E-002 | 25.08 | 3.7489E-003 | 2.05 |
| TH-229 | 4.1626E+000 | 2.75 | 3.7647E-003 | 2.05 |
| TH-230 | 1.2345E-001 | 10.80 | 3.7534E-003 | 2.05 |
| TH-232 | 8.3073E-003 | 40.88 | 3.7466E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012142.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-005
Batch Identification: B11-01657
Sample Identification: 11-01657-08
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:20
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/11/10 09:15:19
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

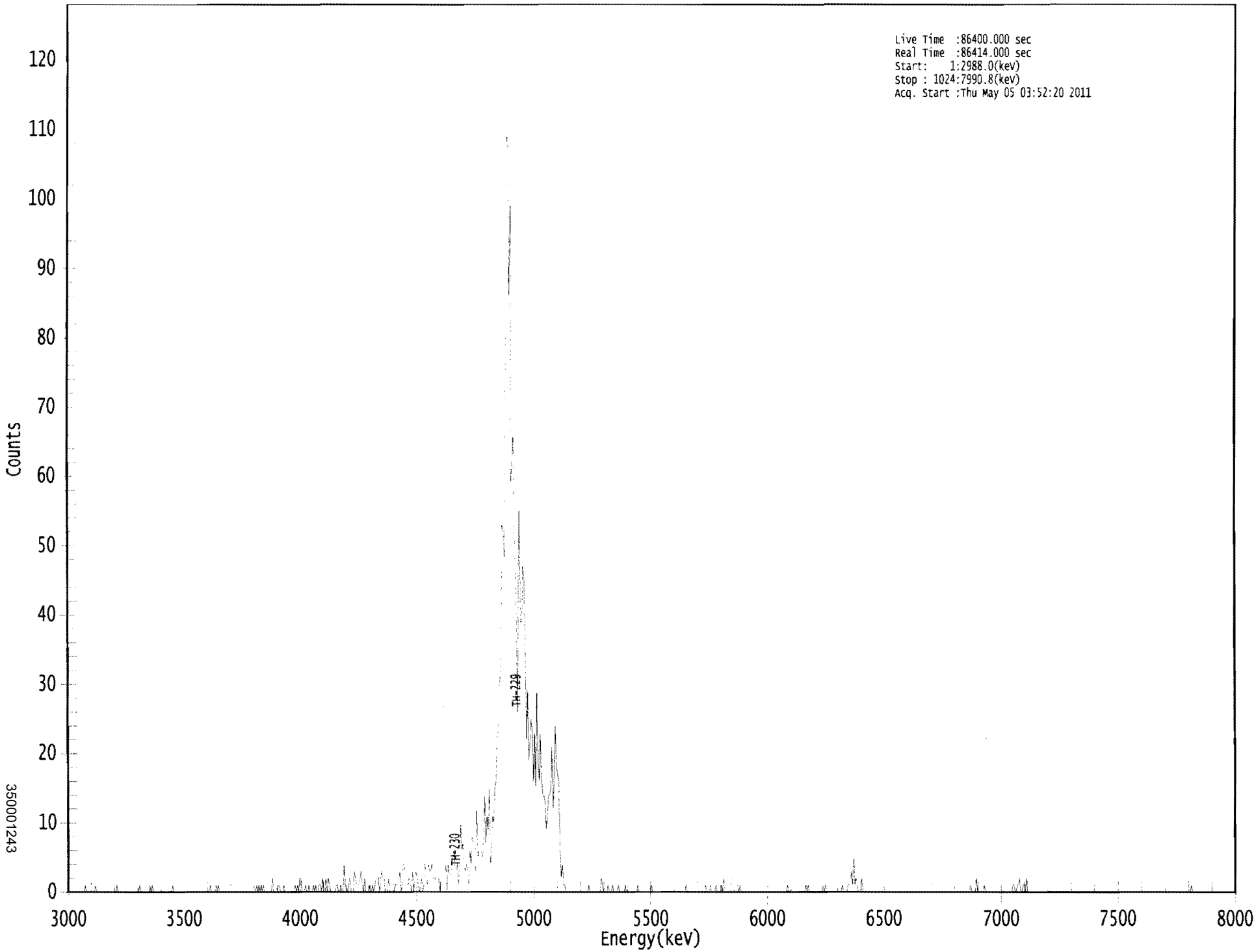
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-229 | 4918.375 | 2094.00 | 45.76 | 0.00 | 0.00E+000 | 41.2 |
| TH-230 | 4657.560 | 88.00 | 9.38 | 0.00 | 0.00E+000 | 17.1 |
| TH-232 | 3982.386 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 9.8 |
| <not ID'd> | 5316.889 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 7.3 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-229 | 3.0409E+000 | 3.00 | 3.9297E-003 | 2.05 |
| TH-230 | 1.2741E-001 | 10.86 | 3.9178E-003 | 2.05 |
| TH-232 | 8.6713E-003 | 40.88 | 3.9108E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012143.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-006
Batch Identification: B11-01657
Sample Identification: 11-01657-09
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:22
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2092 +/- 0.0043 on 4/11/10 18:32:55
Effective Efficiency: 0.2092 +/- 0.0043

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

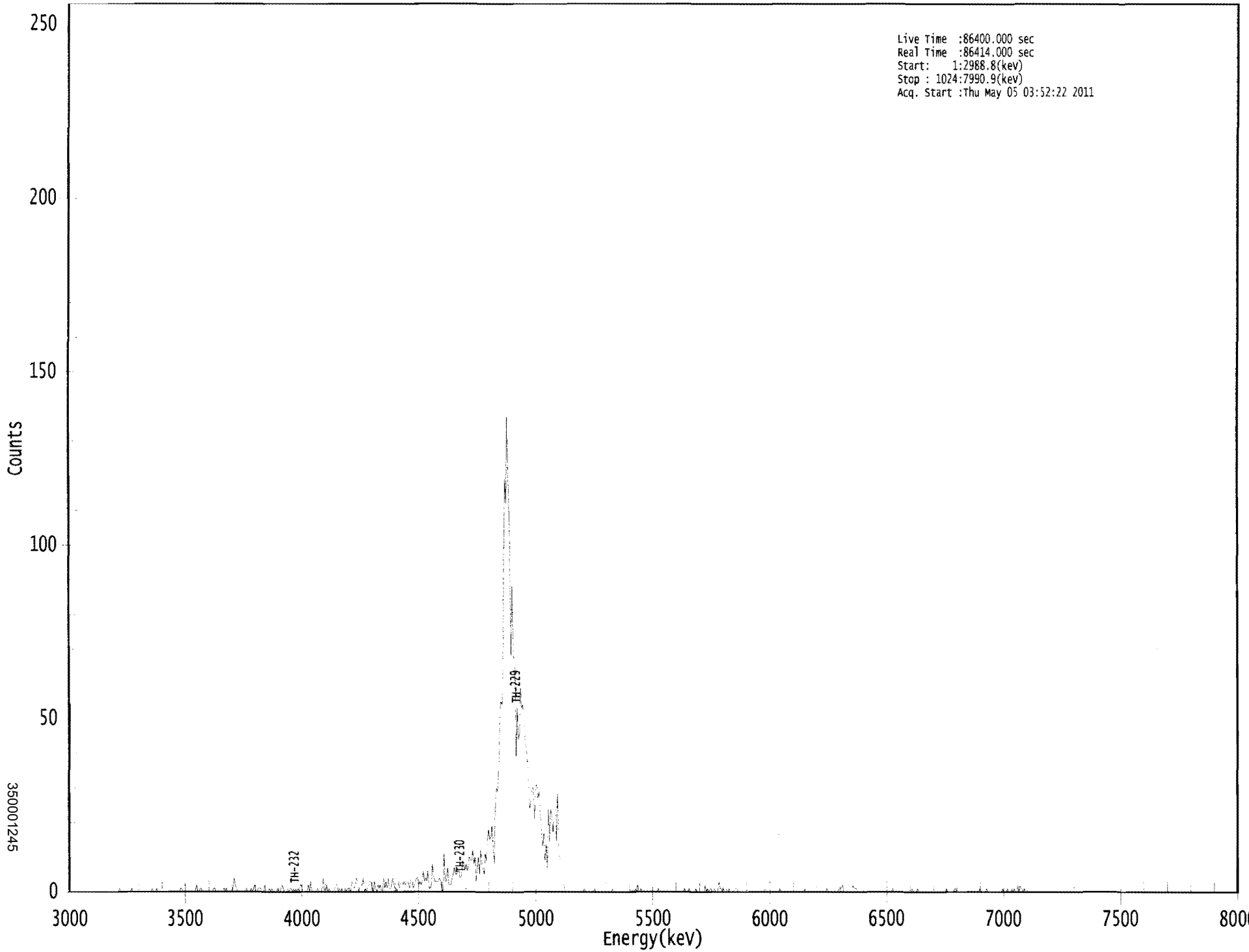
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5403.305 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4908.545 | 2628.00 | 51.26 | 0.00 | 0.00E+000 | 33.5 |
| TH-230 | 4670.824 | 168.00 | 12.96 | 0.00 | 0.00E+000 | 31.8 |
| TH-232 | 3962.792 | 10.00 | 3.16 | 0.00 | 0.00E+000 | 9.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 7.4805E-003 | 44.77 | 4.0485E-003 | 2.06 |
| TH-229 | 3.9484E+000 | 2.84 | 4.0656E-003 | 2.06 |
| TH-230 | 2.5165E-001 | 7.99 | 4.0534E-003 | 2.06 |
| TH-232 | 1.4952E-002 | 31.69 | 4.0461E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012144.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-007
Batch Identification: B11-01657
Sample Identification: 11-01657-10
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:24
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86413.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2047 +/- 0.0042 on 4/11/10 18:33:27
Effective Efficiency: 0.2047 +/- 0.0042

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

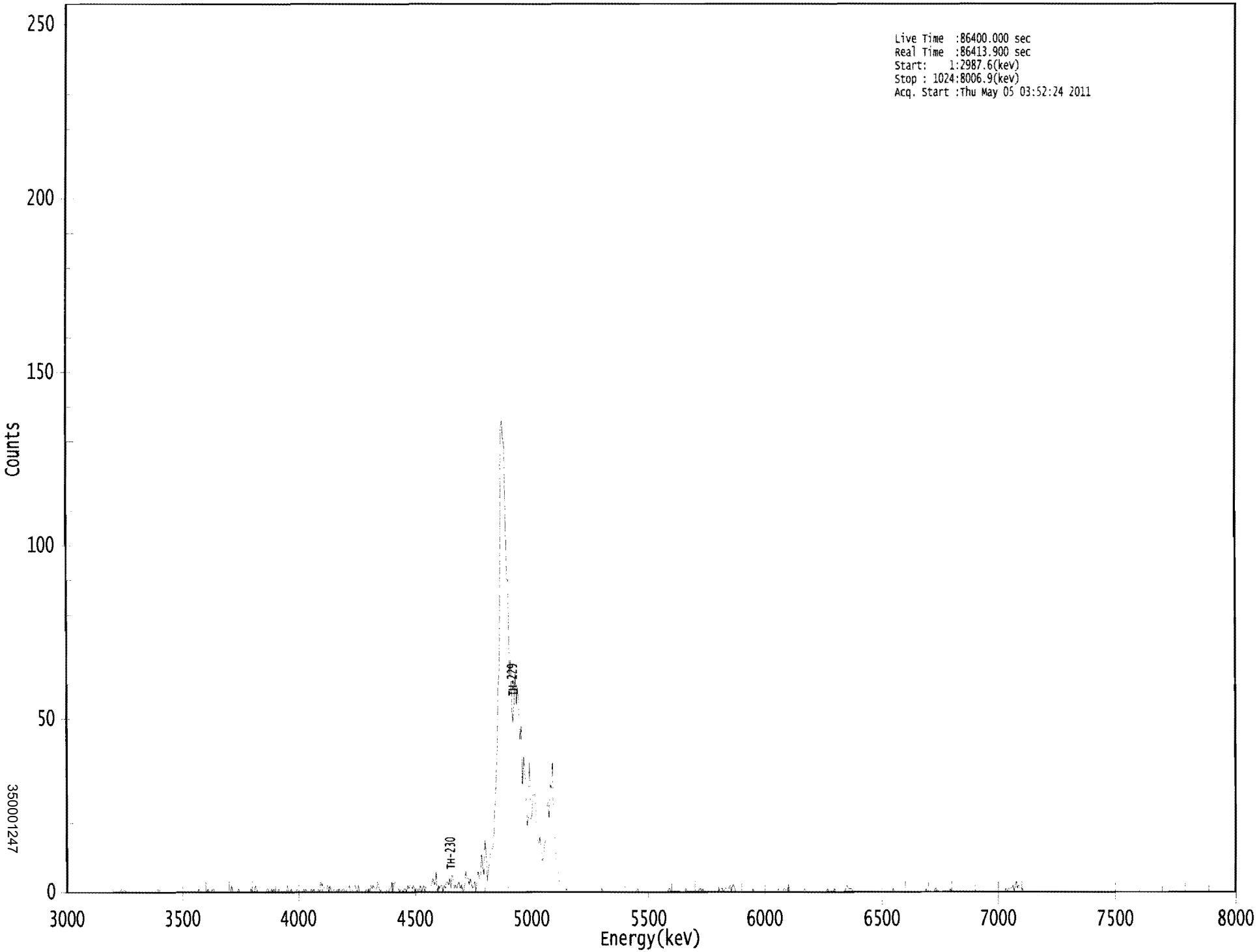
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5364.777 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4916.429 | 2560.00 | 50.60 | 0.00 | 0.00E+000 | 42.2 |
| TH-230 | 4647.780 | 38.00 | 6.16 | 0.00 | 0.00E+000 | 10.4 |
| TH-232 | 4001.584 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 3.0576E-003 | 70.74 | 4.1370E-003 | 2.06 |
| TH-229 | 3.9303E+000 | 2.85 | 4.1545E-003 | 2.06 |
| TH-230 | 5.8165E-002 | 16.35 | 4.1420E-003 | 2.06 |
| TH-232 | 4.5837E-003 | 57.77 | 4.1345E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012145.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-008
Batch Identification: B11-01657
Sample Identification: 11-01657-11
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:26
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/11/10 18:33:56
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

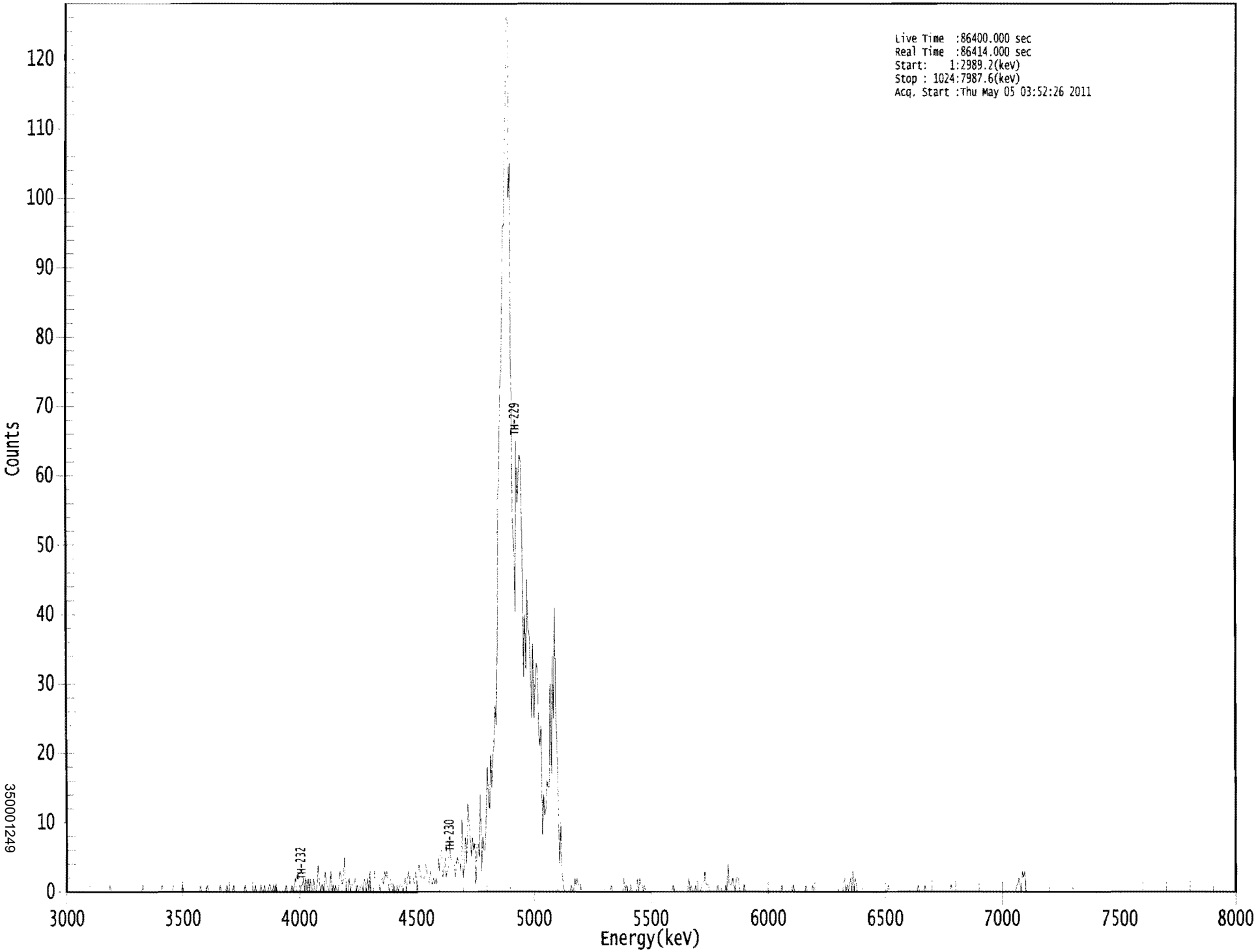
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5422.002 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4917.367 | 2767.00 | 52.60 | 0.00 | 0.00E+000 | 54.5 |
| TH-230 | 4636.605 | 186.00 | 13.64 | 0.00 | 0.00E+000 | 15.7 |
| TH-232 | 4001.650 | 14.00 | 3.74 | 0.00 | 0.00E+000 | 7.3 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.5302E-002 | 30.22 | 3.7643E-003 | 2.05 |
| TH-229 | 3.8654E+000 | 2.80 | 3.7802E-003 | 2.05 |
| TH-230 | 2.5905E-001 | 7.61 | 3.7689E-003 | 2.05 |
| TH-232 | 1.9464E-002 | 26.80 | 3.7621E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012146.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-009
Batch Identification: B11-01657
Sample Identification: 11-01657-12
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:28
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86414.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2243 +/- 0.0046 on 4/11/10 18:34:27
Effective Efficiency: 0.2243 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

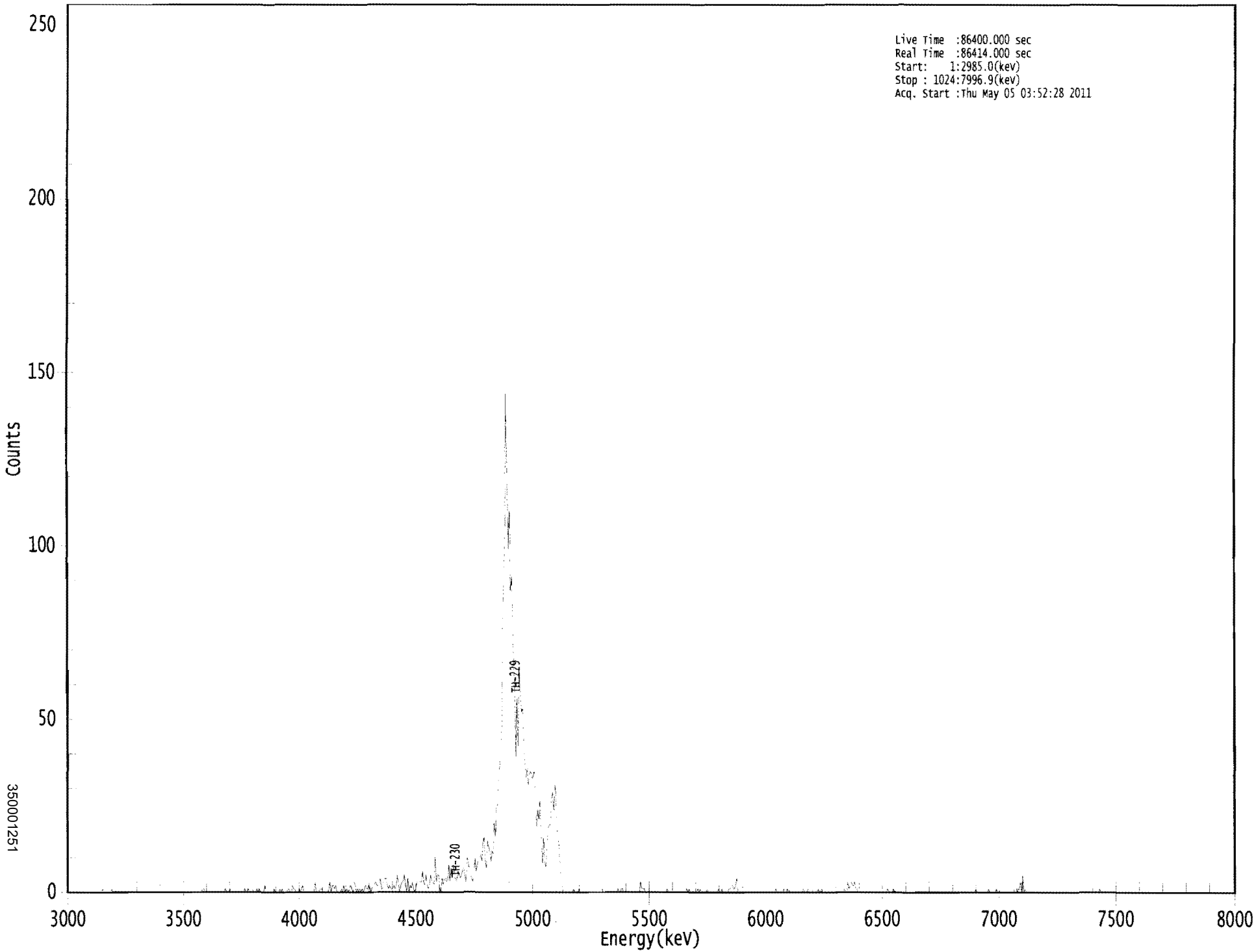
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5423.717 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 6.1 |
| TH-229 | 4917.931 | 2643.00 | 51.41 | 0.00 | 0.00E+000 | 45.3 |
| TH-230 | 4662.562 | 127.00 | 11.27 | 0.00 | 0.00E+000 | 14.9 |
| TH-232 | 3968.739 | 10.00 | 3.16 | 0.00 | 0.00E+000 | 7.3 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.2559E-002 | 33.40 | 3.7761E-003 | 2.05 |
| TH-229 | 3.7038E+000 | 2.83 | 3.7921E-003 | 2.05 |
| TH-230 | 1.7744E-001 | 9.11 | 3.7807E-003 | 2.05 |
| TH-232 | 1.3946E-002 | 31.69 | 3.7739E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012147.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-010
Batch Identification: B11-01657
Sample Identification: 11-01657-13
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:30
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

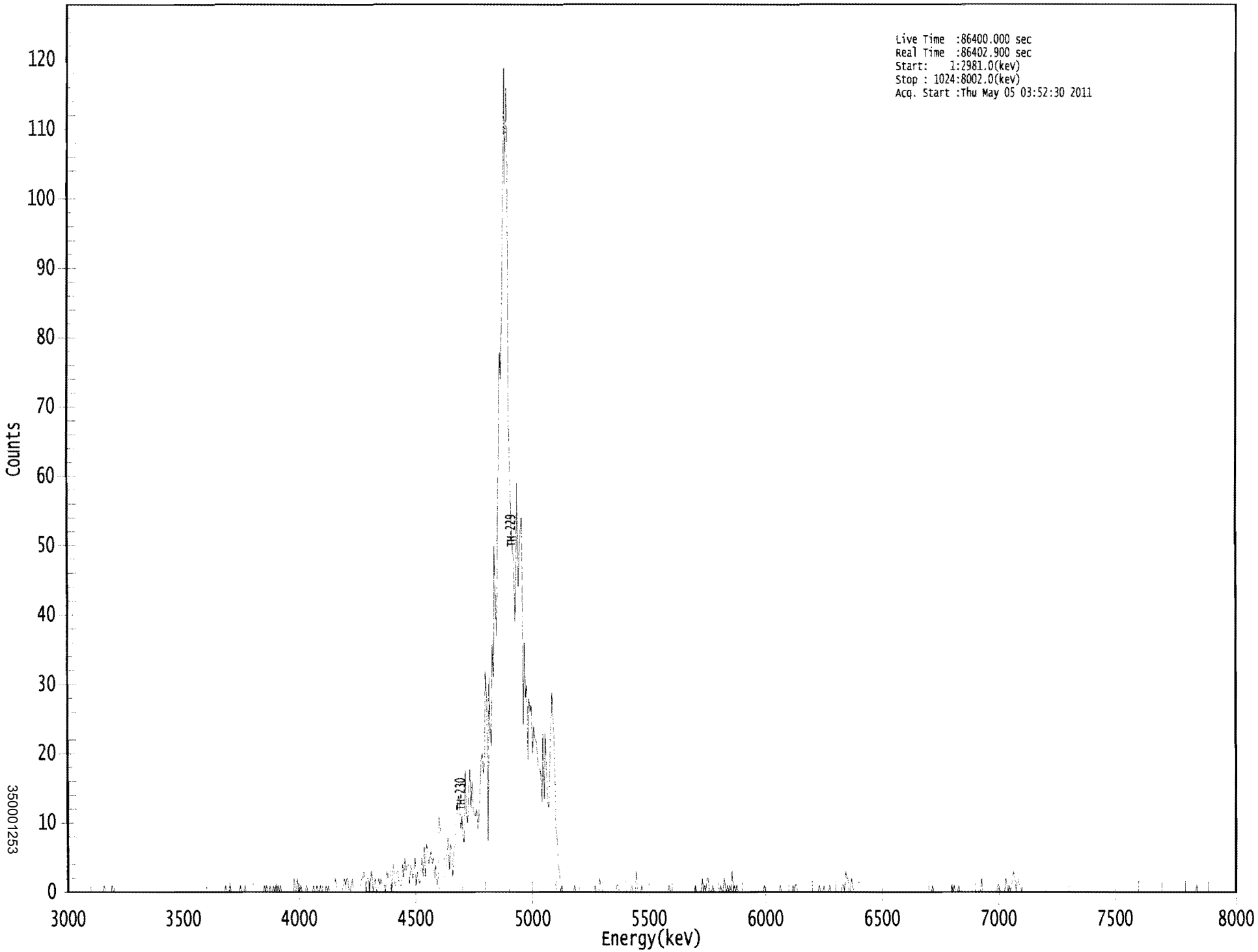
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5364.710 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 9.8 |
| TH-229 | 4898.550 | 2588.00 | 50.87 | 0.00 | 0.00E+000 | 51.1 |
| TH-230 | 4681.247 | 241.00 | 15.52 | 0.00 | 0.00E+000 | 42.1 |
| TH-232 | 3969.496 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.2581E-003 | 57.77 | 3.8409E-003 | 2.06 |
| TH-229 | 3.6888E+000 | 2.84 | 3.8571E-003 | 2.06 |
| TH-230 | 3.4248E-001 | 6.76 | 3.8455E-003 | 2.06 |
| TH-232 | 7.0926E-003 | 44.77 | 3.8386E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012148.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-011
Batch Identification: B11-01657
Sample Identification: 11-01657-14
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:32
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

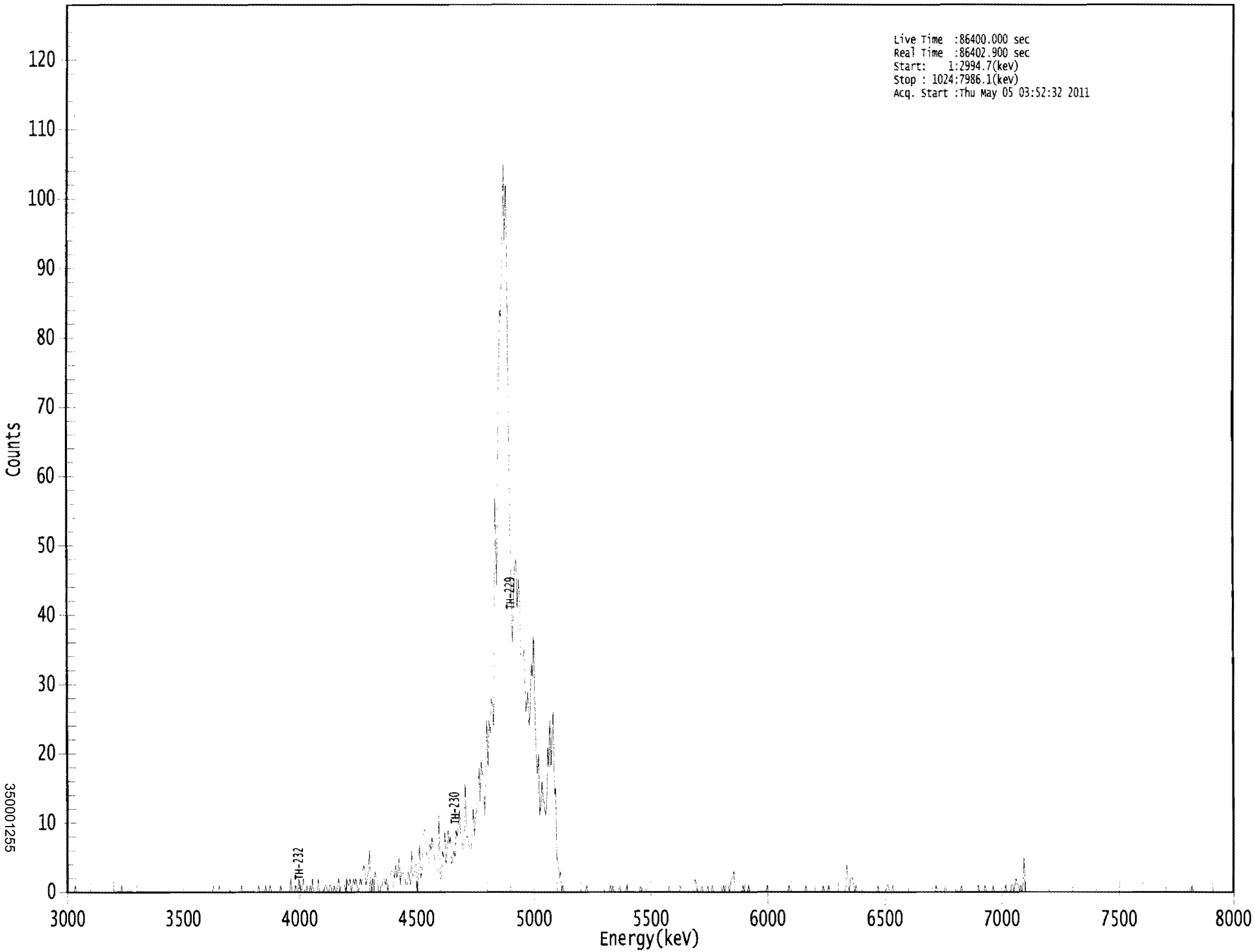
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5375.740 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4901.805 | 2543.00 | 50.43 | 0.00 | 0.00E+000 | 54.5 |
| TH-230 | 4662.808 | 175.00 | 13.23 | 0.00 | 0.00E+000 | 9.8 |
| TH-232 | 3996.352 | 7.00 | 2.65 | 0.00 | 0.00E+000 | 7.3 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.9147E-003 | 70.74 | 3.9437E-003 | 2.05 |
| TH-229 | 3.7217E+000 | 2.86 | 3.9603E-003 | 2.05 |
| TH-230 | 2.5535E-001 | 7.83 | 3.9484E-003 | 2.05 |
| TH-232 | 1.0195E-002 | 37.85 | 3.9413E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012149.CNF



**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: ARS1-11-00897-012
Batch Identification: B11-01657
Sample Identification: 11-01657-15
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:34
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.9 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

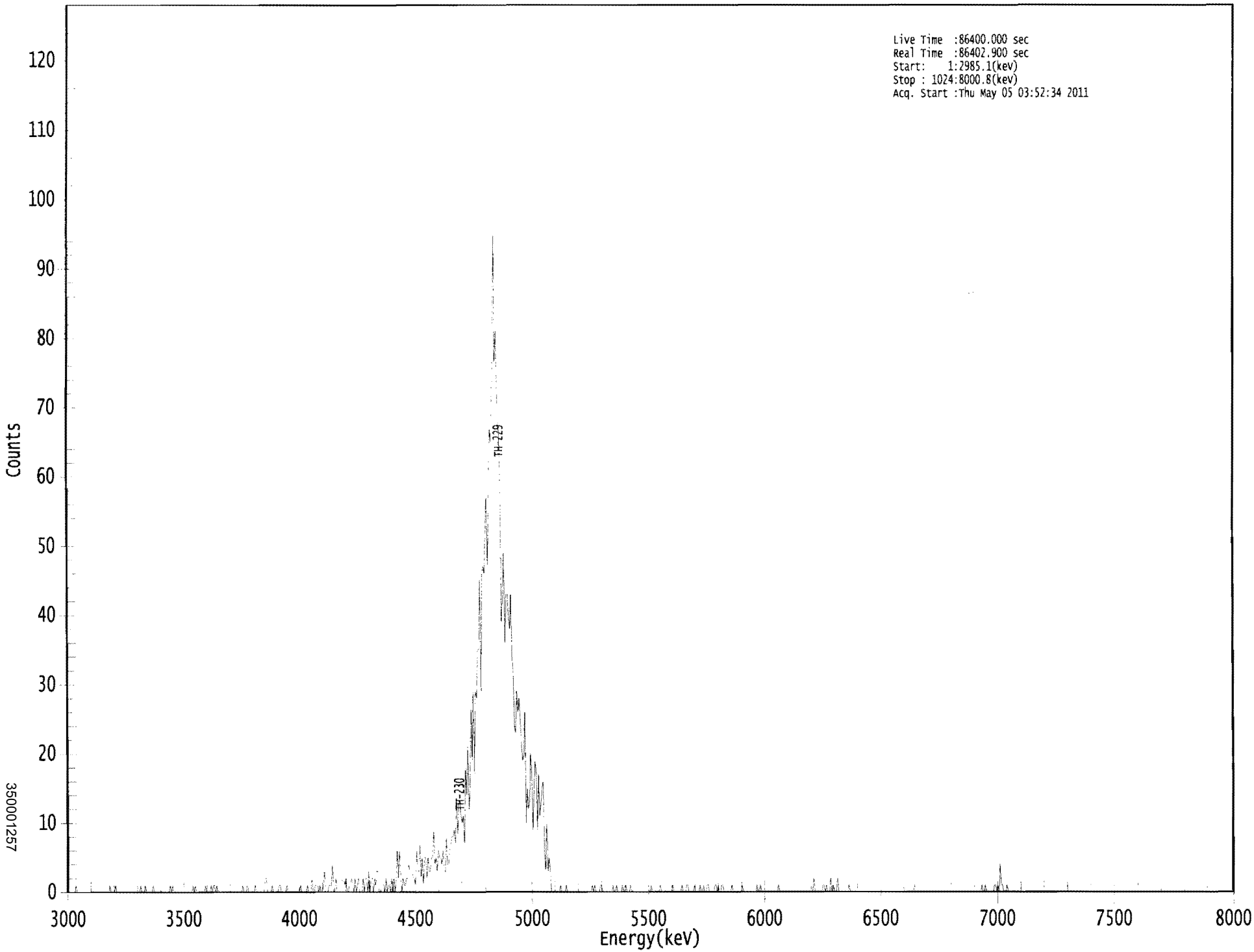
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-229 | 4853.200 | 2326.00 | 48.23 | 0.00 | 0.00E+000 | 56.8 |
| TH-230 | 4679.345 | 201.00 | 14.18 | 0.00 | 0.00E+000 | 18.9 |
| TH-232 | 3960.805 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4.9 |
| <not ID'd> | 5311.570 | 4.00 | 2.00 | 0.00 | 0.00E+000 | 9.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-229 | 3.2758E+000 | 2.92 | 3.8110E-003 | 2.05 |
| TH-230 | 2.8222E-001 | 7.35 | 3.7995E-003 | 2.05 |
| TH-232 | 2.8031E-003 | 70.74 | 3.7927E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012150.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-013
Batch Identification: B11-01657
Sample Identification: 11-01657-16
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/5/11 03:52:37
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2134 +/- 0.0044 on 5/24/10 08:35:23
Effective Efficiency: 0.2134 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

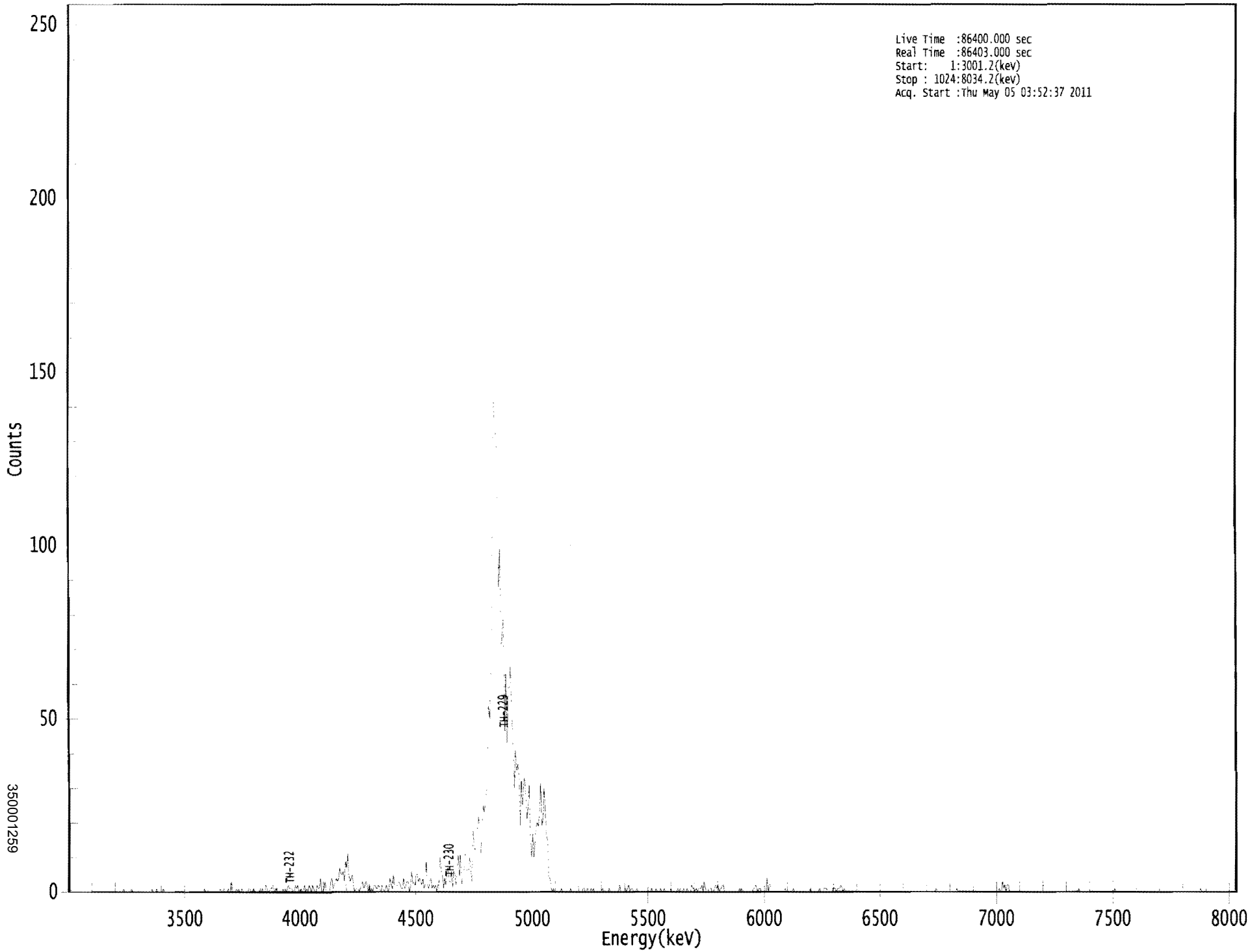
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5362.713 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4884.678 | 2819.00 | 53.09 | 0.00 | 0.00E+000 | 41.3 |
| TH-230 | 4650.752 | 104.00 | 10.20 | 0.00 | 0.00E+000 | 8.4 |
| TH-232 | 3962.822 | 13.00 | 3.61 | 0.00 | 0.00E+000 | 9.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.3999E-003 | 57.77 | 3.9688E-003 | 2.06 |
| TH-229 | 4.1519E+000 | 2.79 | 3.9855E-003 | 2.06 |
| TH-230 | 1.5271E-001 | 10.02 | 3.9735E-003 | 2.06 |
| TH-232 | 1.9055E-002 | 27.81 | 3.9664E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012151.CNF



# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ApexAlpha | ARS1-B11-01657-01 | TH-228 | 2 | 1440 | 0 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 2 | ApexAlpha | ARS1-B11-01657-01 | TH-229 | 3073 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 3 | ApexAlpha | ARS1-B11-01657-01 | TH-230 | 3355 | 1440 | 14 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 4 | ApexAlpha | ARS1-B11-01657-01 | TH-232 | 4 | 1440 | 5 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 5 | ApexAlpha | ARS1-B11-01657-02 | TH-228 | 2 | 1440 | 3 | 1440 | 0.19 | 05/05/11 03:52 | A_1 |
| 6 | ApexAlpha | ARS1-B11-01657-02 | TH-229 | 3051 | 1440 | 17 | 1440 | 0.19 | 05/05/11 03:52 | A_1 |
| 7 | ApexAlpha | ARS1-B11-01657-02 | TH-230 | 3404 | 1440 | 5 | 1440 | 0.19 | 05/05/11 03:52 | A_1 |
| 8 | ApexAlpha | ARS1-B11-01657-02 | TH-232 | 2 | 1440 | 3 | 1440 | 0.19 | 05/05/11 03:52 | A_1 |
| 9 | ApexAlpha | ARS1-B11-01657-03 | TH-228 | 17 | 1440 | 1 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 10 | ApexAlpha | ARS1-B11-01657-03 | TH-229 | 2847 | 1440 | 11 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 11 | ApexAlpha | ARS1-B11-01657-03 | TH-230 | 30 | 1440 | 6 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 12 | ApexAlpha | ARS1-B11-01657-03 | TH-232 | 15 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 13 | ApexAlpha | ARS1-B11-01657-04 | TH-228 | 12 | 1440 | 0 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 14 | ApexAlpha | ARS1-B11-01657-04 | TH-229 | 2892 | 1440 | 15 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 15 | ApexAlpha | ARS1-B11-01657-04 | TH-230 | 36 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 16 | ApexAlpha | ARS1-B11-01657-04 | TH-232 | 5 | 1440 | 3 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 17 | ApexAlpha | ARS1-B11-01657-05 | TH-228 | 3 | 1440 | 0 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 18 | ApexAlpha | ARS1-B11-01657-05 | TH-229 | 2456 | 1440 | 5 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 19 | ApexAlpha | ARS1-B11-01657-05 | TH-230 | 6 | 1440 | 5 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 20 | ApexAlpha | ARS1-B11-01657-05 | TH-232 | 4 | 1440 | 21 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 21 | ApexAlpha | ARS1-B11-01657-06 | TH-228 | 2 | 1440 | 0 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 22 | ApexAlpha | ARS1-B11-01657-06 | TH-229 | 2486 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 23 | ApexAlpha | ARS1-B11-01657-06 | TH-230 | 15 | 1440 | 5 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 24 | ApexAlpha | ARS1-B11-01657-06 | TH-232 | 2 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 25 | ApexAlpha | ARS1-B11-01657-07 | TH-228 | 16 | 1440 | 2 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 26 | ApexAlpha | ARS1-B11-01657-07 | TH-229 | 2992 | 1440 | 4 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 27 | ApexAlpha | ARS1-B11-01657-07 | TH-230 | 89 | 1440 | 3 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 28 | ApexAlpha | ARS1-B11-01657-07 | TH-232 | 6 | 1440 | 1 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 29 | ApexAlpha | ARS1-B11-01657-08 | TH-228 | 9 | 1440 | 0 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 30 | ApexAlpha | ARS1-B11-01657-08 | TH-229 | 2094 | 1440 | 3 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 31 | ApexAlpha | ARS1-B11-01657-08 | TH-230 | 88 | 1440 | 3 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 32 | ApexAlpha | ARS1-B11-01657-08 | TH-232 | 6 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 33 | ApexAlpha | ARS1-B11-01657-09 | TH-228 | 5 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 34 | ApexAlpha | ARS1-B11-01657-09 | TH-229 | 2628 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 35 | ApexAlpha | ARS1-B11-01657-09 | TH-230 | 168 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 36 | ApexAlpha | ARS1-B11-01657-09 | TH-232 | 10 | 1440 | 2 | 1440 | 0.21 | 05/05/11 03:52 | A_1 |
| 37 | ApexAlpha | ARS1-B11-01657-10 | TH-228 | 2 | 1440 | 2 | 1440 | 0.20 | 05/05/11 03:52 | A_1 |
| 38 | ApexAlpha | ARS1-B11-01657-10 | TH-229 | 2560 | 1440 | 5 | 1440 | 0.20 | 05/05/11 03:52 | A_1 |
| 39 | ApexAlpha | ARS1-B11-01657-10 | TH-230 | 38 | 1440 | 6 | 1440 | 0.20 | 05/05/11 03:52 | A_1 |
| 40 | ApexAlpha | ARS1-B11-01657-10 | TH-232 | 3 | 1440 | 1 | 1440 | 0.20 | 05/05/11 03:52 | A_1 |
| 41 | ApexAlpha | ARS1-B11-01657-11 | TH-228 | 11 | 1440 | 4 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 42 | ApexAlpha | ARS1-B11-01657-11 | TH-229 | 2767 | 1440 | 4 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 43 | ApexAlpha | ARS1-B11-01657-11 | TH-230 | 186 | 1440 | 4 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 44 | ApexAlpha | ARS1-B11-01657-11 | TH-232 | 14 | 1440 | 3 | 1440 | 0.23 | 05/05/11 03:52 | A_1 |
| 45 | ApexAlpha | ARS1-B11-01657-12 | TH-228 | 9 | 1440 | 0 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 46 | ApexAlpha | ARS1-B11-01657-12 | TH-229 | 2643 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 47 | ApexAlpha | ARS1-B11-01657-12 | TH-230 | 127 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 48 | ApexAlpha | ARS1-B11-01657-12 | TH-232 | 10 | 1440 | 0 | 1440 | 0.22 | 05/05/11 03:52 | A_1 |
| 49 | ApexAlpha | ARS1-B11-01657-13 | TH-228 | 3 | 1440 | 2 | 1440 | 0.22 | 05/05/11 03:53 | A_2 |
| 50 | ApexAlpha | ARS1-B11-01657-13 | TH-229 | 2588 | 1440 | 1 | 1440 | 0.22 | 05/05/11 03:53 | A_2 |
| 51 | ApexAlpha | ARS1-B11-01657-13 | TH-230 | 241 | 1440 | 3 | 1440 | 0.22 | 3500 | A_2 |
| 52 | ApexAlpha | ARS1-B11-01657-13 | TH-232 | 5 | 1440 | 2 | 1440 | 0.22 | [illegible] | A_2 |

350001260

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Date |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | ApexAlpha | ARS1-B11-01657-14 | TH-228 | 2 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 54 | ApexAlpha | ARS1-B11-01657-14 | TH-229 | 2543 | 1440 | 1 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 55 | ApexAlpha | ARS1-B11-01657-14 | TH-230 | 175 | 1440 | 1 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 56 | ApexAlpha | ARS1-B11-01657-14 | TH-232 | 7 | 1440 | 1 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 57 | ApexAlpha | ARS1-B11-01657-15 | TH-228 | 4 | 1440 | 2 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 58 | ApexAlpha | ARS1-B11-01657-15 | TH-229 | 2326 | 1440 | 3 | 1440 | 0.22 | 05/05/11 03:53 | A_2 |
| 59 | ApexAlpha | ARS1-B11-01657-15 | TH-230 | 201 | 1440 | 4 | 1440 | 0.22 | 05/05/11 03:53 | A_2 |
| 60 | ApexAlpha | ARS1-B11-01657-15 | TH-232 | 2 | 1440 | 0 | 1440 | 0.22 | 05/05/11 03:53 | A_2 |
| 61 | ApexAlpha | ARS1-B11-01657-16 | TH-228 | 3 | 1440 | 1 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 62 | ApexAlpha | ARS1-B11-01657-16 | TH-229 | 2819 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 63 | ApexAlpha | ARS1-B11-01657-16 | TH-230 | 104 | 1440 | 3 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |
| 64 | ApexAlpha | ARS1-B11-01657-16 | TH-232 | 13 | 1440 | 7 | 1440 | 0.21 | 05/05/11 03:53 | A_2 |

| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-01 | | | | 1 | TH-228 | 0.003361909 | 0.004677052 | 0.002386251 | 0.004677052 | 0.004555387 | 0 | 0.004659369 | 0.00237723 | 0.00465937 | pCi |
| ARS1-B11-01657-01 | | | | 1 | TH-229 | 5.125444366 | 0.645501612 | 0.329337557 | 0.645501612 | 0.017978825 | 0.006727205 | 0.181485689 | 0.09259474 | 0.18148569 | pCi |
| ARS1-B11-01657-01 | | | | 1 | TH-230 | 5.589062942 | 0.701794245 | 0.358058288 | 0.701794245 | 0.03365657 | 0.014561545 | 0.190313283 | 0.09709861 | 0.19031328 | pCi |
| ARS1-B11-01657-01 | | | | 1 | TH-232 | -0.001669526 | 0.009818883 | 0.005009634 | 0.009818883 | 0.02189398 | 0.008684783 | 0.00981681 | 0.00500858 | 0.00981681 | pCi |
| ARS1-B11-01657-02 | | | | 1 | TH-228 | -0.001700733 | 0.007456623 | 0.0038044 | 0.007456623 | 0.018314886 | 0.00685295 | 0.00745379 | 0.00380295 | 0.00745379 | pCi |
| ARS1-B11-01657-02 | | | | 1 | TH-229 | 5.124939694 | 0.645978873 | 0.329581057 | 0.645978873 | 0.036982389 | 0.01620237 | 0.183382096 | 0.09356229 | 0.1833821 | pCi |
| ARS1-B11-01657-02 | | | | 1 | TH-230 | 5.75299139 | 0.721783724 | 0.368257002 | 0.721783724 | 0.022195974 | 0.008804576 | 0.1936922 | 0.09882255 | 0.1936922 | pCi |
| ARS1-B11-01657-02 | | | | 1 | TH-232 | -0.001689169 | 0.007405924 | 0.003778533 | 0.007405924 | 0.018190359 | 0.006806355 | 0.007403109 | 0.0037771 | 0.00740311 | pCi |
| ARS1-B11-01657-03 | | | | 1 | TH-228 | 0.02908862 | 0.015521437 | 0.0079191 | 0.015521437 | 0.013385788 | 0.004229451 | 0.015118039 | 0.00771329 | 0.01511804 | pCi |
| ARS1-B11-01657-03 | | | | 1 | TH-229 | 5.120902322 | 0.647188646 | 0.330198289 | 0.647188646 | 0.032757646 | 0.01393213 | 0.189202752 | 0.09653202 | 0.18920275 | pCi |
| ARS1-B11-01657-03 | | | | 1 | TH-230 | 0.043423106 | 0.021915003 | 0.011181124 | 0.021915003 | 0.025523549 | 0.010310178 | 0.021277322 | 0.01085578 | 0.02127732 | pCi |
| ARS1-B11-01657-03 | | | | 1 | TH-232 | 0.023473807 | 0.014865434 | 0.007584405 | 0.014865434 | 0.016774744 | 0.005940679 | 0.014592198 | 0.007445 | 0.0145922 | pCi |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | MW-1-110419 | 1 | TH-228 | 0.043963821 | 0.025436047 | 0.012977575 | 0.025436047 | 0.009928496 | 0 | 0.024874873 | 0.01269126 | 0.02487487 | pCi |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | MW-1-110419 | 1 | TH-229 | 10.3155263 | 1.303045779 | 0.664819275 | 1.303045779 | 0.074327982 | 0.032305618 | 0.378904808 | 0.19331878 | 0.37890481 | pCi |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | MW-1-110419 | 1 | TH-230 | 0.122151363 | 0.045849612 | 0.023392659 | 0.045849612 | 0.033376064 | 0.011819941 | 0.043407749 | 0.02214681 | 0.04340775 | pCi |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | MW-1-110419 | 1 | TH-232 | 0.007171001 | 0.019895886 | 0.010150962 | 0.019895886 | 0.038611612 | 0.014447453 | 0.019877 | 0.01014133 | 0.019877 | pCi |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | MW-2-110421 | 1 | TH-228 | 0.012825277 | 0.01459571 | 0.007446791 | 0.01459571 | 0.0115855 | 0 | 0.014513167 | 0.00740468 | 0.01451317 | pCi |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | MW-2-110421 | 1 | TH-229 | 10.27514711 | 1.307046058 | 0.666860234 | 1.307046058 | 0.054976412 | 0.021807739 | 0.407621061 | 0.20796993 | 0.40762106 | pCi |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | MW-2-110421 | 1 | TH-230 | 0.004200614 | 0.027311168 | 0.013934269 | 0.027311168 | 0.055086409 | 0.021851372 | 0.027306449 | 0.01393186 | 0.02730645 | pCi |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | MW-2-110421 | 1 | TH-232 | -0.071267598 | 0.041976894 | 0.021416782 | 0.041976894 | 0.100745709 | 0.044692408 | 0.041083674 | 0.02096106 | 0.04108367 | pCi |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 1 | TH-228 | 0.008448284 | 0.011753161 | 0.005996511 | 0.011753161 | 0.011447425 | 0 | 0.011708724 | 0.00597384 | 0.01170872 | pCi |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 1 | TH-229 | 10.28524057 | 1.307405656 | 0.667043702 | 1.307405656 | 0.044607297 | 0.016690881 | 0.405047778 | 0.20665703 | 0.40504778 | pCi |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 1 | TH-230 | 0.041505515 | 0.036725398 | 0.018737448 | 0.036725398 | 0.054429891 | 0.021590948 | 0.036381188 | 0.01856183 | 0.03638119 | pCi |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | MW-2-2-110421 | 1 | TH-232 | -0.004142249 | 0.018161108 | 0.009265872 | 0.018161108 | 0.044607139 | 0.016690822 | 0.018154207 | 0.00926235 | 0.01815421 | pCi |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 1 | TH-228 | 0.247162371 | 0.149815317 | 0.076436386 | 0.149815317 | 0.164009888 | 0.058083157 | 0.146806959 | 0.07490151 | 0.14680696 | pCi |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 1 | TH-229 | 51.72900682 | 6.52203607 | 3.327569423 | 6.52203607 | 0.208015792 | 0.080549796 | 1.857293432 | 0.94759869 | 1.85729343 | pCi |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 1 | TH-230 | 1.491832528 | 0.372640296 | 0.1901226 | 0.372640296 | 0.186805556 | 0.069897742 | 0.326115624 | 0.16638552 | 0.32611562 | pCi |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | JPOP41S-110421 | 1 | TH-232 | 0.086560951 | 0.090382867 | 0.046113708 | 0.090382867 | 0.127465546 | 0.040274756 | 0.089775349 | 0.04580375 | 0.08977535 | pCi |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 1 | TH-228 | 0.043250022 | 0.028736107 | 0.014661279 | 0.028736107 | 0.013023062 | 0 | 0.028256681 | 0.01441667 | 0.02825668 | pCi |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 1 | TH-229 | 10.27514977 | 1.317854996 | 0.672374998 | 1.317854996 | 0.052917863 | 0.019800477 | 0.441051613 | 0.22502633 | 0.44105161 | pCi |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 1 | TH-230 | 0.418524635 | 0.105042853 | 0.053593292 | 0.105042853 | 0.053023729 | 0.01984009 | 0.092061674 | 0.04697024 | 0.09206167 | pCi |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | MD-SW-110420 | 1 | TH-232 | 0.019655879 | 0.027345046 | 0.013951554 | 0.027345046 | 0.045650779 | 0.016166961 | 0.027241659 | 0.01389881 | 0.02724166 | pCi |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | MW-3-110420 | 1 | TH-228 | 0.007967807 | 0.02210662 | 0.011278888 | 0.02210662 | 0.042901947 | 0.016052784 | 0.022085635 | 0.01126818 | 0.02208564 | pCi |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | MW-3-110420 | 1 | TH-229 | 10.24486937 | 1.298880923 | 0.662694348 | 1.298880923 | 0.042028635 | 0.015726014 | 0.392368029 | 0.20018777 | 0.39236803 | pCi |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | MW-3-110420 | 1 | TH-230 | 0.645251517 | 0.126995457 | 0.064793601 | 0.126995457 | 0.042112717 | 0.015757475 | 0.100230343 | 0.05113793 | 0.10023034 | pCi |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | MW-3-110420 | 1 | TH-232 | 0.031222341 | 0.026765892 | 0.013656067 | 0.026765892 | 0.036256943 | 0.012840188 | 0.026498553 | 0.01351967 | 0.02649855 | pCi |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | MW-4-110420 | 1 | TH-228 | 0 | 0.016044763 | 0.008186103 | 0.016044763 | 0.038024451 | 0.01346614 | 0.016044763 | 0.0081861 | 0.01604476 | pCi |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | MW-4-110420 | 1 | TH-229 | 10.24486937 | 1.300602351 | 0.663572628 | 1.300602351 | 0.052583219 | 0.020858421 | 0.398029514 | 0.20307628 | 0.39802951 | pCi |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | MW-4-110420 | 1 | TH-230 | 0.128568173 | 0.054497743 | 0.027804971 | 0.054497743 | 0.056678051 | 0.022894967 | 0.052235518 | 0.02665077 | 0.05223552 | pCi |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | MW-4-110420 | 1 | TH-232 | 0.008019437 | 0.015747951 | 0.008034669 | 0.015747951 | 0.029522605 | 0.009328134 | 0.015718096 | 0.00801944 | 0.0157181 | pCi |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | MW-6-110420 | 1 | TH-228 | 0.026390062 | 0.028795503 | 0.014691583 | 0.028795503 | 0.045298636 | 0.017540956 | 0.028618316 | 0.01460118 | 0.02861832 | pCi |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | MW-6-110420 | 1 | TH-229 | 10.2044955 | 1.290844708 | 0.658594239 | 1.290844708 | 0.044376538 | 0.017183893 | 0.381052651 | 0.19441462 | 0.38105265 | pCi |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | MW-6-110420 | 1 | TH-230 | 0.673519252 | 0.128927067 | 0.065779116 | 0.128927067 | 0.044465316 | 0.01721827 | 0.099979624 | 0.05101001 | 0.09997962 | pCi |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | MW-6-110420 | 1 | TH-232 | 0.040625778 | 0.030247418 | 0.015432356 | 0.030247418 | 0.039771977 | 0.014881631 | 0.029846234 | 0.01522767 | 0.02984623 | pCi |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | MW-7-110419 | 1 | TH-228 | 0.035638155 | 0.023678643 | 0.01208094 | 0.023678643 | 0.010731044 | 0 | 0.023283595 | 0.01187939 | 0.02328359 | pCi |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | MW-7-110419 | 1 | TH-229 | 10.23477854 | 1.297197551 | 0.661835485 | 1.297197551 | 0.036001928 | 0.012749876 | 0.390642021 | 0.19930715 | 0.39064202 | pCi |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | MW-7-110419 | 1 | TH-230 | 0.485386768 | 0.104469291 | 0.053300659 | 0.104469291 | 0.036073945 | 0.01277538 | 0.086442804 | 0.04410347 | 0.0864428 | pCi |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | MW-7-110419 | 1 | TH-232 | 0.038753264 | 0.02447192 | 0.012485673 | 0.02447192 | 0.010502135 | 0 | 0.024019522 | 0.01225486 | 0.02401952 | pCi |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | MW-8-110419 | 1 | TH-228 | 0.004018533 | 0.017618693 | 0.008989129 | 0.017618693 | 0.037332173 | 0.013220974 | 0.017611998 | 0.00898571 | 0.017612 | pCi |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | MW-8-110419 | 1 | TH-229 | 10.17421772 | 1.290697607 | 0.658519187 | 1.290697607 | 0.028956455 | 0.00914925 | 0.392217254 | 0.20011084 | 0.39221725 | pCi |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | MW-8-110419 | 1 | TH-230 | 0.937884647 | 0.165544887 | 0.084461677 | 0.165544887 | 0.042436606 | 0.015878665 | 0.120648924 | 0.06155557 | 0.12064892 | pCi |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | MW-8-110419 | 1 | TH-232 | 0.011798427 | 0.02044405 | 0.010430638 | 0.02044405 | 0.036535794 | 0.012938941 | 0.020394259 | 0.01040523 | 0.02039426 | pCi |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 1 | TH-228 | -0.004057242 | 0.017788408 | 0.009075718 | 0.017788408 | 0.043691715 | 0.016348295 | 0.017781648 | 0.00907227 | 0.01778165 | pCi |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 1 | TH-229 | 10.10356082 | 1.282782126 | 0.654480677 | 1.282782126 | 0.029264406 | 0.009246552 | 0.392928508 | 0.20047373 | 0.39292851 | pCi |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 1 | TH-230 | 0.692972714 | 0.133186381 | 0.067952235 | 0.133186381 | 0.029322952 | 0.00926505 | 0.10355696 | 0.05283518 | 0.10355696 | pCi |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | MW-MD-02-110420 | 1 | TH-232 | 0.023847811 | 0.022221965 | 0.011337737 | 0.022221965 | 0.029264295 | 0.009246517 | 0.022034253 | 0.01124197 | 0.02203425 | pCi |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 1 | TH-228 | 0.009227451 | 0.022178553 | 0.011315588 | 0.022178553 | 0.042861511 | 0.015179157 | 0.022150496 | 0.01130127 | 0.0221505 | pCi |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 1 | TH-229 | 10.10356082 | 1.288560638 | 0.657428897 | 1.288560638 | 0.046837469 | 0.017525353 | 0.411401685 | 0.20989882 | 0.41140168 | pCi |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 1 | TH-230 | 0.858537855 | 0.160387334 | 0.081830273 | 0.160387334 | 0.052364382 | 0.020277019 | 0.122299935 | 0.06239793 | 0.12229993 | pCi |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | MW-MD-110420 | 1 | TH-232 | 0.008698685 | 0.012101516 | 0.006174243 | 0.012101516 | 0.011786718 | 0 | 0.012055762 | 0.0061509 | 0.01205576 | pCi |

| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-01 | | | L | | 0.881919897 | 2 | 1440 | 0 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/5/2011 | 0.11375 |
| ARS1-B11-01657-01 | | | L | | 0.881919897 | 3073 | 1440 | 3 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/5/2011 | 0.26774 |
| ARS1-B11-01657-01 | | | L | | 0.881919897 | 3355 | 1440 | 14 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/5/2011 | 0.14097 |
| ARS1-B11-01657-01 | | | L | | 0.881919897 | 4 | 1440 | 5 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/5/2011 | 0.01982 |
| ARS1-B11-01657-02 | | | L | | 0.96350993 | 2 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/5/2011 | 0.11375 |
| ARS1-B11-01657-02 | | | L | | 0.96350993 | 3051 | 1440 | 17 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/5/2011 | 0.26774 |
| ARS1-B11-01657-02 | | | L | | 0.96350993 | 3404 | 1440 | 5 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/5/2011 | 0.14097 |
| ARS1-B11-01657-02 | | | L | | 0.96350993 | 2 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/5/2011 | 0.01982 |
| ARS1-B11-01657-03 | | | L | | 0.800580305 | 17 | 1440 | 1 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/5/2011 | 0.11375 |
| ARS1-B11-01657-03 | | | L | | 0.800580305 | 2847 | 1440 | 11 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/5/2011 | 0.26774 |
| ARS1-B11-01657-03 | | | L | | 0.800580305 | 30 | 1440 | 6 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/5/2011 | 0.14097 |
| ARS1-B11-01657-03 | | | L | | 0.800580305 | 15 | 1440 | 2 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/5/2011 | 0.01982 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | L | | 0.794700733 | 12 | 1440 | 0 | 1440 | 0.219564006 | 0.5 | 4/19/2011 | 5/5/2011 | 0.23087 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | L | | 0.794700733 | 2892 | 1440 | 15 | 1440 | 0.219564006 | 0.5 | 4/19/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | L | | 0.794700733 | 36 | 1440 | 2 | 1440 | 0.219564006 | 0.5 | 4/19/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | L | | 0.794700733 | 5 | 1440 | 3 | 1440 | 0.219564006 | 0.5 | 4/19/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | L | | 0.703374185 | 3 | 1440 | 0 | 1440 | 0.212170452 | 0.5 | 4/21/2011 | 5/5/2011 | 0.23042 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | L | | 0.703374185 | 2456 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/21/2011 | 5/5/2011 | 0.5354 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | L | | 0.703374185 | 6 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/21/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | L | | 0.703374185 | 4 | 1440 | 21 | 1440 | 0.212170452 | 0.5 | 4/21/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | L | | 0.732777571 | 2 | 1440 | 0 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/5/2011 | 0.23042 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | L | | 0.732777571 | 2486 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/5/2011 | 0.5354 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | L | | 0.732777571 | 15 | 1440 | 5 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | L | | 0.732777571 | 2 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | L | | 0.799757869 | 16 | 1440 | 2 | 1440 | 0.22593005 | 0.1 | 4/21/2011 | 5/5/2011 | 1.15210 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | L | | 0.799757869 | 2992 | 1440 | 4 | 1440 | 0.22593005 | 0.1 | 4/21/2011 | 5/5/2011 | 2.67744 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | L | | 0.799757869 | 89 | 1440 | 3 | 1440 | 0.22593005 | 0.1 | 4/21/2011 | 5/5/2011 | 1.40972 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | L | | 0.799757869 | 6 | 1440 | 1 | 1440 | 0.22593005 | 0.1 | 4/21/2011 | 5/5/2011 | 0.19822 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | L | | 0.588206835 | 9 | 1440 | 0 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | L | | 0.588206835 | 2094 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | L | | 0.588206835 | 88 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | L | | 0.588206835 | 6 | 1440 | 2 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | L | | 0.766225173 | 5 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | L | | 0.766225173 | 2628 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | L | | 0.766225173 | 168 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | L | | 0.766225173 | 10 | 1440 | 2 | 1440 | 0.209210098 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | L | | 0.762093662 | 2 | 1440 | 2 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | L | | 0.762093662 | 2560 | 1440 | 5 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | L | | 0.762093662 | 38 | 1440 | 6 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | L | | 0.762093662 | 3 | 1440 | 1 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | L | | 0.752864372 | 11 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | L | | 0.752864372 | 2767 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | L | | 0.752864372 | 186 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | L | | 0.752864372 | 14 | 1440 | 3 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | L | | 0.719742063 | 9 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/5/2011 | 0.23087 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | L | | 0.719742063 | 2643 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | L | | 0.719742063 | 127 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | L | | 0.719742063 | 10 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/5/2011 | 0.03964 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | L | | 0.721378018 | 3 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/5/2011 | 0.23087 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | L | | 0.721378018 | 2588 | 1440 | 1 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/5/2011 | 0.53548 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | L | | 0.721378018 | 241 | 1440 | 3 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/5/2011 | 0.28194 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | L | | 0.721378018 | 5 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/5/2011 | 0.03964 |
| -B11-01657-14 | ARS1-11-00897 | 011 | L | | 0.732892371 | 2 | 1440 | 3 | 1440 | 0.214771703 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| -B11-01657-14 | ARS1-11-00897 | 011 | L | | 0.732892371 | 2543 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| -B11-01657-14 | ARS1-11-00897 | 011 | L | | 0.732892371 | 175 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| -B11-01657-14 | ARS1-11-00897 | 011 | L | | 0.732892371 | 7 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |
| -B11-01657-15 | ARS1-11-00897 | 012 | L | | 0.64449472 | 4 | 1440 | 2 | 1440 | 0.214771703 | 0.5 | 4/20/2011 | 5/5/2011 | 0.23065 |
| -B11-01657-15 | ARS1-11-00897 | 012 | L | | 0.64449472 | 2326 | 1440 | 3 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/5/2011 | 0.53548 |
| -B11-01657-15 | ARS1-11-00897 | 012 | L | | 0.64449472 | 201 | 1440 | 4 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/5/2011 | 0.28194 |
| -B11-01657-15 | ARS1-11-00897 | 012 | L | | 0.64449472 | 2 | 1440 | 0 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/5/2011 | 0.03964 |

3500012630

| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-01 | | | 0.23156818 | 0.108293155 | 2.22 | 1.96 | 0.001388889 | 0 | 0.001388889 | 0.715 | ApexAlpha | A_1_1A | 4.88256979 | | |
| ARS1-B11-01657-01 | | | 0.538862212 | 0.255103153 | 2.22 | 1.96 | 2.134027778 | 0.002083333 | 2.131944444 | 0.715 | ApexAlpha | A_1_1A | 45.49444962 | | |
| ARS1-B11-01657-01 | | | 0.285873133 | 0.134316992 | 2.22 | 1.96 | 2.329861111 | 0.009722222 | 2.320138889 | 0.715 | ApexAlpha | A_1_1A | 40.06654739 | | |
| ARS1-B11-01657-01 | | | 0.044084012 | 0.018886518 | 2.22 | 1.96 | 0.002777778 | 0.003472222 | -0.000694444 | 0.715 | ApexAlpha | A_1_1A | 4.88256979 | | |
| ARS1-B11-01657-02 | | | 0.231621778 | 0.108293155 | 2.22 | 1.96 | 0.001388889 | 0.002083333 | -0.000694444 | 0.715 | ApexAlpha | A_1_1B | 4.88326931 | | |
| ARS1-B11-01657-02 | | | 0.538915446 | 0.255103153 | 2.22 | 1.96 | 2.11875 | 0.011805556 | 2.106944444 | 0.715 | ApexAlpha | A_1_1B | 42.06732941 | | |
| ARS1-B11-01657-02 | | | 0.285926474 | 0.134316992 | 2.22 | 1.96 | 2.363888889 | 0.003472222 | 2.360416667 | 0.715 | ApexAlpha | A_1_1B | 27.36777115 | | |
| ARS1-B11-01657-02 | | | 0.044137246 | 0.018886518 | 2.22 | 1.96 | 0.001388889 | 0.002083333 | -0.000694444 | 0.715 | ApexAlpha | A_1_1B | | | |
| ARS1-B11-01657-03 | | | 0.231939677 | 0.108293155 | 2.22 | 1.96 | 0.011805556 | 0.000694444 | 0.011111111 | 0.715 | ApexAlpha | A_1_2A | 10.64367199 | | |
| ARS1-B11-01657-03 | | | 0.539231184 | 0.255103153 | 2.22 | 1.96 | 1.977083333 | 0.007638889 | 1.969444444 | 0.715 | ApexAlpha | A_1_2A | 34.18570709 | | |
| ARS1-B11-01657-03 | | | 0.286242845 | 0.134316992 | 2.22 | 1.96 | 0.020833333 | 0.004166667 | 0.016666667 | 0.715 | ApexAlpha | A_1_2A | 7.859941959 | | |
| ARS1-B11-01657-03 | | | 0.044452984 | 0.018886518 | 2.22 | 1.96 | 0.010416667 | 0.001388889 | 0.009027778 | 0.715 | ApexAlpha | A_1_2A | 24.5623188 | | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | 0.470695935 | 0.108293155 | 2.22 | 1.96 | 0.008333333 | 0 | 0.008333333 | 0.715 | ApexAlpha | A_1_2B | 6.518549919 | | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | 1.078396444 | 0.255103153 | 2.22 | 1.96 | 2.008333333 | 0.010416667 | 1.997916667 | 0.715 | ApexAlpha | A_1_2B | 37.85322571 | | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | 0.572415697 | 0.134316992 | 2.22 | 1.96 | 0.025 | 0.001388889 | 0.023611111 | 0.715 | ApexAlpha | A_1_2B | 11.00005245 | | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | 0.088835902 | 0.018886518 | 2.22 | 1.96 | 0.003472222 | 0.002083333 | 0.001388889 | 0.715 | ApexAlpha | A_1_2B | 9.777824402 | | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | 0.471439186 | 0.108293155 | 2.22 | 1.96 | 0.002083333 | 0 | 0.002083333 | 0.715 | ApexAlpha | A_1_3A | 9.822584152 | | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | 1.08004008 | 0.255103153 | 2.22 | 1.96 | 1.705555556 | 0.003472222 | 1.702083333 | 0.715 | ApexAlpha | A_1_3A | 37.28762054 | | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | 0.574063151 | 0.134316992 | 2.22 | 1.96 | 0.004166667 | 0.003472222 | 0.000694444 | 0.715 | ApexAlpha | A_1_3A | 7.366938114 | | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | 0.09048009 | 0.018886518 | 2.22 | 1.96 | 0.002777778 | 0.014583333 | -0.011805556 | 0.715 | ApexAlpha | A_1_3A | 4.911292076 | | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | 0.47130111 | 0.108293155 | 2.22 | 1.96 | 0.001388889 | 0 | 0.001388889 | 0.715 | ApexAlpha | A_1_3B | 9.827695847 | | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | 1.07990468 | 0.255103153 | 2.22 | 1.96 | 1.726388889 | 0.002083333 | 1.724305556 | 0.715 | ApexAlpha | A_1_3B | 41.94086456 | | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | 0.573927481 | 0.134316992 | 2.22 | 1.96 | 0.010416667 | 0.003472222 | 0.006944444 | 0.715 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | 0.090344691 | 0.018886518 | 2.22 | 1.96 | 0.001388889 | 0.002083333 | -0.000694444 | 0.715 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | 2.347112 | 0.108293155 | 2.22 | 1.96 | 0.011111111 | 0.001388889 | 0.009722222 | 0.715 | ApexAlpha | A_1_4A | 6.138088703 | | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | 5.39031193 | 0.255103153 | 2.22 | 1.96 | 2.077777778 | 0.002777778 | 2.075 | 0.715 | ApexAlpha | A_1_4A | 34.26769638 | | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | 2.860407504 | 0.134316992 | 2.22 | 1.96 | 0.061805556 | 0.002083333 | 0.059722222 | 0.715 | ApexAlpha | A_1_4A | 17.800457 | | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | 0.442512015 | 0.018886518 | 2.22 | 1.96 | 0.004166667 | 0.000694444 | 0.003472222 | 0.715 | ApexAlpha | A_1_4A | 7.365706444 | | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | 0.473333398 | 0.108293155 | 2.22 | 1.96 | 0.00625 | 0 | 0.00625 | 0.715 | ApexAlpha | A_1_4B | | | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | 1.081996331 | 0.255103153 | 2.22 | 1.96 | 1.454166667 | 0.002083333 | 1.452083333 | 0.715 | ApexAlpha | A_1_4B | 41.15888977 | | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | 0.576023051 | 0.134316992 | 2.22 | 1.96 | 0.061111111 | 0.002083333 | 0.059027778 | 0.715 | ApexAlpha | A_1_4B | 17.11597824 | | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | 0.092436054 | 0.018886518 | 2.22 | 1.96 | 0.004166667 | 0.001388889 | 0.002777778 | 0.715 | ApexAlpha | A_1_4B | 9.780558586 | | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | 0.471106714 | 0.108293155 | 2.22 | 1.96 | 0.003472222 | 0.002083333 | 0.001388889 | 0.715 | ApexAlpha | A_1_5A | 4.889725208 | | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | 1.07925603 | 0.255103153 | 2.22 | 1.96 | 1.825 | 0.002083333 | 1.822916667 | 0.715 | ApexAlpha | A_1_5A | 33.5205307 | | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | 0.573277268 | 0.134316992 | 2.22 | 1.96 | 0.116666667 | 0.002083333 | 0.114583333 | 0.715 | ApexAlpha | A_1_5A | 31.78321457 | | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | 0.089695764 | 0.018886518 | 2.22 | 1.96 | 0.006944444 | 0.001388889 | 0.005555556 | 0.715 | ApexAlpha | A_1_5A | 9.779450417 | | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | 0.471402506 | 0.108293155 | 2.22 | 1.96 | 0.001388889 | 0.001388889 | 0 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | 1.0795458 | 0.255103153 | 2.22 | 1.96 | 1.777777778 | 0.003472222 | 1.774305556 | 0.715 | ApexAlpha | A_1_5B | 42.21513748 | | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | 0.573567618 | 0.134316992 | 2.22 | 1.96 | 0.026388889 | 0.004166667 | 0.022222222 | 0.715 | ApexAlpha | A_1_5B | 10.42634296 | | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | 0.089985533 | 0.018886518 | 2.22 | 1.96 | 0.002083333 | 0.000694444 | 0.001388889 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | 0.470527059 | 0.108293155 | 2.22 | 1.96 | 0.007638889 | 0.002777778 | 0.004861111 | 0.715 | ApexAlpha | A_1_6A | 4.886059284 | | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | 1.078688175 | 0.255103153 | 2.22 | 1.96 | 1.921527778 | 0.002777778 | 1.91875 | 0.715 | ApexAlpha | A_1_6A | 54.52222061 | | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | 0.572708276 | 0.134316992 | 2.22 | 1.96 | 0.129166667 | 0.002777778 | 0.126388889 | 0.715 | ApexAlpha | A_1_6A | 15.74396896 | | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | 0.08912791 | 0.018886518 | 2.22 | 1.96 | 0.009722222 | 0.002083333 | 0.007638889 | 0.715 | ApexAlpha | A_1_6A | 7.329089165 | | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | 0.471498483 | 0.108293155 | 2.22 | 1.96 | 0.00625 | 0 | 0.00625 | 0.715 | ApexAlpha | A_1_6B | 6.124101639 | | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | 1.079181876 | 0.255103153 | 2.22 | 1.96 | 1.835416667 | 0.001388889 | 1.834027778 | 0.715 | ApexAlpha | A_1_6B | 45.33320236 | | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | 0.5732027 | 0.134316992 | 2.22 | 1.96 | 0.088194444 | 0.001388889 | 0.086805556 | 0.715 | ApexAlpha | A_1_6B | 14.93114376 | | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | 0.089621331 | 0.018886518 | 2.22 | 1.96 | 0.006944444 | 0 | 0.006944444 | 0.715 | ApexAlpha | A_1_6B | 7.348922253 | | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | 0.471657981 | 0.108293155 | 2.22 | 1.96 | 0.002083333 | 0.001388889 | 0.000694444 | 0.715 | ApexAlpha | A_2_1A | 9.816235542 | | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | 1.079337654 | 0.255103153 | 2.22 | 1.96 | 1.797222222 | 0.000694444 | 1.796527778 | 0.715 | ApexAlpha | A_2_1A | 51.05318832 | | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | 0.57335879 | 0.134316992 | 2.22 | 1.96 | 0.167361111 | 0.002083333 | 0.165277778 | 0.715 | ApexAlpha | A_2_1A | 42.05364609 | | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | 0.089777108 | 0.018886518 | 2.22 | 1.96 | 0.003472222 | 0.001388889 | 0.002083333 | 0.715 | ApexAlpha | A_2_1A | 4.908117771 | | |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | 0.471305779 | 0.108293155 | 2.22 | 1.96 | 0.001388889 | 0.002083333 | -0.000694444 | 0.715 | ApexAlpha | A_2_1B | 4.879087925 | | |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | 1.079450724 | 0.255103153 | 2.22 | 1.96 | 1.765972222 | 0.000694444 | 1.765277778 | 0.715 | ApexAlpha | A_2_1B | 54.46378708 | | |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | 0.573472351 | 0.134316992 | 2.22 | 1.96 | 0.121527778 | 0.000694444 | 0.120833333 | 0.715 | ApexAlpha | A_2_1B | 9.75817585 | | |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | 0.089890457 | 0.018886518 | 2.22 | 1.96 | 0.004861111 | 0.000694444 | 0.004166667 | 0.715 | ApexAlpha | A_2_1B | 7.318632126 | | |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | 0.472813849 | 0.108293155 | 2.22 | 1.96 | 0.002777778 | 0.001388889 | 0.001388889 | 0.715 | ApexAlpha | A_2_2A | | | |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | 1.080466185 | 0.255103153 | 2.22 | 1.96 | 1.615277778 | 0.002083333 | 1.613194444 | 0.715 | ApexAlpha | A_2_2A | 56.75115204 | | |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | 0.574489844 | 0.134316992 | 2.22 | 1.96 | 0.139583333 | 0.002777778 | 0.136805556 | 0.715 | ApexAlpha | A_2_2A | 18.86896133 | | |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | 0.090905914 | 0.018886518 | 2.22 | 1.96 | 0.001388889 | 0 | 0.001388889 | 0.715 | ApexAlpha | A_2_2A | 4.902958393 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | Delta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-01 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-01 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-01 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-01 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-02 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-02 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-02 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-02 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-03 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-03 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-03 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-03 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 0.810439815 | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 13.66111111 | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66111111 | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66111111 | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66180556 | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66180556 | |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66180556 | |
| B11-01657-13 | ARS1-11-00897 | 010 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.66180556 | |
| B11-01657-14 | ARS1-11-00897 | 011 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-14 | ARS1-11-00897 | 011 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-14 | ARS1-11-00897 | 011 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-14 | ARS1-11-00897 | 011 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-15 | ARS1-11-00897 | 012 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-15 | ARS1-11-00897 | 012 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-15 | ARS1-11-00897 | 012 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| B11-01657-15 | ARS1-11-00897 | 012 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |

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| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-01 | | | | | | | 0.999195929 | | | | | 0.061663514 | 0.413125013 | 594.9000193 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-01 | | | | | | | 0.99999979 | | | | | 0.061663514 | 0.415953094 | 598.972456 | | ABAILEY | 5/6/2011 |
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| ARS1-B11-01657-01 | | | | | | | 1 | | | | | 0.061663514 | 0.415953182 | 598.9725816 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-02 | | | | | | | 0.999195929 | | | | | 0.061663514 | 0.408320756 | 587.981888 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-02 | | | | | | | 0.99999979 | | | | | 0.061663514 | 0.411115949 | 592.0069661 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-02 | | | | | | | 0.99999998 | | | | | 0.061663514 | 0.410293794 | 590.823064 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-02 | | | | | | | 1 | | | | | 0.061663514 | 0.411116035 | 592.0070902 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-03 | | | | | | | 0.999195929 | | | | | 0.061663514 | 0.381974502 | 550.0432834 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-03 | | | | | | | 0.99999979 | | | | | 0.061663514 | 0.38458934 | 553.8086497 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-03 | | | | | | | 0.99999998 | | | | | 0.061663514 | 0.383820234 | 552.701137 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-03 | | | | | | | 1 | | | | | 0.061663514 | 0.384589421 | 553.8087658 | | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | | | | 0.9845759 | | | | | 0.061663514 | 0.189549797 | 272.9517074 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | | | | 0.99999595 | | | | | 0.061663514 | 0.193680536 | 278.8999723 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | | | | 0.999999606 | | | | | 0.061663514 | 0.193293882 | 278.3431898 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-04 | ARS1-11-00897 | 001 | | | | | 1 | | | | | 0.061663514 | 0.193681321 | 278.9011017 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | | | | 0.986532304 | | | | | 0.061663514 | 0.162439633 | 233.9130718 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | | | | 0.999996467 | | | | | 0.061663514 | 0.165650507 | 238.5367308 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | | | | 0.999999656 | | | | | 0.061663514 | 0.165319734 | 238.0604164 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-05 | ARS1-11-00897 | 002 | | | | | 1 | | | | | 0.061663514 | 0.165651093 | 238.5375734 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | | | | 0.986532304 | | | | | 0.061663514 | 0.164398936 | 236.7344679 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | | | | 0.999996467 | | | | | 0.061663514 | 0.167648539 | 241.4138961 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | | | | 0.999999656 | | | | | 0.061663514 | 0.167313775 | 240.9318366 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-06 | ARS1-11-00897 | 003 | | | | | 1 | | | | | 0.061663514 | 0.167649131 | 241.4147489 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | | | | 0.986532304 | | | | | 0.061663514 | 0.039335366 | 56.64292637 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | | | | 0.999996467 | | | | | 0.061663514 | 0.040112891 | 57.76256271 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | | | | 0.999999656 | | | | | 0.061663514 | 0.040032793 | 57.6472214 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-07 | ARS1-11-00897 | 004 | | | | | 1 | | | | | 0.061663514 | 0.040113032 | 57.76276675 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | | | | 0.985553617 | | | | | 0.061663514 | 0.144508597 | 208.0923796 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | | | | 0.999996209 | | | | | 0.061663514 | 0.141319919 | 203.5006834 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | | | | 0.999999631 | | | | | 0.061663514 | 0.141037762 | 203.0943771 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-08 | ARS1-11-00897 | 005 | | | | | 1 | | | | | 0.061663514 | 0.141320455 | 203.5014549 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | | | | 0.985553617 | | | | | 0.061663514 | 0.174312559 | 251.0100843 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | | | | 0.999996209 | | | | | 0.061663514 | 0.177934594 | 256.2258147 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | | | | 0.999999631 | | | | | 0.061663514 | 0.177579332 | 255.7142382 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-09 | ARS1-11-00897 | 006 | | | | | 1 | | | | | 0.061663514 | 0.177935268 | 256.2267861 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | | | | 0.985553617 | | | | | 0.061663514 | 0.169664224 | 244.3164821 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | | | | 0.999996209 | | | | | 0.061663514 | 0.173189671 | 249.3931263 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | | | | 0.999999631 | | | | | 0.061663514 | 0.172843883 | 248.8951918 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-10 | ARS1-11-00897 | 007 | | | | | 1 | | | | | 0.061663514 | 0.173190328 | 249.3940718 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | | | | 0.985553617 | | | | | 0.061663514 | 0.184202339 | 265.2513686 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | | | | 0.999996209 | | | | | 0.061663514 | 0.188029874 | 270.7630182 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | | | | 0.999999631 | | | | | 0.061663514 | 0.187654456 | 270.2224169 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-11 | ARS1-11-00897 | 008 | | | | | 1 | | | | | 0.061663514 | 0.188030587 | 270.7640447 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | | | | 0.9845759 | | | | | 0.061663514 | 0.175373837 | 252.5383249 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | | | | 0.99999595 | | | | | 0.061663514 | 0.179195648 | 258.0417337 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | | | | 0.999999606 | | | | | 0.061663514 | 0.178837911 | 257.5265916 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-12 | ARS1-11-00897 | 009 | | | | | 1 | | | | | 0.061663514 | 0.179196374 | 258.0427787 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | | | | 0.984575221 | | | | | 0.061663514 | 0.172810431 | 248.8470212 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | | | | 0.99999595 | | | | | 0.061663514 | 0.176576502 | 254.2701631 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | | | | 0.999999606 | | | | | 0.061663514 | 0.176223993 | 253.7625504 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-13 | ARS1-11-00897 | 010 | | | | | 1 | | | | | 0.061663514 | 0.176577217 | 254.2711928 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | | | | | 0.985552937 | | | | | 0.061663514 | 0.171161696 | 246.4728424 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | | | | | 0.999996209 | | | | | 0.061663514 | 0.17471838 | 251.594467 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | | | | | 0.999999631 | | | | | 0.061663514 | 0.17436954 | 251.0921374 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-14 | ARS1-11-00897 | 011 | | | | | 1 | | | | | 0.061663514 | 0.174719042 | 251.5954209 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | | | | | 0.985552937 | | | | | 0.061663514 | 0.150517066 | 216.7445751 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | | | | | 0.999996209 | | | | | 0.061663514 | 0.159665931 | 229.9189405 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | | | | | 0.999999631 | | | | | 0.061663514 | 0.159347144 | 229.4598879 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-15 | ARS1-11-00897 | 012 | | | | | 1 | | | | | 0.061663514 | 0.159666536 | 229.9198122 | ASP-A-008 | ABAILEY | 5/6/2011 |

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| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | NPOP20E-110420 | 1 | TH-228 | 0.037393028 | 0.073429543 | 0.037464052 | 0.073429543 | 0.137657996 | 0.043495221 | 0.073290336 | 0.03739303 | 0.07329034 | pCi |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | NPOP20E-110420 | 1 | TH-229 | 51.57761818 | 6.518882171 | 3.325960291 | 6.518882171 | 0.197240821 | 0.073802345 | 1.907054956 | 0.97298722 | 1.90705496 | pCi |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | NPOP20E-110420 | 1 | TH-230 | 1.853608356 | 0.434323989 | 0.221593872 | 0.434323989 | 0.197635416 | 0.073949992 | 0.372087058 | 0.18984034 | 0.37208706 | pCi |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | NPOP20E-110420 | 1 | TH-232 | 0.109895077 | 0.161093943 | 0.082190787 | 0.161093943 | 0.275104976 | 0.112734516 | 0.16054547 | 0.08191095 | 0.16054547 | pCi |

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| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | L | | 0.800268917 | 3 | 1440 | 1 | 1440 | 0.213413358 | 0.1 | 4/20/2011 | 5/5/2011 | 1.1532 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | L | | 0.800268917 | 2819 | 1440 | 3 | 1440 | 0.213413358 | 0.1 | 4/20/2011 | 5/5/2011 | 2.67744 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | L | | 0.800268917 | 104 | 1440 | 3 | 1440 | 0.213413358 | 0.1 | 4/20/2011 | 5/5/2011 | 1.4097 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | L | | 0.800268917 | 13 | 1440 | 7 | 1440 | 0.213413358 | 0.1 | 4/20/2011 | 5/5/2011 | 0.19822 |

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| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | 2.352220817 | 0.108293155 | 2.22 | 1.96 | 0.002083333 | 0.000694444 | 0.001388889 | 0.715 | ApexAlpha | A_2_3B | 4.919867039 | | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | 5.393033243 | 0.255103153 | 2.22 | 1.96 | 1.957638889 | 0.002083333 | 1.955555556 | 0.715 | ApexAlpha | A_2_3B | 41.25119019 | | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | 2.863132935 | 0.134316992 | 2.22 | 1.96 | 0.072222222 | 0.002083333 | 0.070138889 | 0.715 | ApexAlpha | A_2_3B | 8.375487328 | | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | 0.445231923 | 0.018886518 | 2.22 | 1.96 | 0.009027778 | 0.004861111 | 0.004166667 | 0.715 | ApexAlpha | A_2_3B | 9.839734077 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | Delta |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.66180556 | |

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| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | | | | 0.985552937 | | | | | 0.061663514 | 0.03714299 | 53.48590581 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | | | | 0.999996209 | | | | | 0.061663514 | 0.037914809 | 54.59732534 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | | | | 0.999999631 | | | | | 0.061663514 | 0.037839109 | 54.48831716 | ASP-A-008 | ABAILEY | 5/6/2011 |
| ARS1-B11-01657-16 | ARS1-11-00897 | 013 | | | | | 1 | | | | | 0.061663514 | 0.037914953 | 54.59753233 | ASP-A-008 | ABAILEY | 5/6/2011 |

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## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01597-01 | Bil-01597 | A12A | 12033 | Am | 4-28-11 1115 | @F | 86400 |
| 11-01597-02 | ↓ | A12B | 12034 | ↓ | ↓ | @F | ↓ |
| 11-01597-03 | ↓ | A13A | 12036 | ↓ | ↓ | @F | ↓ |
| 11-01597-04 | ↓ | A13B | 12037 | ↓ | ↓ | @F | ↓ |
| 11-01597-05 | ↓ | A14A | 12038 | ↓ | ↓ | @F | ↓ |
| 11-01597-06 | ↓ | A14B | 12030 | ↓ | ↓ | @F | ↓ |
| 11-01597-07 | ↓ | A15A | 12032 | ↓ | ↓ | @F | ↓ |
| 11-01597-08 | ↓ | A15B | 12035 | ↓ | ↓ | @F | ↓ |
| 11-01597-09 | ↓ | A21A | 12031 | ↓ | ↓ | @F | ↓ |
| 11-01597-10 | ↓ | A22A | 12029 | ↓ | ↓ | @F | ↓ LSW 5-3-11 |
| 1-36 | Source Check | A11A - A36B | N/A | Source | 5-4-11 1755 | @F | 7200 |
| ↓ | ↓ | ↓ | ↓ | ↓ | 5-4-11 2110 | @F | ↓ |
| 11-01657-01 | Bil-01657 | A11A | 12136 | Th | 5-5-11 0353 | @F | 86400 |
| 11-01657-02 | ↓ | A11B | 12137 | ↓ | ↓ | @F | ↓ |
| 11-01657-03 | ↓ | A21A | 12138 | ↓ | ↓ | @F | ↓ |

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Reviewed By: LSW Date: 5-10-11
Initials

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01657-04 | B11-01657 | A12B | 12139 | Th | 5-5-11 0353 | | 86400 |
| 11-01657-05 | ↓ | A13A | 12140 | ↓ | ↓ | | ↓ |
| 11-01657-06 | ↓ | A13B | 12141 | ↓ | ↓ | | ↓ |
| 11-01657-07 | ↓ | A14A ~~A12~~ 5-5-11 | ~~12143~~ 12142 5-6-11 | ↓ | ↓ | | ↓ |
| 11-01657-08 | ↓ | A14B | 12143 | ↓ | ↓ | | ↓ |
| 11-01657-09 | ↓ | A15A | 12144 | ↓ | ↓ | | ↓ |
| 11-01657-10 | ↓ | A15B | 12145 | ↓ | ↓ | | ↓ |
| 11-01657-11 | ↓ | A16A | 12146 | ↓ | ↓ | | ↓ |
| 11-01657-12 | ↓ | A16B | 12147 | ↓ | ↓ | | ↓ |
| 11-01657-13 | ↓ 5-5-11 | A21A ~~A21B~~ | 12148 | ↓ | ↓ | | ↓ |
| 11-01657-14 | ↓ 5-5-11 | A21B ~~A22A~~ | 12149 | ↓ | ↓ | | ↓ |
| 11-01657-15 | ↓ | A22A | 12150 | ↓ | ↓ | | ↓ |
| 11-01657-16 | ↓ | A23B | 12151 | ↓ | ↓ | | ↓ |
| 11-01647-01 | B11-01647 | A24A | 12152 | ↓ | ↓ | | ↓ |
| 11-01647-02 | ↓ | A24B | 12154 | ↓ | ↓ | | ↓ |

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Reviewed By: LSW Date: 5-10-11
Initials

# Nonconformance Report

**NCR #:** 1292
*Assigned by QAO*

## Part A: Initiator (Deficiency Identification)

**Describe Nonconformance:**

Method blank for TH-232 is biased high and did not pass method blank evaluation. ARS1-11-00897-014, 015, 016 Tracer recoveries are biased low at 26%, 26%, and 18%.

| | |
|---|---|
| ARS1-B11-01660 | ARS-031 |
| ARS Batch No. | ARS Procedure No. |
| Isotopic Thorium | Eichrom ACW-10 |
| Analyte(s) | Method |
| ARS1-11-0897 | |
| ARS SDG(s) | |

| | | |
|---|---|---|
| Heather Wright | Heather Wright | 5/10/11 |
| Initiator's Signature | Name (print) | Date |

# Nonconformance Report

**NCR #:** 1292
*Assigned by QAO*

## Part B: Responsible Manager (Investigation and Proposed Resolution)

**1) Did this nonconformance affect analytical results?** ○ Yes ◉ No

*If Yes:*

Identify affected client(s): _____

ARS Sample ID(s) / SDG(s): _____

**2) Is client contact required?** ○ Yes (Part C Signature Required) ◉ No

**3) Cause of Nonconformance:**

Suspected matrix interference

**4) Proposed Immediate Resolution** Proposed Completion Date: 06-02-2011

Is retesting of sample required? ○ Yes ◉ No

Has Nonconformance item(s) been tagged Out of Service? ○ Yes ◉ N/A

**Immediate Resolution Actions(s):** *CAR Required* ○ *Yes* ◉ *No*

Rerun samples.

**Long Term Action(s):**

Jamaal Brown

Person(s) assigned to Implement Resolution

Virgene Mulligan

Responsible Manager's Signature

06-02-2011

Date

# Nonconformance Report

**NCR #:** 1292
*Assigned by QAO*

## Part C: QAO (Evaluation)

**1) Route to Project Manager for Client Notification** ☐ N/A

Project Manager's Signature — 5/12/11 Date of Notification

**2) Notify Regulation Body** ☐ N/A

QAO's Signature — Date of Notification

**3) Execute Immediate Resolution and Establish Completion Date** ☐ N/A

Responsible Individual's Signature — 06-02-2011 Completion Date

**4) Execute Corrective Action and Establish Completion Date** ☐ N/A

Responsible Manager's Signature — Completion Date

**5) Nonconformance Category (*Select Only One* )**

| | | |
|---|---|---|
| ○ PT Results | ○ HS&E | ○ Equipment |
| ◉ Batch QC Results | ○ Contractual | ○ Software |
| ○ Instr. QC or Malfunction | ○ Procedural | ○ Prep |
| ○ Missing or Defective Data | ○ Reporting Errors | ○ Other |

Additional Category Detail (e.g., Blank, LCS, Chemical Yield, Background, Lost Sample, etc?)

### Verification

**Immediate Resolution Verified Complete:** 06-02-2011 Date ☒ N/A

**Corrective Actions Verified Complete:** Date ☐ N/A

**OAO Comments:**

Rerun results confirmed matrix interference.

QAO's Signature (Indicates NCR Complete) — 06-02-2011 Date

# Nonconformance Report

**NCR #:** 1292
*Assigned by QAO*

## Part D: Corrective Action Request

**Responsible Manager (Investigation, Root Cause, and Proposed Corrective Actions(s))**

**1) Description of Root Cause Investigation**

**2) Results of Root Cause Determination**

**3) Proposed Corrective Action(s) and Preventive Measures**
(Include Responsible Individual and Estimated Completion Date for each action)

Responsible Manager's Signature

Date

ARS INTERNATIONAL

# Rerun Report

| | |
|---|---|
| SDG | ARS1-11-00897 |
| Analysis | ASP-A-008 |
| Run | 2 |

| Fraction | Client ID | Rerun Reason | Comments | Original Deadline | Rerun Deadline |
|---|---|---|---|---|---|
| 014 | PR-SW-01-110420 | Tracer Recovery | TR biased low, rerun batch | 05/06/11 | 05/13/11 |
| 015 | RB-01-110420 | Tracer Recovery | TR biased low, rerun batch | 05/06/11 | 05/13/11 |
| 016 | RB-02-110421 | Tracer Recovery | TR biased low, rerun batch | 05/06/11 | 05/13/11 |
| 017 | RM-JM-SW-02-110420 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 018 | RM-JM-SW-110420 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 019 | RM-SW-BG-110419 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 020 | RP-JM-SW-01-110420 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 021 | RP-JM-SW-110420 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 022 | RP-SW-01-110419 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 023 | RP-SW-BG-041911 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 024 | SPOP35-110421 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |
| 025 | MW-RM-110420 | Blank | MB failed evaluation, rerun batch | 05/06/11 | 05/13/11 |

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01660**

| Method | ARS-031 | Analysis | ASP-A-008 | Matrix | AQ |
|---|---|---|---|---|---|

**Description** **Thorium in Water**

| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | LCS | B-11680 | | | | | | | | |
| ARS1-B11-01660-02 | LCSD | B-11681 | | | | | | | | |
| ARS1-B11-01660-03 | MBL | | | | | | | | | |
| ARS1-B11-01660-04 | TRG | | | | **ARS1-11-00897** | 014 | 1 | PR-SW-01-110420 | STD | 05/03/11 |
| ARS1-B11-01660-05 | TRG | | | | **ARS1-11-00897** | 015 | 1 | RB-01-110420 | STD | 05/03/11 |
| ARS1-B11-01660-06 | TRG | | | | **ARS1-11-00897** | 016 | 1 | RB-02-110421 | STD | 05/03/11 |
| ARS1-B11-01660-07 | TRG | | | | **ARS1-11-00897** | 017 | 1 | RM-JM-SW-02-110420 | STD | 05/03/11 |
| ARS1-B11-01660-08 | TRG | | | | **ARS1-11-00897** | 018 | 1 | RM-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01660-09 | TRG | | | | **ARS1-11-00897** | 019 | 1 | RM-SW-BG-110419 | STD | 05/03/11 |
| ARS1-B11-01660-10 | TRG | | | | **ARS1-11-00897** | 020 | 1 | RP-JM-SW-01-110420 | STD | 05/03/11 |
| ARS1-B11-01660-11 | TRG | | | | **ARS1-11-00897** | 021 | 1 | RP-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01660-12 | TRG | | | | **ARS1-11-00897** | 022 | 1 | RP-SW-01-110419 | STD | 05/03/11 |
| ARS1-B11-01660-13 | TRG | | | | **ARS1-11-00897** | 023 | 1 | RP-SW-BG-041911 | STD | 05/03/11 |
| ARS1-B11-01660-14 | TRG | | | | **ARS1-11-00897** | 024 | 1 | SPOP35-110421 | STD | 05/03/11 |
| ARS1-B11-01660-15 | TRG | | | | **ARS1-11-00897** | 025 | 1 | MW-RM-110420 | STD | 05/03/11 |

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# Technical Notes



| | |
|---|---|
| Batch | ARS1-B11-01660 |
| Analysis Code | ASP-A-008 |
| Procedure No | ARS-031 |
| Matrix | AQ |

| # | Date | Dept | Batch Technical Notes | User ID |
|---|---|---|---|---|
| 1 | 05/04/11 12:39 | CHEMISTRY | B11-01660-04,05 did not seem to plate well, there is a whitish film covering the disk. Tracer recovery/activity could be affected. | JBROWN |
| 2 | 05/10/11 12:22 | COUNTROOM | ARS1-B11-01660-04 (ARS1-11-00897-014) fell outside the tracer acceptance range biased low at 25.7813107%. ARS1-B11-01660-05 (ARS1-11-00897-015) fell outside the tracer acceptance range biased low at 25.8777444%. ARS1-B11-01660-06 (ARS1-11-00897-016) fell outside the tracer acceptance range biased low at 17.6493122%. ARS1-B11-01660-03 (MBL) Th-230/232 failed method blank requirements according to ARS-014 rev4 sections 6.1.2.3.2.2. and 6.1.2.3.2.3. | JARMSTRONG |

# LCS Report
## Analytical Batch: ARS1-B11-01660



| BlindID | ABatch | ABatchSampleID | BlindGroup | StdID | Isotope | ExpectedAddition | ExpectedValue | EmptyWt | GrossWt | NetWt | UserID | ModDate | ExpectedValue_CT | MidPointCountDate | KnownValue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-11680 | ARS1-B11-01660 | ARS1-B11-01660-01 | B-Th230 | S-0231 | Th-230 | 1 | 5.656931968 | 13.3199 | 14.3495 | 1.0296 | VMULLIGAN | 4/28/2011 | 5.656930829 | 5/6/2011 | 5.824375981 |
| B-11681 | ARS1-B11-01660 | ARS1-B11-01660-02 | B-Th230 | S-0231 | Th-230 | 1 | 5.656931968 | 13.3817 | 14.4106 | 1.0289 | VMULLIGAN | 4/28/2011 | 5.656930829 | 5/6/2011 | 5.82041613 |

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| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | | | | 1 | TH-228 | 0.017647893 | 0.011725583 | 0.005982441 | 0.011725583 | 0.005313977 | 0 | 0.011529957 | 0.00588263 | 0.01152996 | pCi |
| ARS1-B11-01660-01 | | | | 1 | TH-229 | 5.107780859 | 0.64757132 | 0.330393531 | 0.64757132 | 0.020946222 | 0.007837527 | 0.195585452 | 0.0997885 | 0.19558545 | pCi |
| ARS1-B11-01660-01 | | | | 1 | TH-230 | 5.767023842 | 0.727601398 | 0.371225203 | 0.727601398 | 0.039211559 | 0.016964915 | 0.208775948 | 0.10651834 | 0.20877595 | pCi |
| ARS1-B11-01660-01 | | | | 1 | TH-232 | 0.105034279 | 0.033035278 | 0.016854734 | 0.033035278 | 0.025507562 | 0.010118199 | 0.030498843 | 0.01556063 | 0.03049884 | pCi |
| ARS1-B11-01660-02 | | | | 1 | TH-228 | 0.027772241 | 0.017709182 | 0.009035297 | 0.017709182 | 0.02136245 | 0.007993269 | 0.017388174 | 0.00887152 | 0.01738817 | pCi |
| ARS1-B11-01660-02 | | | | 1 | TH-229 | 5.08860334 | 0.645918496 | 0.329550253 | 0.645918496 | 0.043081603 | 0.018874499 | 0.197413476 | 0.10072116 | 0.19741348 | pCi |
| ARS1-B11-01660-02 | | | | 1 | TH-230 | 6.423776248 | 0.807200709 | 0.411837096 | 0.807200709 | 0.025856574 | 0.010256643 | 0.220920705 | 0.11271465 | 0.22092071 | pCi |
| ARS1-B11-01660-02 | | | | 1 | TH-232 | 0.106258481 | 0.032517964 | 0.016590798 | 0.032517964 | 0.021190344 | 0.007928871 | 0.029874562 | 0.01524212 | 0.02987456 | pCi |
| ARS1-B11-01660-03 | | | | 1 | TH-228 | 0.00394243 | 0.00774184 | 0.003949918 | 0.00774184 | 0.014513589 | 0.004585798 | 0.007727163 | 0.00394243 | 0.00772716 | pCi |
| ARS1-B11-01660-03 | | | | 1 | TH-229 | 5.078005237 | 0.644307295 | 0.328728211 | 0.644307295 | 0.035472649 | 0.015086845 | 0.196130446 | 0.10006655 | 0.19613045 | pCi |
| ARS1-B11-01660-03 | | | | 1 | TH-230 | 0.278213876 | 0.058323471 | 0.029756873 | 0.058323471 | 0.02763897 | 0.011164698 | 0.047654824 | 0.02431369 | 0.04765482 | pCi |
| ARS1-B11-01660-03 | | | | 1 | TH-232 | 0.044972683 | 0.020642479 | 0.010531877 | 0.020642479 | 0.018165053 | 0.006433049 | 0.019914019 | 0.01016021 | 0.01991402 | pCi |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | TH-228 | 0.03388613 | 0.03856668 | 0.019676878 | 0.03856668 | 0.030612714 | 0 | 0.038348576 | 0.0195656 | 0.03834858 | pCi |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | TH-229 | 10.14595339 | 1.395898953 | 0.712193343 | 1.395898953 | 0.229113666 | 0.099581052 | 0.66697633 | 0.34029405 | 0.66697633 | pCi |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | TH-230 | 1.572556901 | 0.323896523 | 0.165253328 | 0.323896523 | 0.102880659 | 0.036434593 | 0.262271152 | 0.13381181 | 0.26227115 | pCi |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 1 | TH-232 | 0.08841753 | 0.081754295 | 0.041711375 | 0.081754295 | 0.119019072 | 0.044533817 | 0.081052886 | 0.04135351 | 0.08105289 | pCi |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | TH-228 | 0.078778763 | 0.059131701 | 0.030169235 | 0.059131701 | 0.030498635 | 0 | 0.058360124 | 0.02977557 | 0.05836012 | pCi |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | TH-229 | 10.16412163 | 1.399635544 | 0.714099767 | 1.399635544 | 0.149429606 | 0.05927491 | 0.670755649 | 0.34222227 | 0.67075565 | pCi |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | TH-230 | 1.061831954 | 0.260866101 | 0.13309495 | 0.260866101 | 0.149728507 | 0.059393476 | 0.227115893 | 0.11587546 | 0.22711589 | pCi |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | RB-01-110420 | 1 | TH-232 | 0.079762958 | 0.156632339 | 0.079914459 | 0.156632339 | 0.273833491 | 0.121476916 | 0.156335397 | 0.07976296 | 0.1563354 | pCi |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | TH-228 | 0.052681112 | 0.059953341 | 0.030588439 | 0.059953341 | 0.047588605 | 0 | 0.05961429 | 0.03041545 | 0.05961429 | pCi |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | TH-229 | 10.164119 | 1.478989962 | 0.754586715 | 1.478989962 | 0.185204028 | 0.069298493 | 0.82361737 | 0.42021294 | 0.82361737 | pCi |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | TH-230 | 0.672070467 | 0.249994757 | 0.127548345 | 0.249994757 | 0.225986167 | 0.089642943 | 0.236430944 | 0.12062803 | 0.23643094 | pCi |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | RB-02-110421 | 1 | TH-232 | 0.085990522 | 0.11227976 | 0.057285592 | 0.11227976 | 0.185203313 | 0.069298225 | 0.111797733 | 0.05703966 | 0.11179773 | pCi |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | TH-228 | 0.027277183 | 0.025544718 | 0.013033019 | 0.025544718 | 0.036200719 | 0.012820276 | 0.025331091 | 0.01292403 | 0.02533109 | pCi |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | TH-229 | 10.13384122 | 1.284118217 | 0.655162355 | 1.284118217 | 0.045810167 | 0.017739036 | 0.385838236 | 0.19685624 | 0.38583824 | pCi |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | TH-230 | 0.871007328 | 0.155566342 | 0.079370583 | 0.155566342 | 0.041139133 | 0.015393185 | 0.11453836 | 0.05843794 | 0.11453836 | pCi |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 1 | TH-232 | 0.110564403 | 0.043699105 | 0.022295462 | 0.043699105 | 0.028071016 | 0.008869481 | 0.041605835 | 0.02122747 | 0.04160584 | pCi |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | TH-228 | 0.036489552 | 0.024244327 | 0.012369555 | 0.024244327 | 0.01098741 | 0 | 0.023839841 | 0.01216318 | 0.02383984 | pCi |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | TH-229 | 10.21458896 | 1.296191371 | 0.661322128 | 1.296191371 | 0.04271809 | 0.01598399 | 0.394996944 | 0.20152905 | 0.39499694 | pCi |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | TH-230 | 0.544542865 | 0.11406347 | 0.058195648 | 0.11406347 | 0.042803539 | 0.016015962 | 0.093161312 | 0.04753128 | 0.09316131 | pCi |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 1 | TH-232 | 0.138838501 | 0.051372357 | 0.026210386 | 0.051372357 | 0.036851705 | 0.013050819 | 0.048554585 | 0.02477275 | 0.04855459 | pCi |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | TH-228 | 0.071110945 | 0.041752769 | 0.021302433 | 0.041752769 | 0.047861316 | 0.01790845 | 0.040858638 | 0.02084624 | 0.04085864 | pCi |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | TH-229 | 10.23477854 | 1.304360991 | 0.665490301 | 1.304360991 | 0.046781197 | 0.017504298 | 0.413808285 | 0.21112668 | 0.41380829 | pCi |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | TH-230 | 0.72692127 | 0.142516111 | 0.072712301 | 0.142516111 | 0.046874762 | 0.017539307 | 0.112214771 | 0.05725243 | 0.11221477 | pCi |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 1 | TH-232 | 0.12597932 | 0.051226947 | 0.026136198 | 0.051226947 | 0.040356824 | 0.014292137 | 0.048911874 | 0.02495504 | 0.04891187 | pCi |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | TH-228 | 0.026113869 | 0.02715991 | 0.013857097 | 0.02715991 | 0.040432974 | 0.014319105 | 0.026975906 | 0.01376322 | 0.02697591 | pCi |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | TH-229 | 10.19440203 | 1.298281753 | 0.662388649 | 1.298281753 | 0.055843067 | 0.022151519 | 0.409223828 | 0.20878767 | 0.40922383 | pCi |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | TH-230 | 0.755229107 | 0.146799651 | 0.074897781 | 0.146799651 | 0.060191736 | 0.024314312 | 0.11497209 | 0.05865923 | 0.11497209 | pCi |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 1 | TH-232 | 0.076649323 | 0.038458034 | 0.019621446 | 0.038458034 | 0.031352821 | 0.00990642 | 0.037325608 | 0.01904368 | 0.03732561 | pCi |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | TH-228 | 0.026013156 | 0.070764538 | 0.036104356 | 0.070764538 | 0.051238996 | 0.019841237 | 0.065279804 | 0.03330602 | 0.0652798 | pCi |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | TH-229 | 10.11365429 | 1.287151002 | 0.656709695 | 1.287151002 | 0.050132371 | 0.01941272 | 0.403286185 | 0.20575826 | 0.40328619 | pCi |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | TH-230 | 0.702348426 | 0.137923086 | 0.070368921 | 0.137923086 | 0.05023265 | 0.019451551 | 0.108706556 | 0.05546253 | 0.10870656 | pCi |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 1 | TH-232 | 0.141857603 | 0.054487834 | 0.027799915 | 0.054487834 | 0.044930564 | 0.016811839 | 0.051720149 | 0.02638783 | 0.05172015 | pCi |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | TH-228 | 0.104096263 | 0.042701203 | 0.021786328 | 0.042701203 | 0.011284035 | 0 | 0.040805735 | 0.02081925 | 0.04080573 | pCi |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | TH-229 | 10.1136569 | 1.285495568 | 0.655865086 | 1.285495568 | 0.037809204 | 0.013389912 | 0.397970007 | 0.20304592 | 0.39797001 | pCi |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | TH-230 | 1.072519788 | 0.1840122 | 0.093883776 | 0.1840122 | 0.037884824 | 0.013416692 | 0.13060544 | 0.06663543 | 0.13060544 | pCi |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 1 | TH-232 | 0.109886334 | 0.043525079 | 0.022206673 | 0.043525079 | 0.011029332 | 0 | 0.041449364 | 0.02114763 | 0.04144936 | pCi |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | TH-228 | 0.161190066 | 0.056580388 | 0.028867545 | 0.056580388 | 0.0383963 | 0.013597829 | 0.053120722 | 0.02710241 | 0.05312072 | pCi |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | TH-229 | 10.12375037 | 1.286212087 | 0.656230657 | 1.286212087 | 0.029744122 | 0.009398126 | 0.396533788 | 0.20231316 | 0.39653379 | pCi |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | TH-230 | 1.202221671 | 0.200462106 | 0.102276585 | 0.200462106 | 0.043590944 | 0.016310588 | 0.138103755 | 0.0704611 | 0.13810376 | pCi |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 1 | TH-232 | 0.072716165 | 0.038164325 | 0.019471594 | 0.038164325 | 0.037529621 | 0.013290899 | 0.037138629 | 0.01894828 | 0.03713863 | pCi |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | TH-228 | 0.0754155 | 0.038772021 | 0.019781644 | 0.038772021 | 0.040606802 | 0.015194001 | 0.03768542 | 0.01922726 | 0.03768542 | pCi |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | TH-229 | 10.17421246 | 1.287055154 | 0.656660793 | 1.287055154 | 0.027190676 | 0.008591324 | 0.380061304 | 0.19390883 | 0.3800613 | pCi |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | TH-230 | 0.592061916 | 0.116798949 | 0.059591301 | 0.116798949 | 0.027245071 | 0.008608511 | 0.092312545 | 0.04709824 | 0.09231254 | pCi |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 1 | TH-232 | 0.09971059 | 0.040799559 | 0.020816102 | 0.040799559 | 0.027190571 | 0.008591291 | 0.03897917 | 0.01988733 | 0.03897917 | pCi |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | TH-228 | 0.012318119 | 0.021344561 | 0.010890082 | 0.021344561 | 0.038145108 | 0.01350887 | 0.021292577 | 0.01086356 | 0.02129258 | pCi |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | TH-229 | 10.12374776 | 1.285968288 | 0.656106269 | 1.285968288 | 0.043262234 | 0.016187594 | 0.395743253 | 0.20190982 | 0.39574325 | pCi |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | TH-230 | 1.034526789 | 0.179246269 | 0.091452178 | 0.179246269 | 0.048367248 | 0.018729212 | 0.128436253 | 0.0655287 | 0.12843625 | pCi |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 1 | TH-232 | 0.104450935 | 0.042087519 | 0.021473224 | 0.042087519 | 0.010887001 | 0 | 0.040149647 | 0.02048451 | 0.04014965 | pCi |

| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_DL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | | | L | | 0.756980858 | 9 | 1440 | 0 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/6/2011 | 0.114534927 |
| ARS1-B11-01660-01 | | | L | | 0.756980858 | 2629 | 1440 | 3 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/6/2011 | 0.269449184 |
| ARS1-B11-01660-01 | | | L | | 0.756980858 | 2973 | 1440 | 14 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/6/2011 | 0.183191481 |
| ARS1-B11-01660-01 | | | L | | 0.756980858 | 59 | 1440 | 5 | 1440 | 0.212452739 | 1 | 5/4/2011 | 5/6/2011 | 0.030092434 |
| ARS1-B11-01660-02 | | | L | | 0.827102709 | 17 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/6/2011 | 0.114534927 |
| ARS1-B11-01660-02 | | | L | | 0.827102709 | 2603 | 1440 | 17 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/6/2011 | 0.269449184 |
| ARS1-B11-01660-02 | | | L | | 0.827102709 | 3263 | 1440 | 5 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/6/2011 | 0.183191481 |
| ARS1-B11-01660-02 | | | L | | 0.827102709 | 57 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/4/2011 | 5/6/2011 | 0.030092434 |
| ARS1-B11-01660-03 | | | L | | 0.739305804 | 3 | 1440 | 1 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/6/2011 | 0.114534927 |
| ARS1-B11-01660-03 | | | L | | 0.739305804 | 2608 | 1440 | 11 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/6/2011 | 0.269449184 |
| ARS1-B11-01660-03 | | | L | | 0.739305804 | 148 | 1440 | 6 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/6/2011 | 0.183191481 |
| ARS1-B11-01660-03 | | | L | | 0.739305804 | 25 | 1440 | 2 | 1440 | 0.216391131 | 1 | 5/4/2011 | 5/6/2011 | 0.030092434 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | L | | 0.257813107 | 3 | 1440 | 0 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | L | | 0.257813107 | 933 | 1440 | 15 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | L | | 0.257813107 | 144 | 1440 | 2 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | L | | 0.257813107 | 11 | 1440 | 3 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | L | | 0.258777444 | 7 | 1440 | 0 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | L | | 0.258777444 | 897 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | L | | 0.258777444 | 98 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | L | | 0.258777444 | 28 | 1440 | 21 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | L | | 0.176493122 | 3 | 1440 | 0 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/6/2011 | 0.232010683 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | L | | 0.176493122 | 594 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/6/2011 | 0.538900159 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | L | | 0.176493122 | 44 | 1440 | 5 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/6/2011 | 0.36638308 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | L | | 0.176493122 | 8 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | L | | 0.72631197 | 9 | 1440 | 2 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | L | | 0.72631197 | 2662 | 1440 | 4 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | L | | 0.72631197 | 231 | 1440 | 3 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | L | | 0.72631197 | 30 | 1440 | 1 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | L | | 0.728652864 | 9 | 1440 | 0 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | L | | 0.728652864 | 2578 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | L | | 0.728652864 | 140 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | L | | 0.728652864 | 37 | 1440 | 2 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | L | | 0.688383774 | 19 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/6/2011 | 0.232471701 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | L | | 0.688383774 | 2359 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/6/2011 | 0.538900438 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | L | | 0.688383774 | 170 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/6/2011 | 0.366383098 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | L | | 0.688383774 | 31 | 1440 | 2 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | L | | 0.717606565 | 8 | 1440 | 2 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | L | | 0.717606565 | 2399 | 1440 | 5 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | L | | 0.717606565 | 183 | 1440 | 6 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | L | | 0.717606565 | 19 | 1440 | 1 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | L | | 0.666426186 | 57 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | L | | 0.666426186 | 2428 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | L | | 0.666426186 | 172 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | L | | 0.666426186 | 37 | 1440 | 3 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | L | | 0.685338695 | 25 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/6/2011 | 0.232471701 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | L | | 0.685338695 | 2487 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/6/2011 | 0.538900438 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | L | | 0.685338695 | 265 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/6/2011 | 0.366383098 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | L | | 0.685338695 | 27 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/6/2011 | 0.060184868 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | L | | 0.702275123 | 41 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/6/2011 | 0.232471701 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | L | | 0.702275123 | 2507 | 1440 | 1 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/6/2011 | 0.538900438 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | L | | 0.702275123 | 300 | 1440 | 3 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/6/2011 | 0.366383098 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | L | | 0.702275123 | 20 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/6/2011 | 0.060184868 |
| -B11-01660-14 | ARS1-11-00897 | 024 | L | | 0.788787368 | 23 | 1440 | 3 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/6/2011 | 0.232010683 |
| -B11-01660-14 | ARS1-11-00897 | 024 | L | | 0.788787368 | 2756 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/6/2011 | 0.538900159 |
| -B11-01660-14 | ARS1-11-00897 | 024 | L | | 0.788787368 | 161 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/6/2011 | 0.36638308 |
| -B11-01660-14 | ARS1-11-00897 | 024 | L | | 0.788787368 | 28 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/6/2011 | 0.060184868 |
| -B11-01660-15 | ARS1-11-00897 | 025 | L | | 0.697756648 | 5 | 1440 | 2 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/6/2011 | 0.232241077 |
| -B11-01660-15 | ARS1-11-00897 | 025 | L | | 0.697756648 | 2523 | 1440 | 3 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/6/2011 | 0.538900299 |
| -B11-01660-15 | ARS1-11-00897 | 025 | L | | 0.697756648 | 261 | 1440 | 4 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/6/2011 | 0.366383089 |
| -B11-01660-15 | ARS1-11-00897 | 025 | L | | 0.697756648 | 26 | 1440 | 0 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/6/2011 | 0.060184868 |

3500001283

| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | | | 0.233892265 | 0.108901926 | 2.22 | 1.96 | 0.00625 | 0 | 0.00625 | 0.715 | ApexAlpha | A_1_1A | 4.88256979 | | |
| ARS1-B11-01660-01 | | | 0.543013102 | 0.256728269 | 2.22 | 1.96 | 1.825694444 | 0.002083333 | 1.823611111 | 0.715 | ApexAlpha | A_1_1A | 52.26568985 | | |
| ARS1-B11-01660-01 | | | 0.37087846 | 0.174542947 | 2.22 | 1.96 | 2.064583333 | 0.009722222 | 2.054861111 | 0.715 | ApexAlpha | A_1_1A | 40.10710144 | | |
| ARS1-B11-01660-01 | | | 0.065326881 | 0.028671761 | 2.22 | 1.96 | 0.040972222 | 0.003472222 | 0.0375 | 0.715 | ApexAlpha | A_1_1A | 7.323854446 | | |
| ARS1-B11-01660-02 | | | 0.2339542 | 0.108901926 | 2.22 | 1.96 | 0.011805556 | 0.002083333 | 0.009722222 | 0.715 | ApexAlpha | A_1_1B | 8.545721054 | | |
| ARS1-B11-01660-02 | | | 0.543074538 | 0.256728269 | 2.22 | 1.96 | 1.807638889 | 0.011805556 | 1.795833333 | 0.715 | ApexAlpha | A_1_1B | 43.44945145 | | |
| ARS1-B11-01660-02 | | | 0.37094002 | 0.174542947 | 2.22 | 1.96 | 2.265972222 | 0.003472222 | 2.2625 | 0.715 | ApexAlpha | A_1_1B | 38.83237839 | | |
| ARS1-B11-01660-02 | | | 0.065388318 | 0.028671761 | 2.22 | 1.96 | 0.039583333 | 0.002083333 | 0.0375 | 0.715 | ApexAlpha | A_1_1B | 4.88326931 | | |
| ARS1-B11-01660-03 | | | 0.233920281 | 0.108901926 | 2.22 | 1.96 | 0.002083333 | 0.000694444 | 0.001388889 | 0.715 | ApexAlpha | A_1_2A | 4.912463665 | | |
| ARS1-B11-01660-03 | | | 0.543040892 | 0.256728269 | 2.22 | 1.96 | 1.811111111 | 0.007638889 | 1.803472222 | 0.715 | ApexAlpha | A_1_2A | 43.99287033 | | |
| ARS1-B11-01660-03 | | | 0.370906307 | 0.174542947 | 2.22 | 1.96 | 0.102777778 | 0.004166667 | 0.098611111 | 0.715 | ApexAlpha | A_1_2A | 10.43898487 | | |
| ARS1-B11-01660-03 | | | 0.065354671 | 0.028671761 | 2.22 | 1.96 | 0.017361111 | 0.001388889 | 0.015972222 | 0.715 | ApexAlpha | A_1_2A | 4.912463665 | | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | 0.494098126 | 0.108901926 | 2.22 | 1.96 | 0.002083333 | 0 | 0.002083333 | 0.715 | ApexAlpha | A_1_2B | 4.888912201 | | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | 1.105439282 | 0.256728269 | 2.22 | 1.96 | 0.647916667 | 0.010416667 | 0.6375 | 0.715 | ApexAlpha | A_1_2B | 76.282547 | | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | 0.761205192 | 0.174542947 | 2.22 | 1.96 | 0.1 | 0.001388889 | 0.098611111 | 0.715 | ApexAlpha | A_1_2B | 6.844477177 | | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | 0.15006287 | 0.028671761 | 2.22 | 1.96 | 0.007638889 | 0.002083333 | 0.005555556 | 0.715 | ApexAlpha | A_1_2B | 4.888912201 | | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | 0.493984047 | 0.108901926 | 2.22 | 1.96 | 0.004861111 | 0 | 0.004861111 | 0.715 | ApexAlpha | A_1_3A | | | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | 1.106367507 | 0.256728269 | 2.22 | 1.96 | 0.622916667 | 0.003472222 | 0.619444444 | 0.715 | ApexAlpha | A_1_3A | 36.34356308 | | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | 0.762135273 | 0.174542947 | 2.22 | 1.96 | 0.068055556 | 0.003472222 | 0.064583333 | 0.715 | ApexAlpha | A_1_3A | 10.43649578 | | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | 0.150991091 | 0.028671761 | 2.22 | 1.96 | 0.019444444 | 0.014583333 | 0.004861111 | 0.715 | ApexAlpha | A_1_3A | 4.911292076 | | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | 0.510614217 | 0.108901926 | 2.22 | 1.96 | 0.002083333 | 0 | 0.002083333 | 0.715 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | 1.122094485 | 0.256728269 | 2.22 | 1.96 | 0.4125 | 0.002083333 | 0.410416667 | 0.715 | ApexAlpha | A_1_3B | 27.0051651 | | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | 0.777893981 | 0.174542947 | 2.22 | 1.96 | 0.030555556 | 0.003472222 | 0.027083333 | 0.715 | ApexAlpha | A_1_3B | 6.55179739 | | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | 0.166718295 | 0.028671761 | 2.22 | 1.96 | 0.005555556 | 0.002083333 | 0.003472222 | 0.715 | ApexAlpha | A_1_3B | 7.370771885 | | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | 0.474045579 | 0.108901926 | 2.22 | 1.96 | 0.00625 | 0.001388889 | 0.004861111 | 0.715 | ApexAlpha | A_1_4A | 7.365706444 | | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | 1.085819816 | 0.256728269 | 2.22 | 1.96 | 1.848611111 | 0.002777778 | 1.845833333 | 0.715 | ApexAlpha | A_1_4A | 46.89792252 | | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | 0.741546481 | 0.174542947 | 2.22 | 1.96 | 0.160416667 | 0.002083333 | 0.158333333 | 0.715 | ApexAlpha | A_1_4A | 29.46282578 | | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | 0.130443485 | 0.028671761 | 2.22 | 1.96 | 0.020833333 | 0.000694444 | 0.020138889 | 0.715 | ApexAlpha | A_1_4A | 4.910470963 | | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | 0.474472822 | 0.108901926 | 2.22 | 1.96 | 0.00625 | 0 | 0.00625 | 0.715 | ApexAlpha | A_1_4B | 4.890279293 | | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | 1.086237831 | 0.256728269 | 2.22 | 1.96 | 1.790277778 | 0.002083333 | 1.788194444 | 0.715 | ApexAlpha | A_1_4B | 39.68317795 | | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | 0.741965333 | 0.174542947 | 2.22 | 1.96 | 0.097222222 | 0.002083333 | 0.095138889 | 0.715 | ApexAlpha | A_1_4B | 9.780558586 | | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | 0.130861499 | 0.028671761 | 2.22 | 1.96 | 0.025694444 | 0.001388889 | 0.024305556 | 0.715 | ApexAlpha | A_1_4B | 6.112849236 | | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | 0.475990085 | 0.108901926 | 2.22 | 1.96 | 0.013194444 | 0.002083333 | 0.011111111 | 0.715 | ApexAlpha | A_1_5A | 4.889725208 | | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | 1.0872606 | 0.256728269 | 2.22 | 1.96 | 1.638194444 | 0.002083333 | 1.636111111 | 0.715 | ApexAlpha | A_1_5A | 38.71032333 | | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | 0.742989885 | 0.174542947 | 2.22 | 1.96 | 0.118055556 | 0.002083333 | 0.115972222 | 0.715 | ApexAlpha | A_1_5A | 7.843934059 | | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | 0.131883982 | 0.028671761 | 2.22 | 1.96 | 0.021527778 | 0.001388889 | 0.020138889 | 0.715 | ApexAlpha | A_1_5A | 4.889725208 | | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | 0.475280176 | 0.108901926 | 2.22 | 1.96 | 0.005555556 | 0.001388889 | 0.004166667 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | 1.087027749 | 0.256728269 | 2.22 | 1.96 | 1.665972222 | 0.003472222 | 1.6625 | 0.715 | ApexAlpha | A_1_5B | 35.01397705 | | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | 0.742756831 | 0.174542947 | 2.22 | 1.96 | 0.127083333 | 0.004166667 | 0.122916667 | 0.715 | ApexAlpha | A_1_5B | 21.26156235 | | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | 0.131651414 | 0.028671761 | 2.22 | 1.96 | 0.013194444 | 0.000694444 | 0.0125 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | 0.475041934 | 0.108901926 | 2.22 | 1.96 | 0.039583333 | 0.002777778 | 0.036805556 | 0.715 | ApexAlpha | A_1_6A | 11.6043911 | | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | 1.086794652 | 0.256728269 | 2.22 | 1.96 | 1.686111111 | 0.002777778 | 1.683333333 | 0.715 | ApexAlpha | A_1_6A | 39.12591553 | | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | 0.742523268 | 0.174542947 | 2.22 | 1.96 | 0.119444444 | 0.002777778 | 0.116666667 | 0.715 | ApexAlpha | A_1_6A | 12.11335564 | | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | 0.131418317 | 0.028671761 | 2.22 | 1.96 | 0.025694444 | 0.002083333 | 0.023611111 | 0.715 | ApexAlpha | A_1_6A | 6.107573986 | | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | 0.475229703 | 0.108901926 | 2.22 | 1.96 | 0.017361111 | 0 | 0.017361111 | 0.715 | ApexAlpha | A_1_6B | 14.69784451 | | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | 1.086517379 | 0.256728269 | 2.22 | 1.96 | 1.727083333 | 0.001388889 | 1.725694444 | 0.715 | ApexAlpha | A_1_6B | 35.83957291 | | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | 0.742245177 | 0.174542947 | 2.22 | 1.96 | 0.184027778 | 0.001388889 | 0.182638889 | 0.715 | ApexAlpha | A_1_6B | 7.144785881 | | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | 0.131140764 | 0.028671761 | 2.22 | 1.96 | 0.01875 | 0 | 0.01875 | 0.715 | ApexAlpha | A_1_6B | 6.124101639 | | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | 0.475146312 | 0.108901926 | 2.22 | 1.96 | 0.028472222 | 0.001388889 | 0.027083333 | 0.715 | ApexAlpha | A_2_1A | 7.157671928 | | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | 1.086435869 | 0.256728269 | 2.22 | 1.96 | 1.740972222 | 0.000694444 | 1.740277778 | 0.715 | ApexAlpha | A_2_1A | 53.07657623 | | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | 0.742163504 | 0.174542947 | 2.22 | 1.96 | 0.208333333 | 0.002083333 | 0.20625 | 0.715 | ApexAlpha | A_2_1A | 54.97091675 | | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | 0.131059255 | 0.028671761 | 2.22 | 1.96 | 0.013888889 | 0.001388889 | 0.0125 | 0.715 | ApexAlpha | A_2_1A | 5.726137161 | | |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | 0.473244412 | 0.108901926 | 2.22 | 1.96 | 0.015972222 | 0.002083333 | 0.013888889 | 0.715 | ApexAlpha | A_2_1B | 7.318632126 | | |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | 1.08549547 | 0.256728269 | 2.22 | 1.96 | 1.913888889 | 0.000694444 | 1.913194444 | 0.715 | ApexAlpha | A_2_1B | 36.90681458 | | |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | 0.741221749 | 0.174542947 | 2.22 | 1.96 | 0.111805556 | 0.000694444 | 0.111111111 | 0.715 | ApexAlpha | A_2_1B | 8.538403511 | | |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | 0.130119421 | 0.028671761 | 2.22 | 1.96 | 0.019444444 | 0.000694444 | 0.01875 | 0.715 | ApexAlpha | A_2_1B | 4.879087925 | | |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | 0.474612779 | 0.108901926 | 2.22 | 1.96 | 0.003472222 | 0.001388889 | 0.002083333 | 0.715 | ApexAlpha | A_2_2A | 4.902958393 | | |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | 1.086374766 | 0.256728269 | 2.22 | 1.96 | 1.752083333 | 0.002083333 | 1.75 | 0.715 | ApexAlpha | A_2_2A | 47.46408081 | | |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | 0.742102542 | 0.174542947 | 2.22 | 1.96 | 0.18125 | 0.002777778 | 0.178472222 | 0.715 | ApexAlpha | A_2_2A | 17.97751427 | | |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | 0.130998433 | 0.028671761 | 2.22 | 1.96 | 0.018055556 | 0 | 0.018055556 | 0.715 | ApexAlpha | A_2_2A | 4.902958393 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | DeltaT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-01 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-01 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-01 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-02 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-02 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-02 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-02 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-03 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-03 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-03 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-03 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.086597222 | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 16.93888889 | |
| 1-B11-01660-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| 1-B11-01660-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| 1-B11-01660-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| 1-B11-01660-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 14.93888889 | |
| 1-B11-01660-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| 1-B11-01660-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| 1-B11-01660-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |
| 1-B11-01660-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 15.93888889 | |

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| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660-01 | | | | | | | 0.997931111 | | | | | 0.061663514 | 0.354149925 | 509.9758919 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-01 | | | | | | | 0.99999946 | | | | | 0.061663514 | 0.357026106 | 514.1175928 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-01 | | | | | | | 0.999999947 | | | | | 0.061663514 | 0.356312227 | 513.0896076 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-01 | | | | | | | 1 | | | | | 0.061663514 | 0.357026299 | 514.1178702 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-02 | | | | | | | 0.997931111 | | | | | 0.061663514 | 0.350069771 | 504.1004703 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-02 | | | | | | | 0.99999946 | | | | | 0.061663514 | 0.352912816 | 508.1944548 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-02 | | | | | | | 0.999999947 | | | | | 0.061663514 | 0.352207162 | 507.1783129 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-02 | | | | | | | 1 | | | | | 0.061663514 | 0.352913006 | 508.194729 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-03 | | | | | | | 0.997931111 | | | | | 0.061663514 | 0.352292578 | 507.3013125 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-03 | | | | | | | 0.99999946 | | | | | 0.061663514 | 0.355153675 | 511.4212922 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-03 | | | | | | | 0.999999947 | | | | | 0.061663514 | 0.35444354 | 510.3986982 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-03 | | | | | | | 1 | | | | | 0.061663514 | 0.355153867 | 511.4215681 | | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | | | | 0.984304484 | | | | | 0.061663514 | 0.06147591 | 88.52531004 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | | | | 0.999995878 | | | | | 0.061663514 | 0.062832932 | 90.4794222 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | | | | 0.999999599 | | | | | 0.061663514 | 0.0627075 | 90.2987993 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-04 | ARS1-11-00897 | 014 | | | | | 1 | | | | | 0.061663514 | 0.062833191 | 90.47979512 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | | | | 0.984304484 | | | | | 0.061663514 | 0.061705857 | 88.85643462 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | | | | 0.999995878 | | | | | 0.061663514 | 0.060944218 | 87.75967396 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | | | | 0.999999599 | | | | | 0.061663514 | 0.060822556 | 87.58448045 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-05 | ARS1-11-00897 | 015 | | | | | 1 | | | | | 0.061663514 | 0.060944469 | 87.76003566 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | | | | 0.985281931 | | | | | 0.061663514 | 0.039546115 | 56.94640604 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | | | | 0.999996137 | | | | | 0.061663514 | 0.040378971 | 58.1457183 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | | | | 0.999999624 | | | | | 0.061663514 | 0.040298354 | 58.0296292 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-06 | ARS1-11-00897 | 016 | | | | | 1 | | | | | 0.061663514 | 0.040379127 | 58.14594291 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | | | | 0.984304484 | | | | | 0.061663514 | 0.178211624 | 256.624738 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | | | | 0.999995878 | | | | | 0.061663514 | 0.182145476 | 262.2894854 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | | | | 0.999999599 | | | | | 0.061663514 | 0.181781861 | 261.7658803 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-07 | ARS1-11-00897 | 017 | | | | | 1 | | | | | 0.061663514 | 0.182146227 | 262.2905665 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | | | | 0.984304484 | | | | | 0.061663514 | 0.171281905 | 246.6459429 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | | | | 0.999995878 | | | | | 0.061663514 | 0.17506279 | 252.0904179 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | | | | 0.999999599 | | | | | 0.061663514 | 0.174713315 | 251.587173 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-08 | ARS1-11-00897 | 018 | | | | | 1 | | | | | 0.061663514 | 0.175063512 | 252.0914569 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | | | | 0.983328007 | | | | | 0.061663514 | 0.156250365 | 225.000525 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | | | | 0.99999562 | | | | | 0.061663514 | 0.159857989 | 230.1955035 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | | | | 0.999999574 | | | | | 0.061663514 | 0.159538903 | 229.7360208 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-09 | ARS1-11-00897 | 019 | | | | | 1 | | | | | 0.061663514 | 0.159858689 | 230.1965118 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | | | | 0.984304484 | | | | | 0.061663514 | 0.159557615 | 229.7629653 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | | | | 0.999995878 | | | | | 0.061663514 | 0.163079698 | 234.8347645 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | | | | 0.999999599 | | | | | 0.061663514 | 0.162754144 | 234.3659669 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-10 | ARS1-11-00897 | 020 | | | | | 1 | | | | | 0.061663514 | 0.16308037 | 234.8357324 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | | | | 0.984304484 | | | | | 0.061663514 | 0.162846961 | 234.4996232 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | | | | 0.999995878 | | | | | 0.061663514 | 0.166441653 | 239.6759797 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | | | | 0.999999599 | | | | | 0.061663514 | 0.166109387 | 239.1975176 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-11 | ARS1-11-00897 | 021 | | | | | 1 | | | | | 0.061663514 | 0.166442339 | 239.6769675 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | | | | 0.983328007 | | | | | 0.061663514 | 0.166779389 | 240.1623209 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | | | | 0.99999562 | | | | | 0.061663514 | 0.170630115 | 245.7073661 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | | | | 0.999999574 | | | | | 0.061663514 | 0.170289528 | 245.2169209 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-12 | ARS1-11-00897 | 022 | | | | | 1 | | | | | 0.061663514 | 0.170630863 | 245.7084424 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | | | | 0.983328007 | | | | | 0.061663514 | 0.168021107 | 241.9503941 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | | | | 0.99999562 | | | | | 0.061663514 | 0.171900503 | 247.5367238 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | | | | 0.999999574 | | | | | 0.061663514 | 0.17155738 | 247.0426271 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-13 | ARS1-11-00897 | 023 | | | | | 1 | | | | | 0.061663514 | 0.171901256 | 247.537808 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | | | | | 0.985281931 | | | | | 0.061663514 | 0.184164912 | 265.1974728 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | | | | | 0.999996137 | | | | | 0.061663514 | 0.188043492 | 270.7826291 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | | | | | 0.999999624 | | | | | 0.061663514 | 0.18766806 | 270.2420062 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-14 | ARS1-11-00897 | 024 | | | | | 1 | | | | | 0.061663514 | 0.188044219 | 270.7836752 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | | | | | 0.984304484 | | | | | 0.061663514 | 0.169127555 | 243.5436794 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | | | | | 0.999995878 | | | | | 0.061663514 | 0.172860885 | 248.9196749 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | | | | | 0.999999599 | | | | | 0.061663514 | 0.172515805 | 248.4227597 | ASP-A-008 | JARMSTRONG | 5/10/2011 |
| ARS1-B11-01660-15 | ARS1-11-00897 | 025 | | | | | 1 | | | | | 0.061663514 | 0.172861598 | 248.9207008 | ASP-A-008 | JARMSTRONG | 5/10/2011 |

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| ID_31001_031 | ABatch | ABatchSampleID | ClientID | Aliquot | AliquotUnits | UserID | ModDate | IC_ID |
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| 2947 | ARS1-B11-01660 | ARS1-B11-01660-02 | | 1 | L | JBROWN | 05/04/2011 08:27:18 | |
| 2948 | ARS1-B11-01660 | ARS1-B11-01660-03 | | 1 | L | JBROWN | 05/04/2011 08:27:18 | |
| 2949 | ARS1-B11-01660 | ARS1-B11-01660-04 | PR-SW-01-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:18 | 86090 |
| 2950 | ARS1-B11-01660 | ARS1-B11-01660-05 | RB-01-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:18 | 86090 |
| 2951 | ARS1-B11-01660 | ARS1-B11-01660-06 | RB-02-110421 | 0.5 | L | JBROWN | 05/04/2011 08:27:18 | 86090 |
| 2952 | ARS1-B11-01660 | ARS1-B11-01660-07 | RM-JM-SW-02-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2953 | ARS1-B11-01660 | ARS1-B11-01660-08 | RM-JM-SW-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2954 | ARS1-B11-01660 | ARS1-B11-01660-09 | RM-SW-BG-110419 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2955 | ARS1-B11-01660 | ARS1-B11-01660-10 | RP-JM-SW-01-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2956 | ARS1-B11-01660 | ARS1-B11-01660-11 | RP-JM-SW-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2957 | ARS1-B11-01660 | ARS1-B11-01660-12 | RP-SW-01-110419 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2958 | ARS1-B11-01660 | ARS1-B11-01660-13 | RP-SW-BG-041911 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2959 | ARS1-B11-01660 | ARS1-B11-01660-14 | SPOP35-110421 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |
| 2960 | ARS1-B11-01660 | ARS1-B11-01660-15 | MW-RM-110420 | 0.5 | L | JBROWN | 05/04/2011 08:27:19 | 86090 |

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| ABatch | ABatchSampleID | ClientID | SampleType | EmptyWt | FilledWt | NetWt | Exp Val | StdID | Isotope | TracerDate | UserID | ModDate | HL days | Ref Date | Cert dpm/g | Curr ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01660 | ARS1-B11-01660-01 | | LCS | 62.980 | 63.992 | 1.012 | 11.339 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-02 | | LCSD | 56.626 | 57.634 | 1.008 | 11.297 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-03 | | MBL | 78.452 | 79.458 | 1.006 | 11.273 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-04 | PR-SW-01-110420 | TRG | 437.838 | 438.843 | 1.005 | 11.262 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-05 | RB-01-110420 | TRG | 437.786 | 438.793 | 1.007 | 11.282 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-06 | RB-02-110421 | TRG | 418.830 | 419.837 | 1.007 | 11.282 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-07 | RM-JM-SW-02-110420 | TRG | 417.684 | 418.688 | 1.004 | 11.249 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-08 | RM-JM-SW-110420 | TRG | 398.216 | 399.228 | 1.012 | 11.338 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-09 | RM-SW-BG-110419 | TRG | 438.208 | 439.222 | 1.014 | 11.361 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-10 | RP-JM-SW-01-110420 | TRG | 430.844 | 431.854 | 1.010 | 11.316 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-11 | RP-JM-SW-110420 | TRG | 377.144 | 378.146 | 1.002 | 11.226 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-12 | RP-SW-01-110419 | TRG | 384.098 | 385.100 | 1.002 | 11.226 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-13 | RP-SW-BG-041911 | TRG | 412.015 | 413.018 | 1.003 | 11.237 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-14 | SPOP35-110421 | TRG | 429.712 | 430.720 | 1.008 | 11.293 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01660 | ARS1-B11-01660-15 | MW-RM-110420 | TRG | 428.181 | 429.184 | 1.003 | 11.237 | S-0246 | Th-229 | 5/4/2011 | JBROWN | 5/4/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |

350001288

5/6/2011 10:31:43

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/6/2011
Time : 10:31:43
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01660-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-12 | A_1_6B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-13 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-14 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01660-15 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-01 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-02 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-03 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-04 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-05 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-06 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-07 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-08 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-09 | A_3_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-10 | A_3_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-11 | A_3_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-12 | A_3_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01648-13 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Detector |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ApexAlpha | ARS1-B11-01660-01 | TH-228 | 9 | 1440 | 0 | 1440 | 0.21 | 05/06/11 10:32 | A_1_1A |
| 2 | ApexAlpha | ARS1-B11-01660-01 | TH-229 | 2629 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_1A |
| 3 | ApexAlpha | ARS1-B11-01660-01 | TH-230 | 2973 | 1440 | 14 | 1440 | 0.21 | 05/06/11 10:32 | A_1_1A |
| 4 | ApexAlpha | ARS1-B11-01660-01 | TH-232 | 59 | 1440 | 5 | 1440 | 0.21 | 05/06/11 10:32 | A_1_1A |
| 5 | ApexAlpha | ARS1-B11-01660-02 | TH-228 | 17 | 1440 | 3 | 1440 | 0.19 | 05/06/11 10:32 | A_1_1B |
| 6 | ApexAlpha | ARS1-B11-01660-02 | TH-229 | 2603 | 1440 | 17 | 1440 | 0.19 | 05/06/11 10:32 | A_1_1B |
| 7 | ApexAlpha | ARS1-B11-01660-02 | TH-230 | 3263 | 1440 | 5 | 1440 | 0.19 | 05/06/11 10:32 | A_1_1B |
| 8 | ApexAlpha | ARS1-B11-01660-02 | TH-232 | 57 | 1440 | 3 | 1440 | 0.19 | 05/06/11 10:32 | A_1_1B |
| 9 | ApexAlpha | ARS1-B11-01660-03 | TH-228 | 3 | 1440 | 1 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2A |
| 10 | ApexAlpha | ARS1-B11-01660-03 | TH-229 | 2608 | 1440 | 11 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2A |
| 11 | ApexAlpha | ARS1-B11-01660-03 | TH-230 | 148 | 1440 | 6 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2A |
| 12 | ApexAlpha | ARS1-B11-01660-03 | TH-232 | 25 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2A |
| 13 | ApexAlpha | ARS1-B11-01660-04 | TH-228 | 3 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2B |
| 14 | ApexAlpha | ARS1-B11-01660-04 | TH-229 | 933 | 1440 | 15 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2B |
| 15 | ApexAlpha | ARS1-B11-01660-04 | TH-230 | 144 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2B |
| 16 | ApexAlpha | ARS1-B11-01660-04 | TH-232 | 11 | 1440 | 3 | 1440 | 0.22 | 05/06/11 10:32 | A_1_2B |
| 17 | ApexAlpha | ARS1-B11-01660-05 | TH-228 | 7 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_1_3A |
| 18 | ApexAlpha | ARS1-B11-01660-05 | TH-229 | 897 | 1440 | 5 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3A |
| 19 | ApexAlpha | ARS1-B11-01660-05 | TH-230 | 98 | 1440 | 5 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3A |
| 20 | ApexAlpha | ARS1-B11-01660-05 | TH-232 | 28 | 1440 | 21 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3A |
| 21 | ApexAlpha | ARS1-B11-01660-06 | TH-228 | 3 | 1440 | 0 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3B |
| 22 | ApexAlpha | ARS1-B11-01660-06 | TH-229 | 594 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3B |
| 23 | ApexAlpha | ARS1-B11-01660-06 | TH-230 | 44 | 1440 | 5 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3B |
| 24 | ApexAlpha | ARS1-B11-01660-06 | TH-232 | 8 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_3B |
| 25 | ApexAlpha | ARS1-B11-01660-07 | TH-228 | 9 | 1440 | 2 | 1440 | 0.23 | 05/06/11 10:32 | A_1_4A |
| 26 | ApexAlpha | ARS1-B11-01660-07 | TH-229 | 2662 | 1440 | 4 | 1440 | 0.23 | 05/06/11 10:32 | A_1_4A |
| 27 | ApexAlpha | ARS1-B11-01660-07 | TH-230 | 231 | 1440 | 3 | 1440 | 0.23 | 05/06/11 10:32 | A_1_4A |
| 28 | ApexAlpha | ARS1-B11-01660-07 | TH-232 | 30 | 1440 | 1 | 1440 | 0.23 | 05/06/11 10:32 | A_1_4A |
| 29 | ApexAlpha | ARS1-B11-01660-08 | TH-228 | 9 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_1_4B |
| 30 | ApexAlpha | ARS1-B11-01660-08 | TH-229 | 2578 | 1440 | 3 | 1440 | 0.22 | 05/06/11 10:32 | A_1_4B |
| 31 | ApexAlpha | ARS1-B11-01660-08 | TH-230 | 140 | 1440 | 3 | 1440 | 0.22 | 05/06/11 10:32 | A_1_4B |
| 32 | ApexAlpha | ARS1-B11-01660-08 | TH-232 | 37 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_1_4B |
| 33 | ApexAlpha | ARS1-B11-01660-09 | TH-228 | 19 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_5A |
| 34 | ApexAlpha | ARS1-B11-01660-09 | TH-229 | 2359 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_5A |
| 35 | ApexAlpha | ARS1-B11-01660-09 | TH-230 | 170 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_1_5A |
| 36 | ApexAlpha | ARS1-B11-01660-09 | TH-232 | 31 | 1440 | 2 | 1440 | 0.21 | 05/06/11 10:32 | A_1_5A |
| 37 | ApexAlpha | ARS1-B11-01660-10 | TH-228 | 8 | 1440 | 2 | 1440 | 0.20 | 05/06/11 10:32 | A_1_5B |
| 38 | ApexAlpha | ARS1-B11-01660-10 | TH-229 | 2399 | 1440 | 5 | 1440 | 0.20 | 05/06/11 10:32 | A_1_5B |
| 39 | ApexAlpha | ARS1-B11-01660-10 | TH-230 | 183 | 1440 | 6 | 1440 | 0.20 | 05/06/11 10:32 | A_1_5B |
| 40 | ApexAlpha | ARS1-B11-01660-10 | TH-232 | 19 | 1440 | 1 | 1440 | 0.20 | 05/06/11 10:32 | A_1_5B |
| 41 | ApexAlpha | ARS1-B11-01660-11 | TH-228 | 57 | 1440 | 4 | 1440 | 0.23 | 05/06/11 10:32 | A_1_6A |
| 42 | ApexAlpha | ARS1-B11-01660-11 | TH-229 | 2428 | 1440 | 4 | 1440 | 0.23 | 05/06/11 10:32 | A_1_6A |
| 43 | ApexAlpha | ARS1-B11-01660-11 | TH-230 | 172 | 1440 | 4 | 1440 | 0.23 | 05/06/11 10:32 | A_1_6A |
| 44 | ApexAlpha | ARS1-B11-01660-11 | TH-232 | 37 | 1440 | 3 | 1440 | 0.23 | 05/06/11 10:32 | A_1_6A |
| 45 | ApexAlpha | ARS1-B11-01660-12 | TH-228 | 25 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_1_6B |
| 46 | ApexAlpha | ARS1-B11-01660-12 | TH-229 | 2487 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_1_6B |
| 47 | ApexAlpha | ARS1-B11-01660-12 | TH-230 | 265 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_1_6B |
| 48 | ApexAlpha | ARS1-B11-01660-12 | TH-232 | 27 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_1_6B |
| 49 | ApexAlpha | ARS1-B11-01660-13 | TH-228 | 41 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_2_1A |
| 50 | ApexAlpha | ARS1-B11-01660-13 | TH-229 | 2507 | 1440 | 1 | 1440 | 0.22 | 05/06/11 10:32 | A_2_1A |
| 51 | ApexAlpha | ARS1-B11-01660-13 | TH-230 | 300 | 1440 | 3 | 1440 | 0.22 | 05/06/11 10:32 | A_2_1A |
| 52 | ApexAlpha | ARS1-B11-01660-13 | TH-232 | 20 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_2_1A |

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Detector |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | ApexAlpha | ARS1-B11-01660-14 | TH-228 | 23 | 1440 | 3 | 1440 | 0.21 | 05/06/11 10:32 | A_2_1B |
| 54 | ApexAlpha | ARS1-B11-01660-14 | TH-229 | 2756 | 1440 | 1 | 1440 | 0.21 | 05/06/11 10:32 | A_2_1B |
| 55 | ApexAlpha | ARS1-B11-01660-14 | TH-230 | 161 | 1440 | 1 | 1440 | 0.21 | 05/06/11 10:32 | A_2_1B |
| 56 | ApexAlpha | ARS1-B11-01660-14 | TH-232 | 28 | 1440 | 1 | 1440 | 0.21 | 05/06/11 10:32 | A_2_1B |
| 57 | ApexAlpha | ARS1-B11-01660-15 | TH-228 | 5 | 1440 | 2 | 1440 | 0.22 | 05/06/11 10:32 | A_2_2A |
| 58 | ApexAlpha | ARS1-B11-01660-15 | TH-229 | 2523 | 1440 | 3 | 1440 | 0.22 | 05/06/11 10:32 | A_2_2A |
| 59 | ApexAlpha | ARS1-B11-01660-15 | TH-230 | 261 | 1440 | 4 | 1440 | 0.22 | 05/06/11 10:32 | A_2_2A |
| 60 | ApexAlpha | ARS1-B11-01660-15 | TH-232 | 26 | 1440 | 0 | 1440 | 0.22 | 05/06/11 10:32 | A_2_2A |

**********
***** ALPHA SPECTRUM ANALYSIS *****
**********

Sample Description: LCS
Batch Identification: B11-01660
Sample Identification: 11-01660-01
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:31:57
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2125 +/- 0.0044 on 4/9/10 20:56:03
Effective Efficiency: 0.2125 +/- 0.0044

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

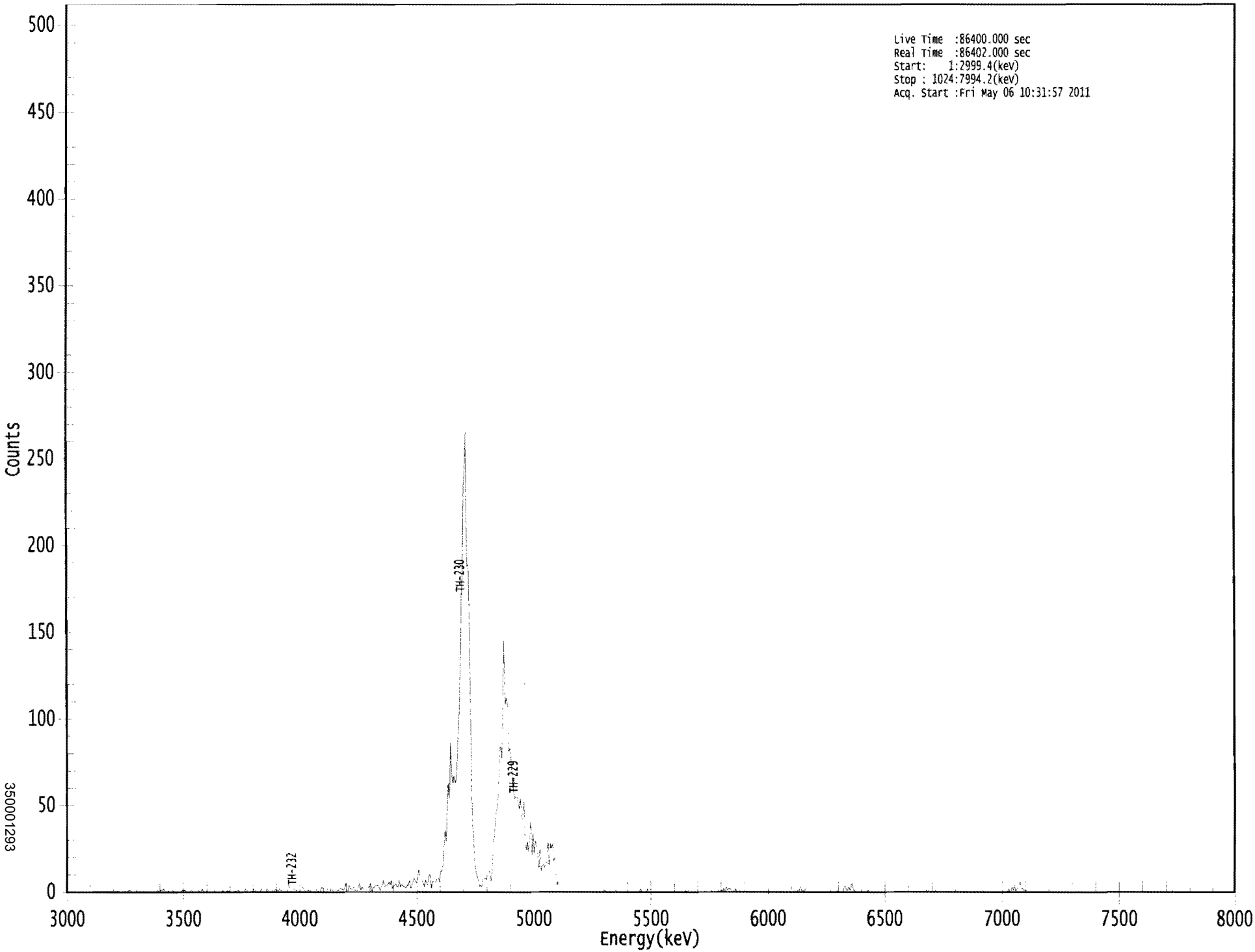
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5.342 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4.920 | 2629.00 | 51.27 | 0.00 | 0.00E+000 | 52.3 |
| TH-230 | 4.691 | 2973.00 | 54.53 | 0.00 | 0.00E+000 | 40.1 |
| TH-232 | 3.973 | 59.00 | 7.68 | 0.00 | 0.00E+000 | 7.3 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.3259E-002 | 33.40 | 3.9867E-003 | 2.06 |
| TH-229 | 3.8896E+000 | 2.84 | 4.0035E-003 | 2.06 |
| TH-230 | 4.3853E+000 | 2.76 | 3.9915E-003 | 2.06 |
| TH-232 | 8.6871E-002 | 13.18 | 3.9843E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012169.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: LCSD
Batch Identification: B11-01660
Sample Identification: 11-01660-02
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:31:58
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1922 +/- 0.0040 on 4/9/10 20:56:53
Effective Efficiency: 0.1922 +/- 0.0040

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

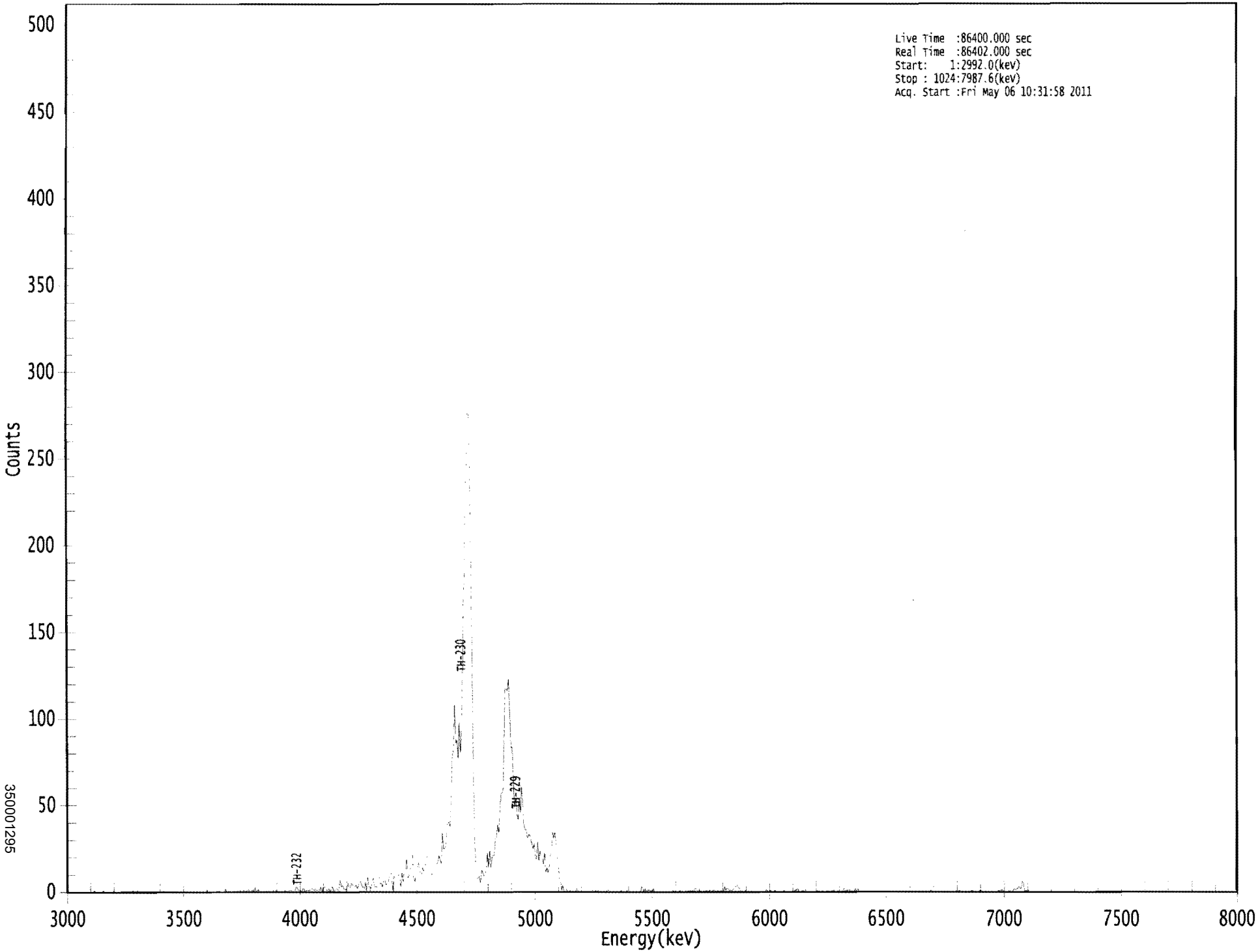
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5.391 | 17.00 | 4.12 | 0.00 | 0.00E+000 | 8.5 |
| TH-229 | 4.917 | 2603.00 | 51.02 | 0.00 | 0.00E+000 | 43.4 |
| TH-230 | 4.686 | 3263.00 | 57.12 | 0.00 | 0.00E+000 | 38.8 |
| TH-232 | 3.984 | 57.00 | 7.55 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.7685E-002 | 24.34 | 4.4068E-003 | 2.06 |
| TH-229 | 4.2569E+000 | 2.84 | 4.4254E-003 | 2.06 |
| TH-230 | 5.3202E+000 | 2.70 | 4.4121E-003 | 2.06 |
| TH-232 | 9.2769E-002 | 13.40 | 4.4041E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012193.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: MBL
Batch Identification: B11-01660
Sample Identification: 11-01660-03
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:00
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/9/10 20:57:28
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

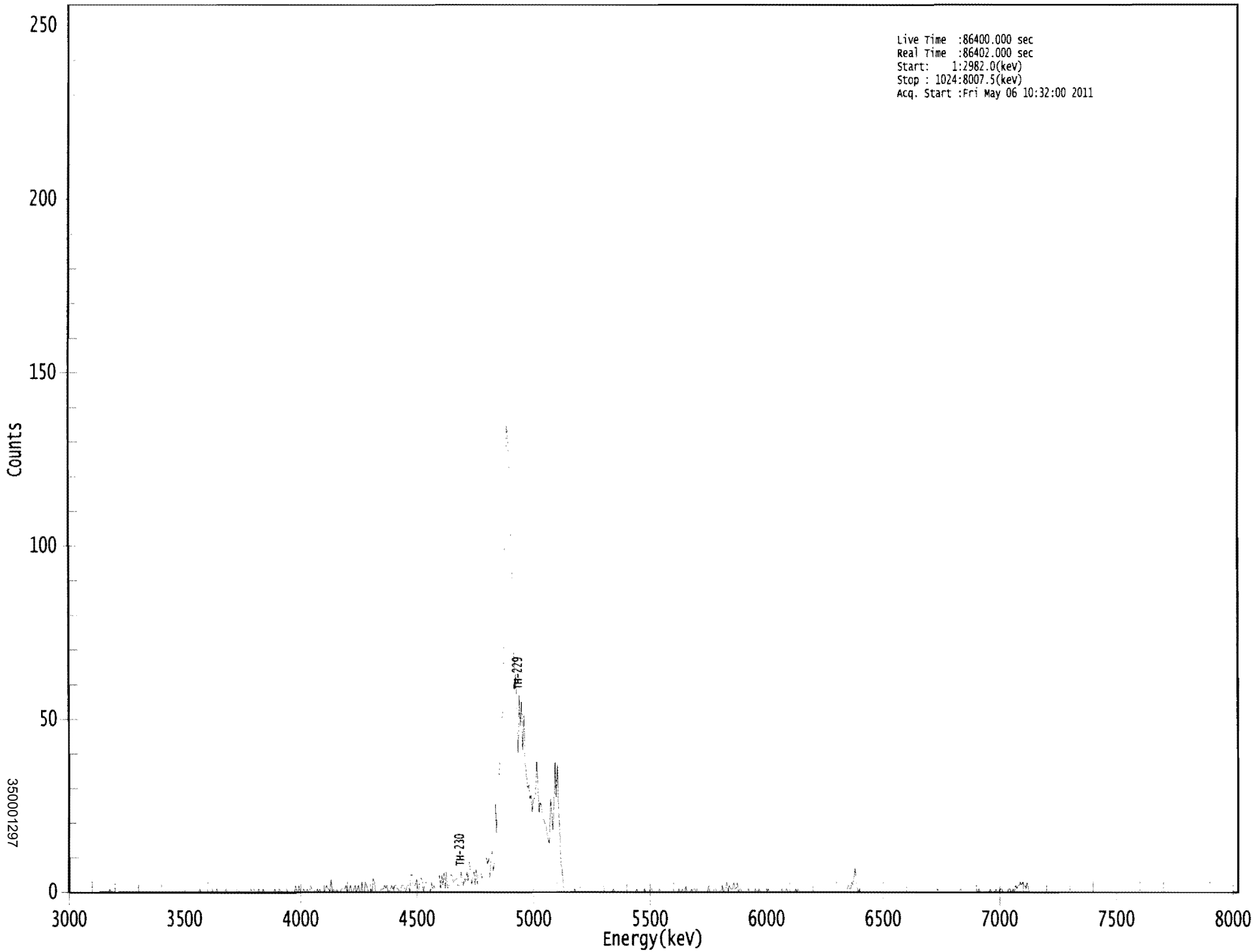
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5402.253 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4923.254 | 2608.00 | 51.07 | 0.00 | 0.00E+000 | 44.0 |
| TH-230 | 4674.323 | 148.00 | 12.17 | 0.00 | 0.00E+000 | 10.4 |
| TH-232 | 3981.634 | 25.00 | 5.00 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.3394E-003 | 57.77 | 3.9142E-003 | 2.05 |
| TH-229 | 3.7883E+000 | 2.84 | 3.9307E-003 | 2.05 |
| TH-230 | 2.1433E-001 | 8.47 | 3.9189E-003 | 2.05 |
| TH-232 | 3.6140E-002 | 20.11 | 3.9118E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012192.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-014
Batch Identification: B11-01660
Sample Identification: 11-01660-04
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:01
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2196 +/- 0.0045 on 4/9/10 20:58:18
Effective Efficiency: 0.2196 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

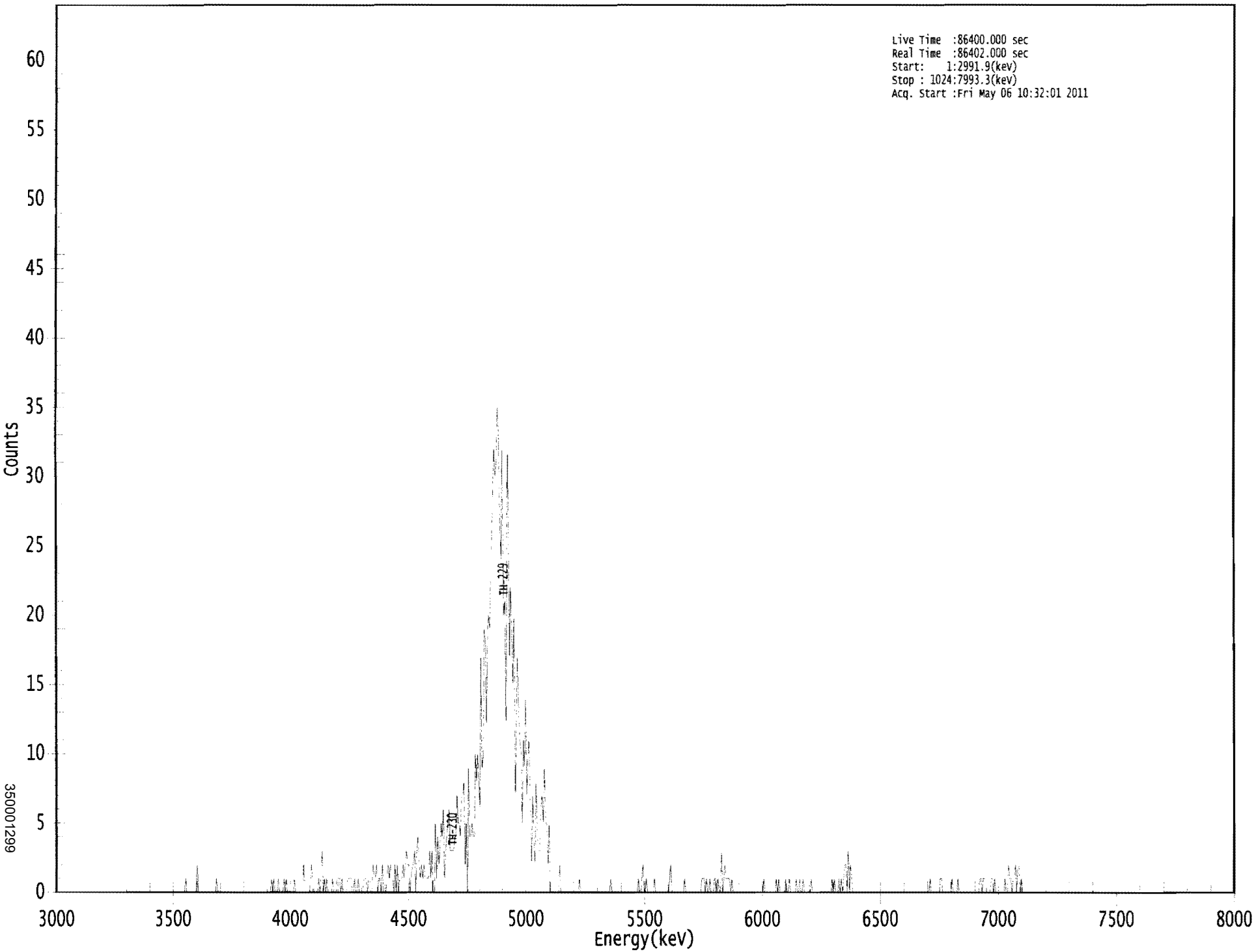
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5343.504 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4901.490 | 933.00 | 30.55 | 0.00 | 0.00E+000 | 76.3 |
| TH-230 | 4681.565 | 144.00 | 12.00 | 0.00 | 0.00E+000 | 6.8 |
| TH-232 | 4005.275 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.2767E-003 | 57.77 | 3.8576E-003 | 2.05 |
| TH-229 | 1.3357E+000 | 3.86 | 3.8739E-003 | 2.05 |
| TH-230 | 2.0553E-001 | 8.58 | 3.8622E-003 | 2.05 |
| TH-232 | 1.5672E-002 | 30.22 | 3.8553E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012191.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-015
Batch Identification: B11-01660
Sample Identification: 11-01660-05
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:02
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2122 +/- 0.0044 on 4/11/10 09:13:21
Effective Efficiency: 0.2122 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

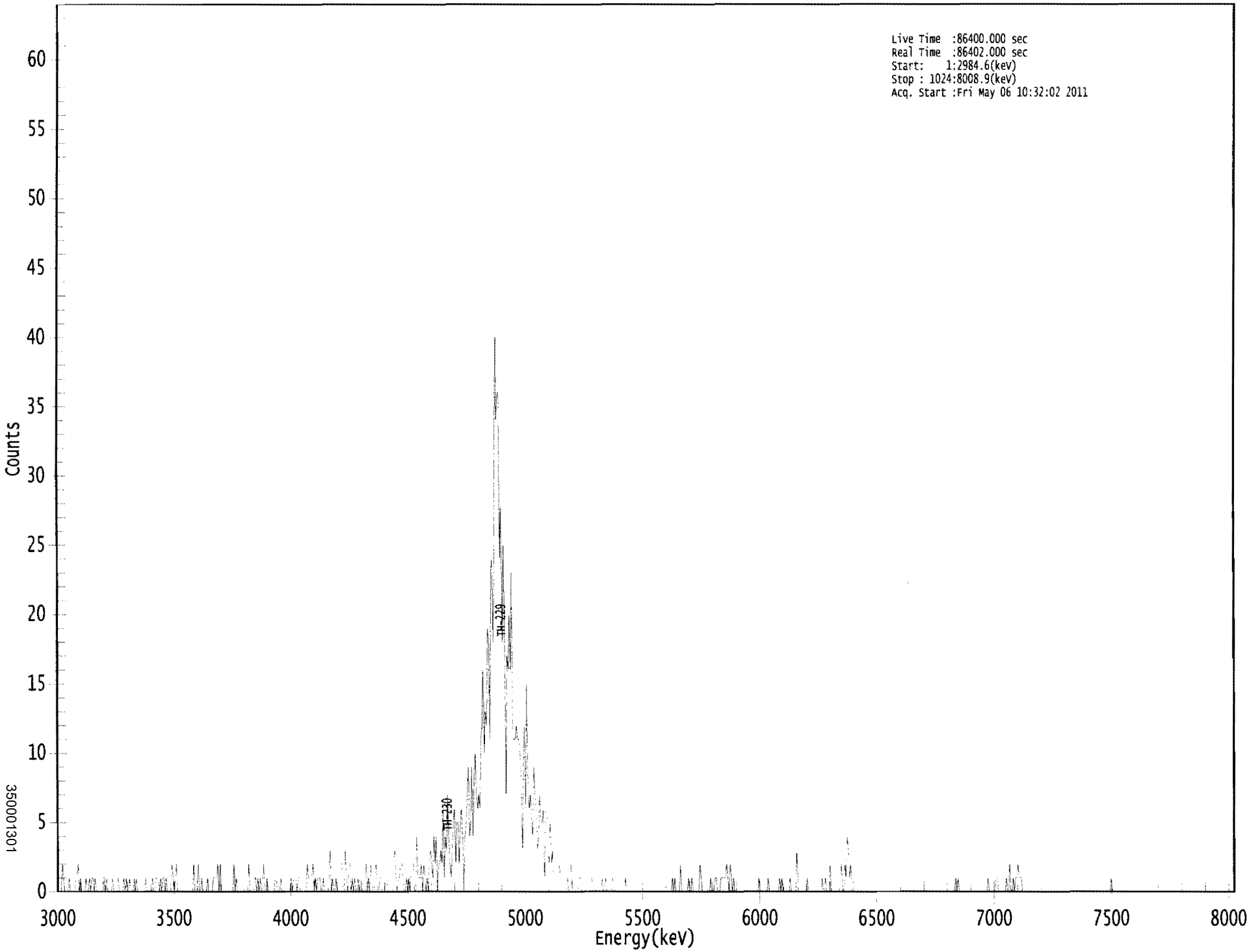
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-229 | 4891.713 | 897.00 | 29.95 | 0.00 | 0.00E+000 | 36.3 |
| TH-230 | 4657.345 | 98.00 | 9.90 | 0.00 | 0.00E+000 | 10.4 |
| TH-232 | 3968.962 | 28.00 | 5.29 | 0.00 | 0.00E+000 | 4.9 |
| ~~<not ID'd>~~ Th-228? | 5301.326 | 7.00 | 2.65 | 0.00 | 0.00E+000 | 9.8 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-229 | 1.3289E+000 | 3.92 | 4.0089E-003 | 2.06 |
| TH-230 | 1.4475E-001 | 10.31 | 3.9968E-003 | 2.06 |
| TH-232 | 4.1282E-002 | 19.01 | 3.9896E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012221.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-016
Batch Identification: B11-01660
Sample Identification: 11-01660-06
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:04
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2061 +/- 0.0042 on 4/11/10 09:13:55
Effective Efficiency: 0.2061 +/- 0.0042

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

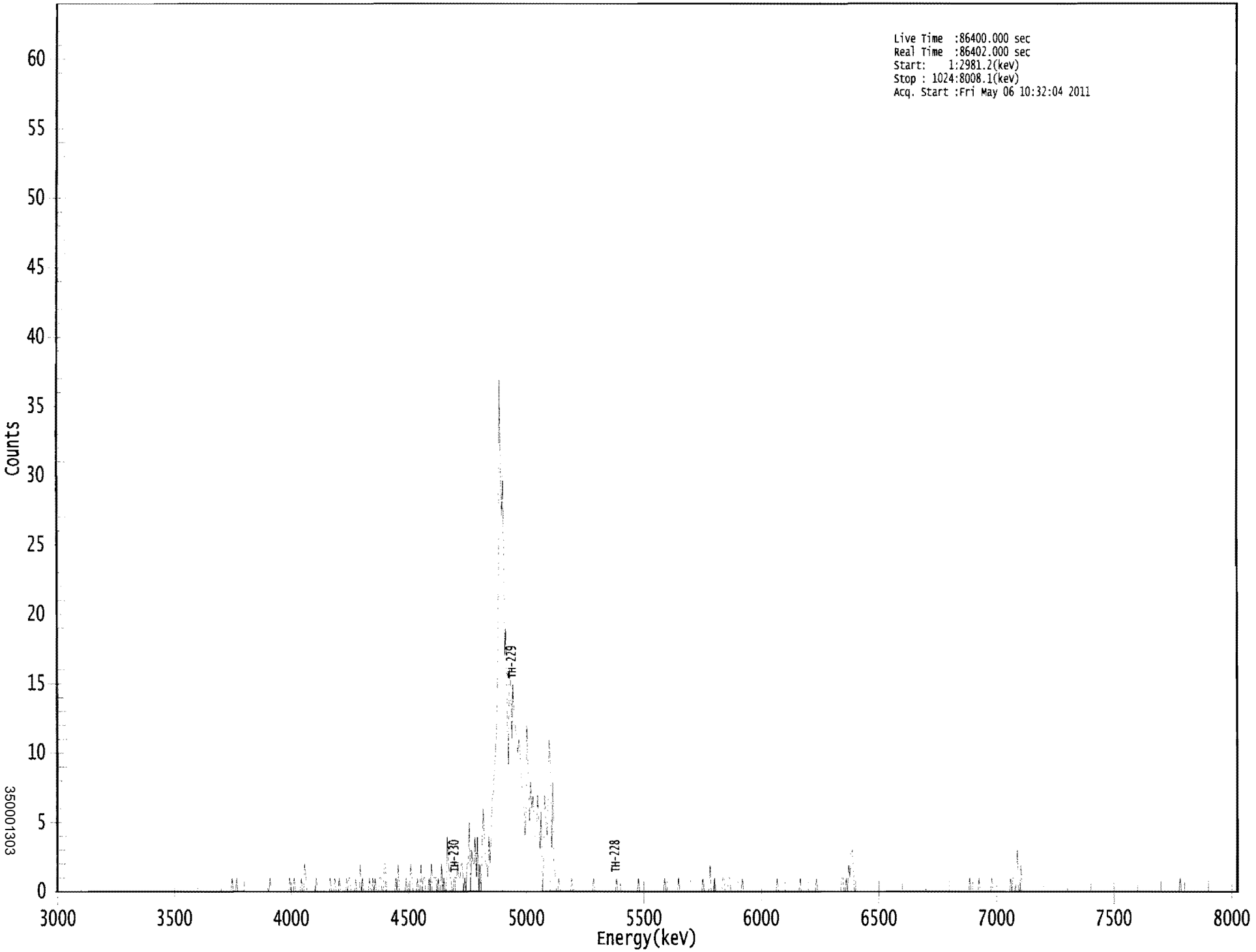
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5362.809 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4927.289 | 594.00 | 24.37 | 0.00 | 0.00E+000 | 27.0 |
| TH-230 | 4681.534 | 44.00 | 6.63 | 0.00 | 0.00E+000 | 6.6 |
| TH-232 | 4010.682 | 8.00 | 2.83 | 0.00 | 0.00E+000 | 7.4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.5558E-003 | 57.77 | 4.1093E-003 | 2.06 |
| TH-229 | 9.0585E-001 | 4.59 | 4.1267E-003 | 2.06 |
| TH-230 | 6.6898E-002 | 15.22 | 4.1143E-003 | 2.06 |
| TH-232 | 1.2141E-002 | 35.42 | 4.1069E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012182.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-017
Batch Identification: B11-01660
Sample Identification: 11-01660-07
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:05
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2259 +/- 0.0046 on 4/11/10 09:14:49
Effective Efficiency: 0.2259 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

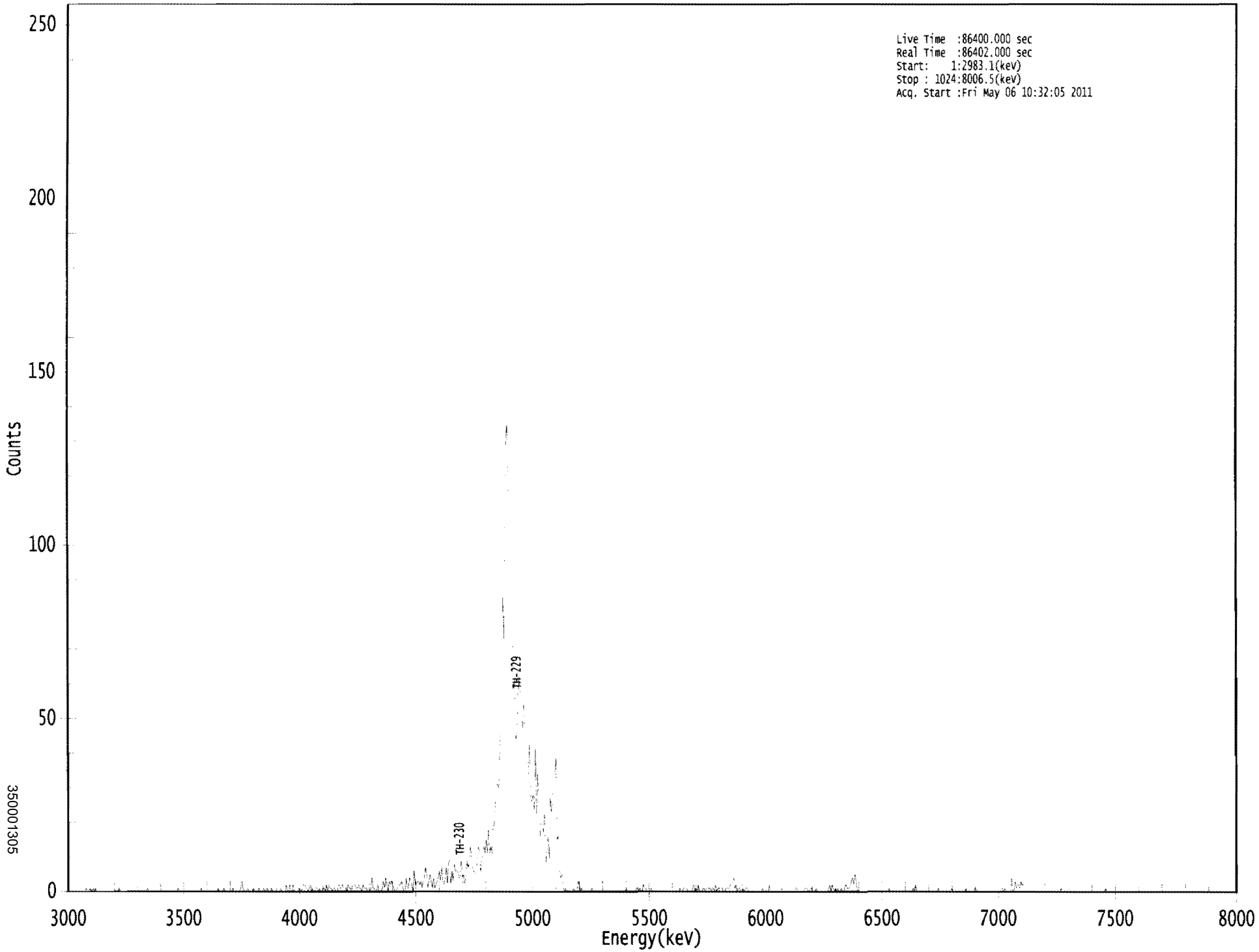
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5419.207 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 7.4 |
| TH-229 | 4921.298 | 2662.00 | 51.59 | 0.00 | 0.00E+000 | 46.9 |
| TH-230 | 4678.689 | 231.00 | 15.20 | 0.00 | 0.00E+000 | 29.5 |
| TH-232 | 3985.295 | 30.00 | 5.48 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.2468E-002 | 33.40 | 3.7489E-003 | 2.05 |
| TH-229 | 3.7035E+000 | 2.82 | 3.7647E-003 | 2.05 |
| TH-230 | 3.2041E-001 | 6.89 | 3.7534E-003 | 2.05 |
| TH-232 | 4.1537E-002 | 18.37 | 3.7466E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012181.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-018
Batch Identification: B11-01660
Sample Identification: 11-01660-08
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:07
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/11/10 09:15:19
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

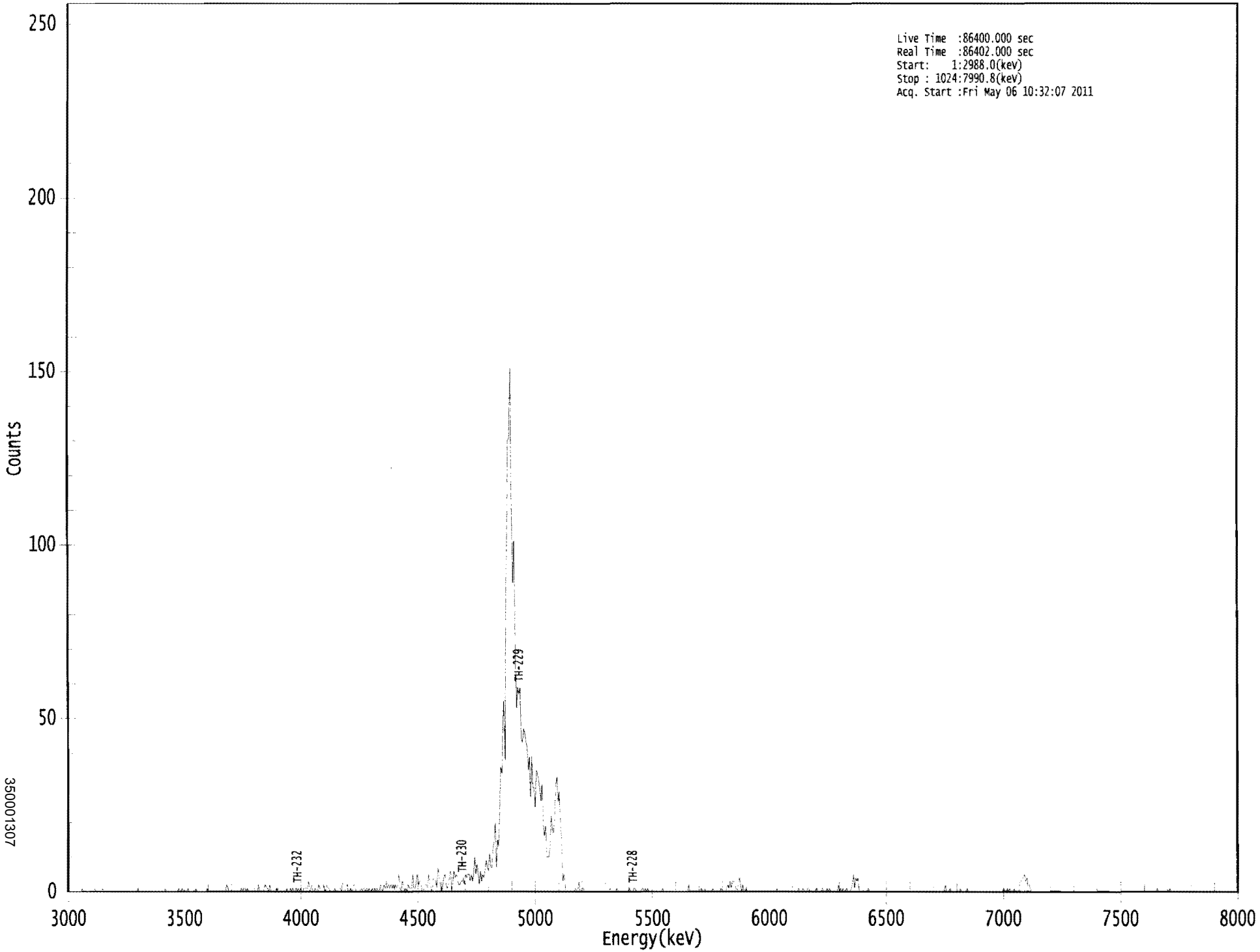
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5407.631 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4926.246 | 2578.00 | 50.77 | 0.00 | 0.00E+000 | 39.7 |
| TH-230 | 4679.193 | 140.00 | 11.83 | 0.00 | 0.00E+000 | 9.8 |
| TH-232 | 3977.452 | 37.00 | 6.08 | 0.00 | 0.00E+000 | 6.1 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.3015E-002 | 33.40 | 3.9131E-003 | 2.05 |
| TH-229 | 3.7437E+000 | 2.85 | 3.9297E-003 | 2.05 |
| TH-230 | 2.0269E-001 | 8.70 | 3.9178E-003 | 2.05 |
| TH-232 | 5.3473E-002 | 16.57 | 3.9108E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012186.CNF




3500013O7

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-019
Batch Identification: B11-01660
Sample Identification: 11-01660-09
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:08
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2092 +/- 0.0043 on 4/11/10 18:32:55
Effective Efficiency: 0.2092 +/- 0.0043

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

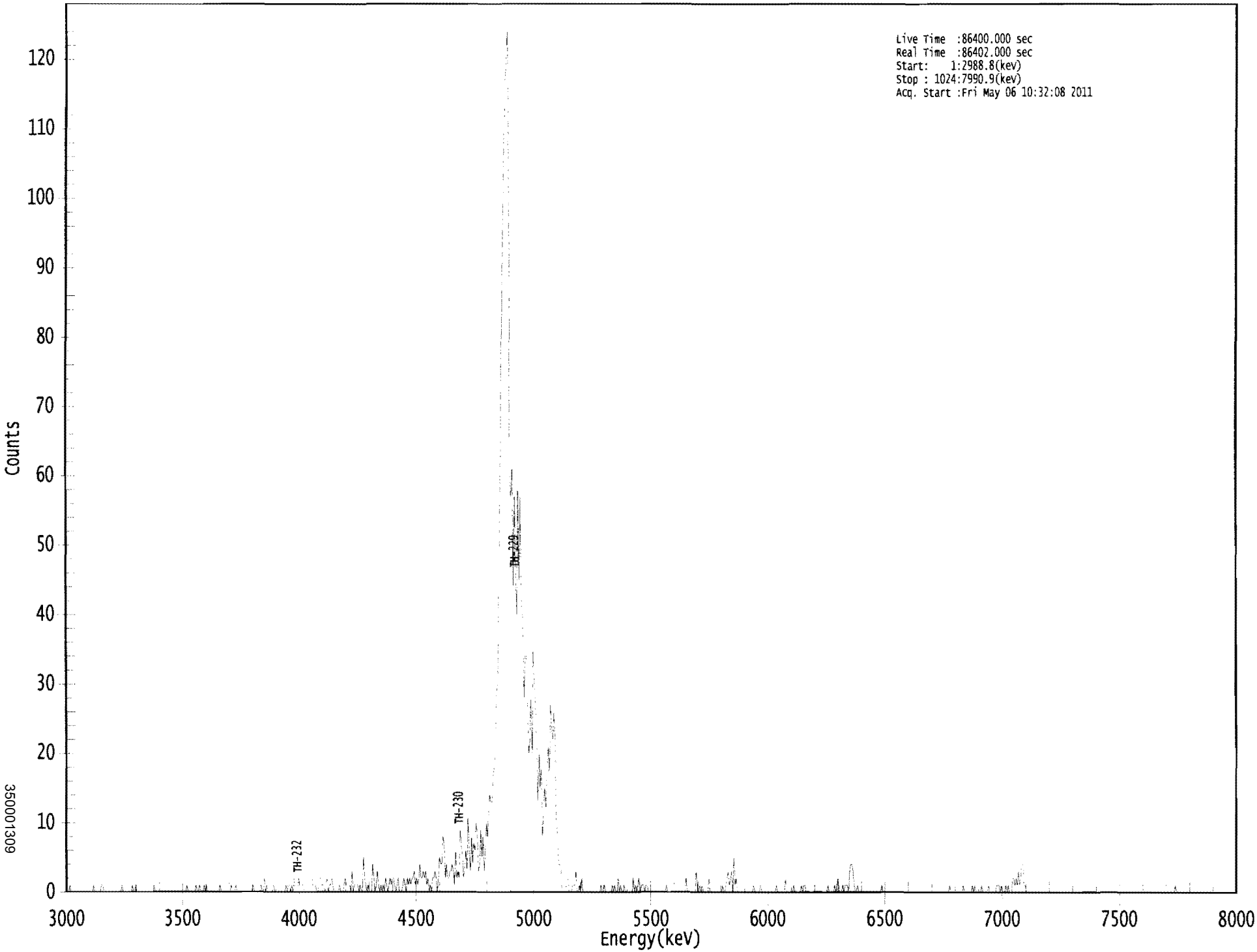
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5396.305 | 19.00 | 4.36 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4915.903 | 2359.00 | 48.57 | 0.00 | 0.00E+000 | 38.7 |
| TH-230 | 4677.124 | 170.00 | 13.04 | 0.00 | 0.00E+000 | 7.8 |
| TH-232 | 3984.528 | 31.00 | 5.57 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 2.8426E-002 | 23.03 | 4.0485E-003 | 2.06 |
| TH-229 | 3.5442E+000 | 2.91 | 4.0656E-003 | 2.06 |
| TH-230 | 2.5464E-001 | 7.94 | 4.0534E-003 | 2.06 |
| TH-232 | 4.6351E-002 | 18.08 | 4.0461E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012187.CNF




3500013O9

# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-020
Batch Identification: B11-01660
Sample Identification: 11-01660-10
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:10
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2047 +/- 0.0042 on 4/11/10 18:33:27
Effective Efficiency: 0.2047 +/- 0.0042

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

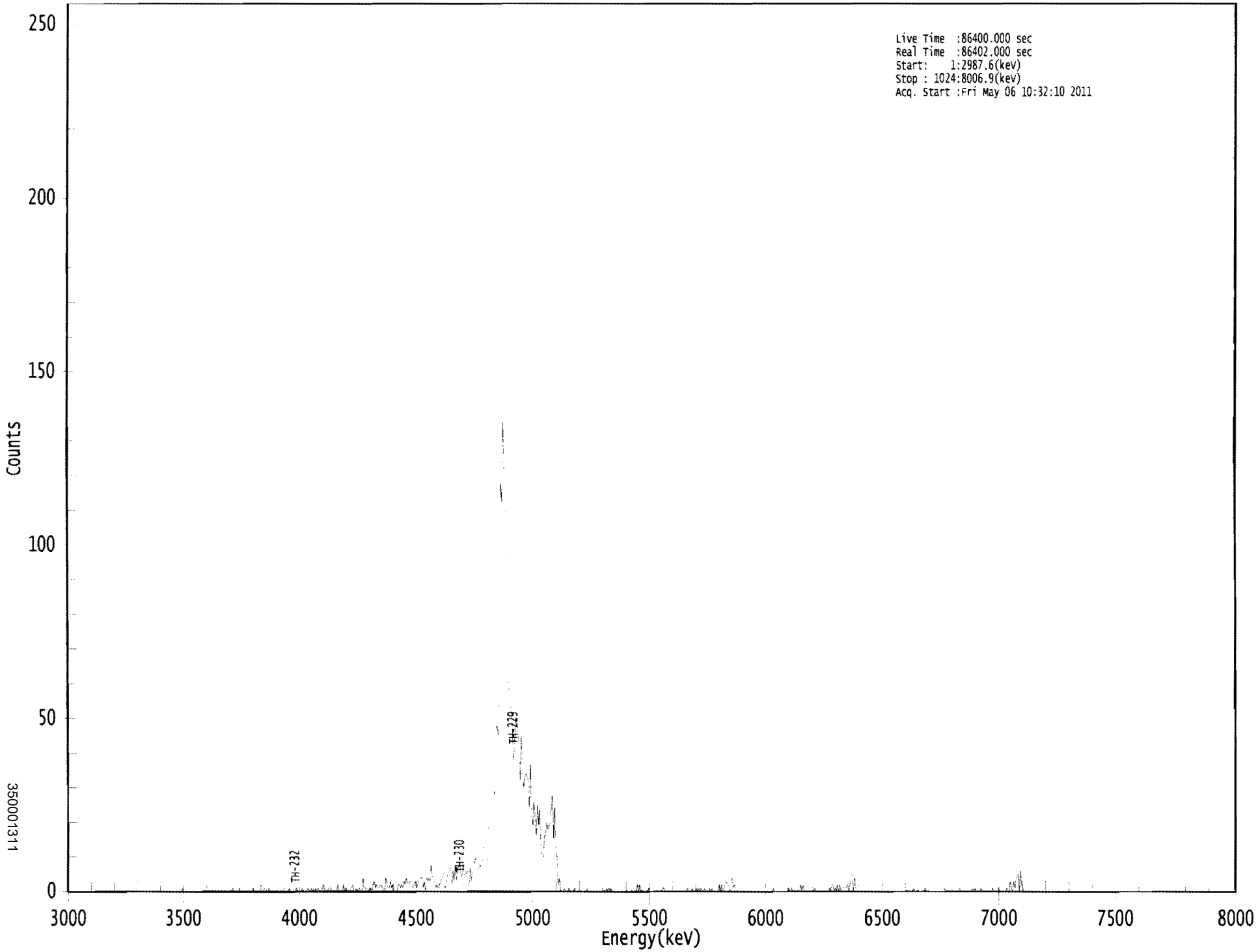
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5365.391 | 8.00 | 2.83 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4911.221 | 2399.00 | 48.98 | 0.00 | 0.00E+000 | 35.0 |
| TH-230 | 4678.361 | 183.00 | 13.53 | 0.00 | 0.00E+000 | 21.3 |
| TH-232 | 3974.297 | 19.00 | 4.36 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.2230E-002 | 35.42 | 4.1370E-003 | 2.06 |
| TH-229 | 3.6831E+000 | 2.90 | 4.1545E-003 | 2.06 |
| TH-230 | 2.8011E-001 | 7.67 | 4.1420E-003 | 2.06 |
| TH-232 | 2.9030E-002 | 23.03 | 4.1345E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012173.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-021
Batch Identification: B11-01660
Sample Identification: 11-01660-11
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:11
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/11/10 18:33:56
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

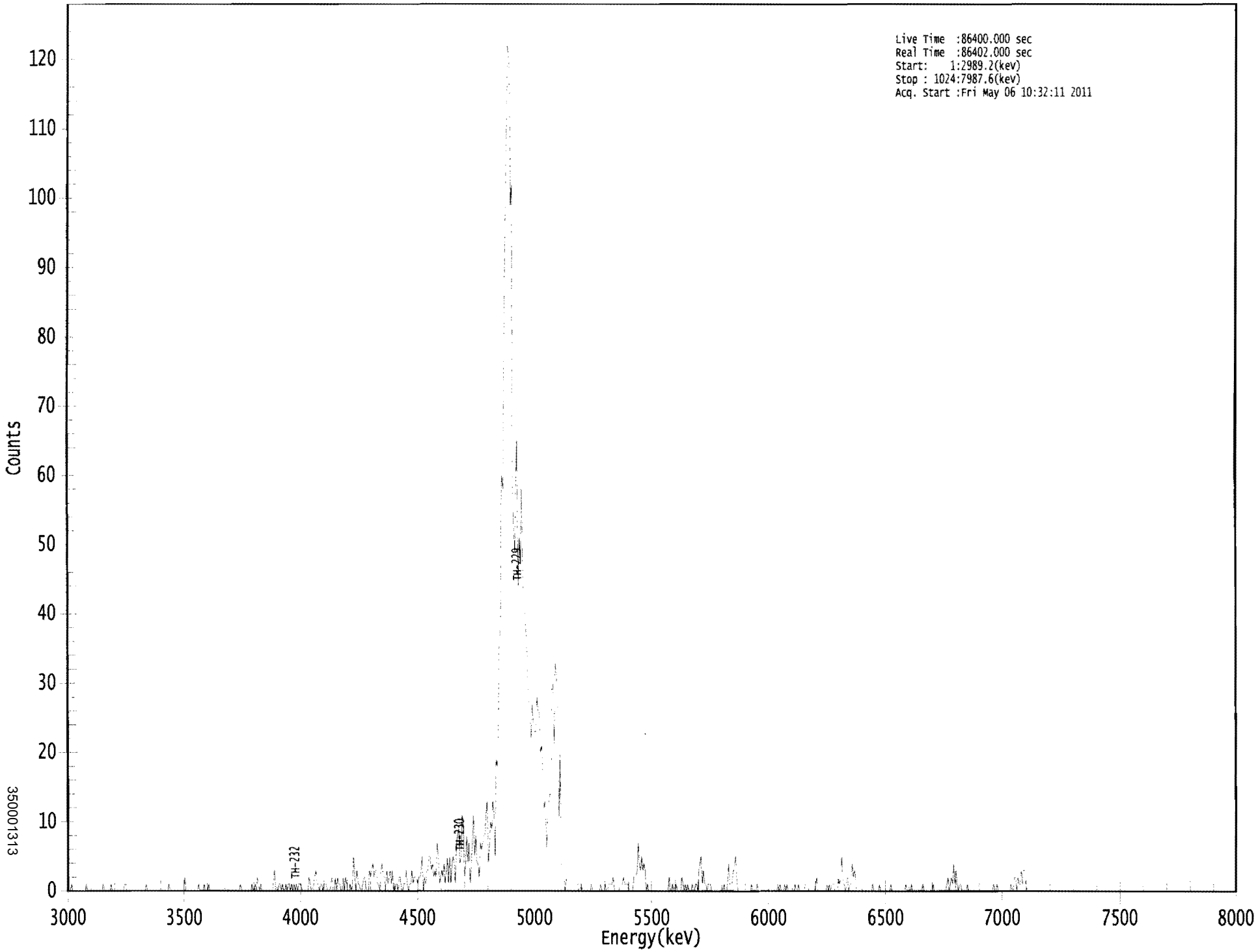
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5406.845 | 57.00 | 7.55 | 0.00 | 0.00E+000 | 11.6 |
| TH-229 | 4924.193 | 2428.00 | 49.27 | 0.00 | 0.00E+000 | 39.1 |
| TH-230 | 4676.640 | 172.00 | 13.11 | 0.00 | 0.00E+000 | 12.1 |
| TH-232 | 3968.909 | 37.00 | 6.08 | 0.00 | 0.00E+000 | 6.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 7.9292E-002 | 13.40 | 3.7643E-003 | 2.05 |
| TH-229 | 3.3918E+000 | 2.89 | 3.7802E-003 | 2.05 |
| TH-230 | 2.3956E-001 | 7.90 | 3.7689E-003 | 2.05 |
| TH-232 | 5.1440E-002 | 16.57 | 3.7621E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012185.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-022
Batch Identification: B11-01660
Sample Identification: 11-01660-12
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:13
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.0 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2243 +/- 0.0046 on 4/11/10 18:34:27
Effective Efficiency: 0.2243 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

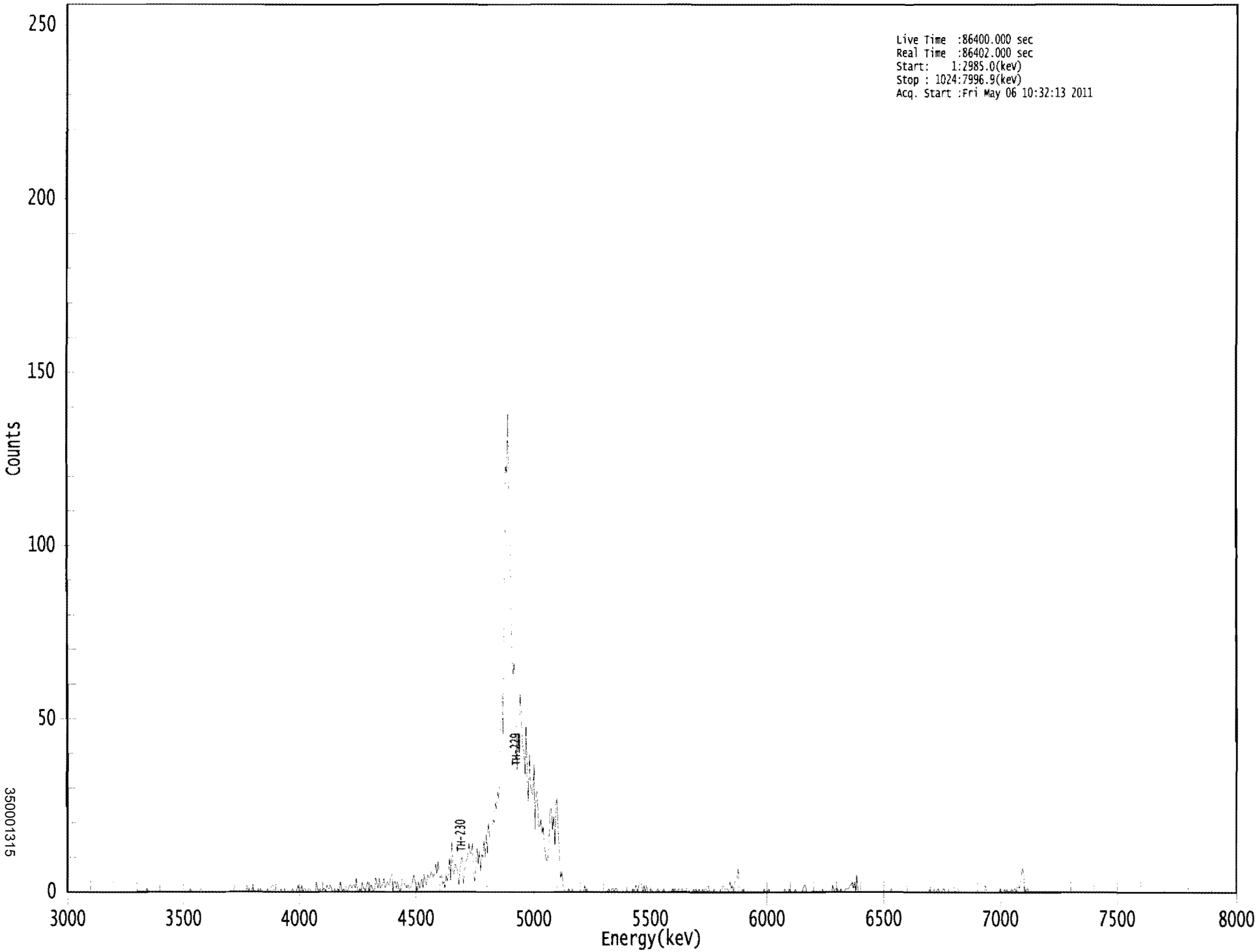
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5391.098 | 25.00 | 5.00 | 0.00 | 0.00E+000 | 14.7 |
| TH-229 | 4917.146 | 2487.00 | 49.87 | 0.00 | 0.00E+000 | 35.8 |
| TH-230 | 4678.895 | 265.00 | 16.28 | 0.00 | 0.00E+000 | 7.1 |
| TH-232 | 3965.545 | 27.00 | 5.20 | 0.00 | 0.00E+000 | 6.1 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 3.4886E-002 | 20.11 | 3.7761E-003 | 2.05 |
| TH-229 | 3.4851E+000 | 2.87 | 3.7921E-003 | 2.05 |
| TH-230 | 3.7024E-001 | 6.48 | 3.7807E-003 | 2.05 |
| TH-232 | 3.7655E-002 | 19.35 | 3.7739E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012177.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-023
Batch Identification: B11-01660
Sample Identification: 11-01660-13
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:16
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

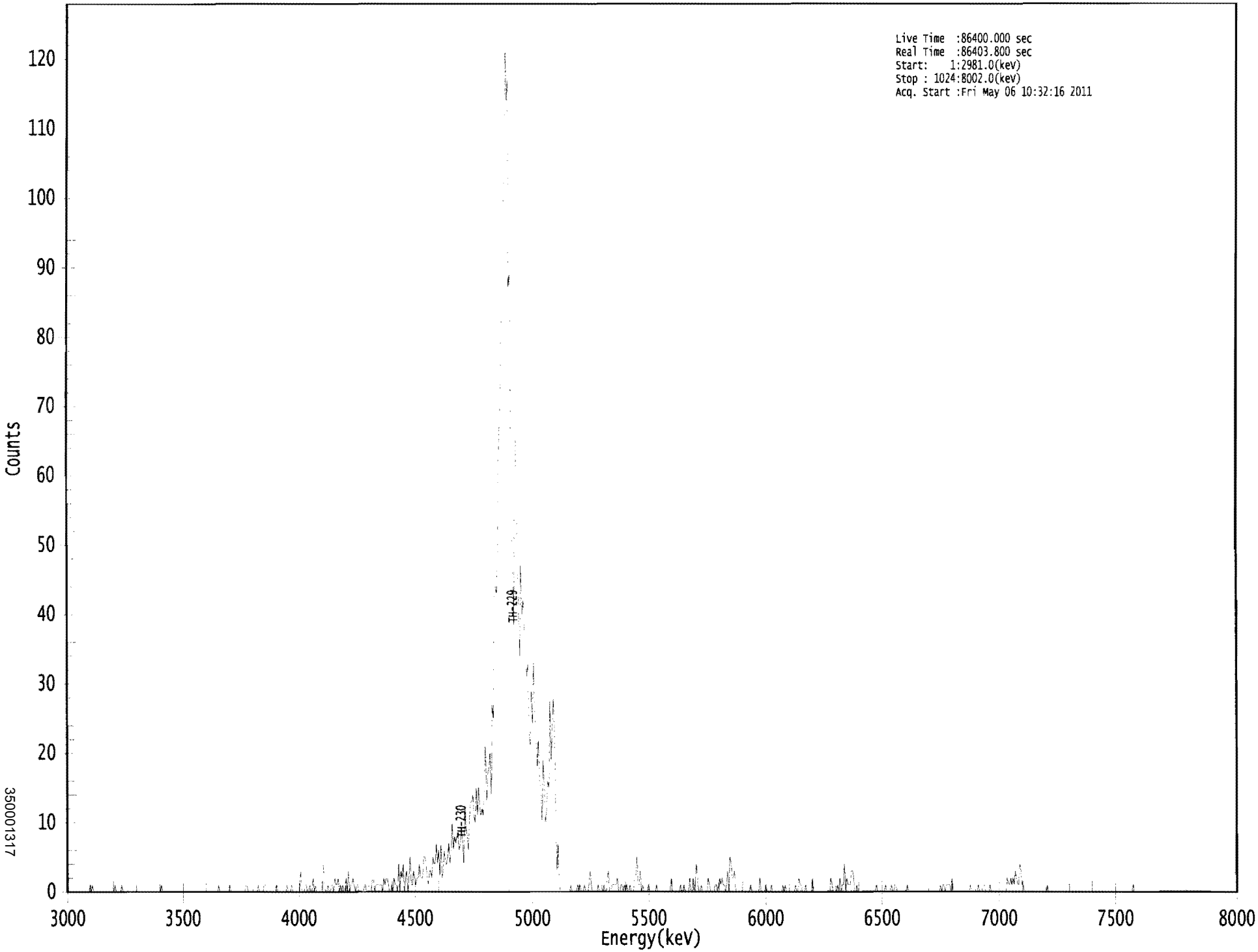
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5357.488 | 41.00 | 6.40 | 0.00 | 0.00E+000 | 7.2 |
| TH-229 | 4905.780 | 2507.00 | 50.07 | 0.00 | 0.00E+000 | 53.1 |
| TH-230 | 4686.556 | 300.00 | 17.32 | 0.00 | 0.00E+000 | 55.0 |
| TH-232 | 3990.110 | 20.00 | 4.47 | 0.00 | 0.00E+000 | 5.7 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 5.8194E-002 | 15.75 | 3.8409E-003 | 2.06 |
| TH-229 | 3.5734E+000 | 2.87 | 3.8571E-003 | 2.06 |
| TH-230 | 4.2632E-001 | 6.13 | 3.8455E-003 | 2.06 |
| TH-232 | 2.8370E-002 | 22.46 | 3.8386E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012189.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-024
Batch Identification: B11-01660
Sample Identification: 11-01660-14
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:18
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.8 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

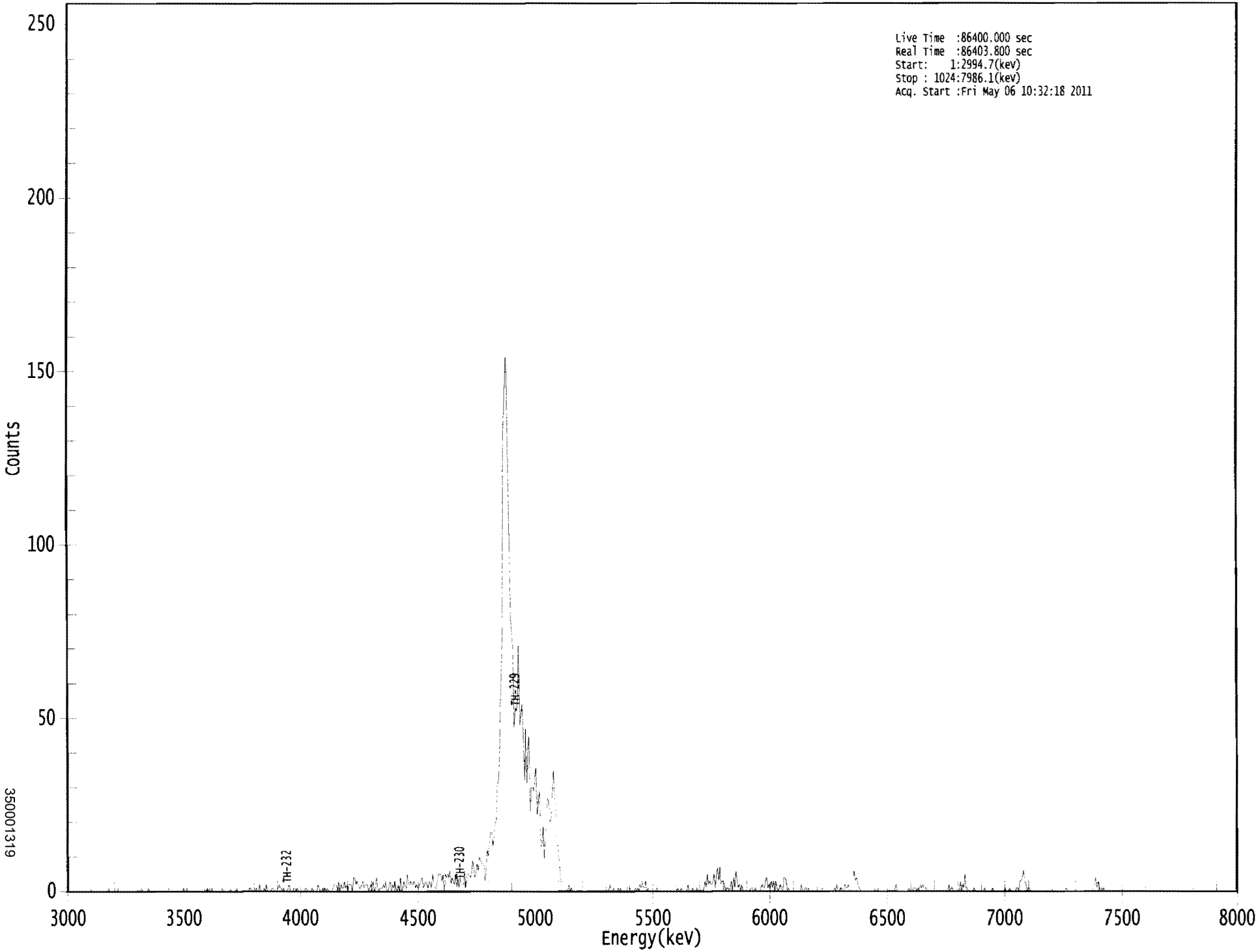
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5409.894 | 23.00 | 4.80 | 0.00 | 0.00E+000 | 7.3 |
| TH-229 | 4919.175 | 2756.00 | 52.50 | 0.00 | 0.00E+000 | 36.9 |
| TH-230 | 4676.122 | 161.00 | 12.69 | 0.00 | 0.00E+000 | 8.5 |
| TH-232 | 3942.682 | 28.00 | 5.29 | 0.00 | 0.00E+000 | 4.9 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 3.3519E-002 | 20.95 | 3.9437E-003 | 2.05 |
| TH-229 | 4.0334E+000 | 2.80 | 3.9603E-003 | 2.05 |
| TH-230 | 2.3492E-001 | 8.14 | 3.9484E-003 | 2.05 |
| TH-232 | 4.0782E-002 | 19.01 | 3.9413E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012180.CNF



# ALPHA SPECTRUM ANALYSIS

Sample Description: ARS1-11-00897-025
Batch Identification: B11-01660
Sample Identification: 11-01660-15
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/6/11 10:32:20
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86403.7 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

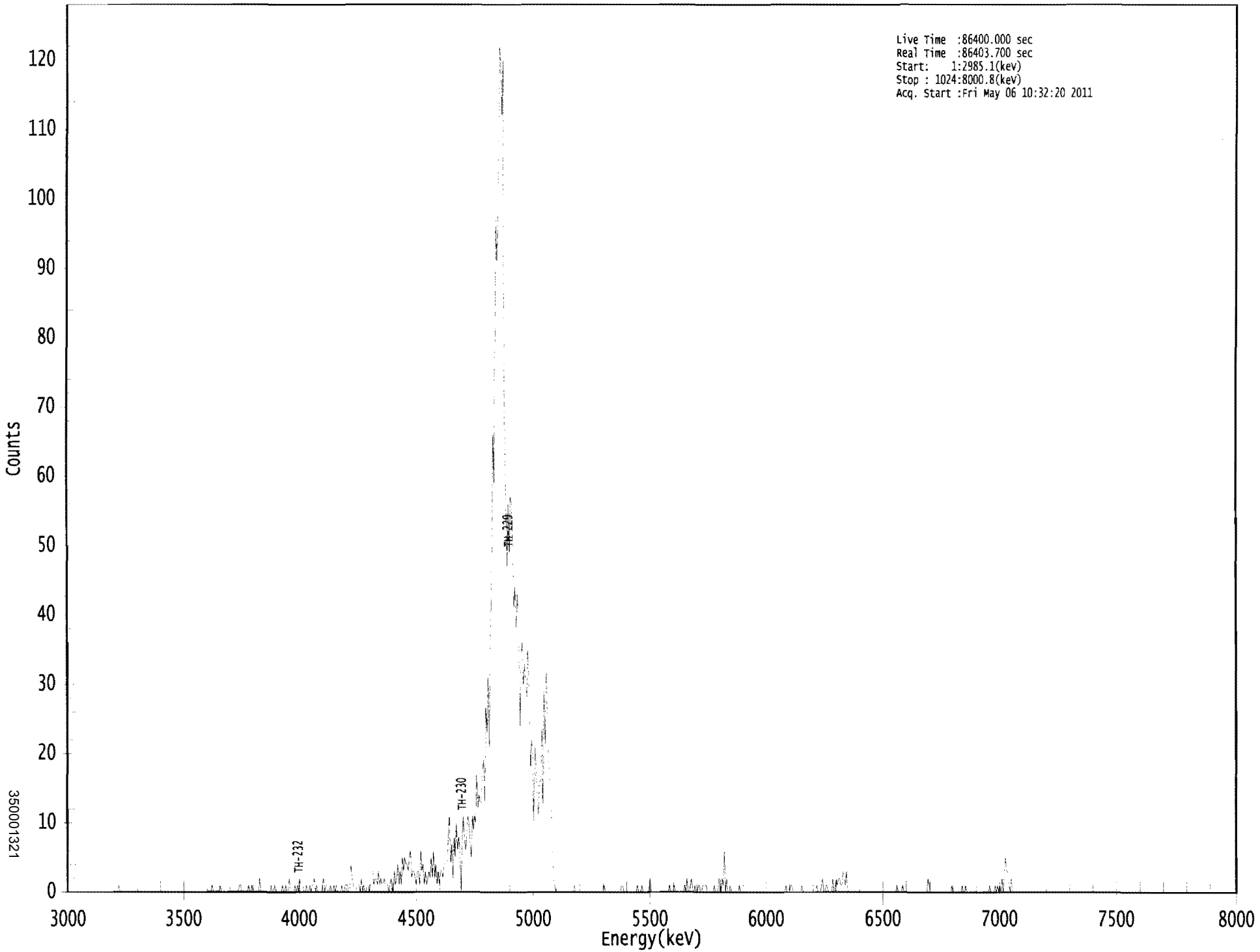
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWHM (keV) |
|---|---|---|---|---|---|---|
| TH-228 | 5380.702 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4.9 |
| TH-229 | 4889.361 | 2523.00 | 50.23 | 0.00 | 0.00E+000 | 47.5 |
| TH-230 | 4687.101 | 261.00 | 16.16 | 0.00 | 0.00E+000 | 18.0 |
| TH-232 | 3985.697 | 26.00 | 5.10 | 0.00 | 0.00E+000 | 4.9 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 7.0120E-003 | 44.77 | 3.7949E-003 | 2.05 |
| TH-229 | 3.5532E+000 | 2.86 | 3.8110E-003 | 2.05 |
| TH-230 | 3.6647E-001 | 6.52 | 3.7995E-003 | 2.05 |
| TH-232 | 3.6441E-002 | 19.72 | 3.7927E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012190.CNF



## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01647-03 | B11-01647 | A25A | 12155 | Th | 5-5-11 0353 | | 86400 |
| 11-01647-04 | ↓ | A25B | 12156 | ↓ | ↓ | | ↓ |
| 11-01647-05 | ↓ | A31A | 12157 | ↓ | ↓ | | ↓ |
| 11-01647-06 | ↓ | A31B | 12158 | ↓ | ↓ | | ↓ |
| 11-01647-07 | ↓ | A32B | 12159 | ↓ | ↓ | | ↓ |
| 11-01647-08 | ↓ | A33A | 12160 | ↓ | ↓ | | ↓ |
| 11-01647-09 | ↓ | A33B | 12161 | ↓ | ↓ | | ↓ |
| 11-01647-10 | ↓ | A34B | 12162 | ↓ | ↓ | | ↓ |
| 11-01647-11 | ↓ | A35A | 12163 | ↓ | ↓ | | ↓ |
| 11-01647-12 | ↓ | A36A | 12164 | ↓ | ↓ | | ↓ |
| 11-01647-13 | ↓ | A36B | 12165 | ↓ | ↓ | | ↓ |
| 11-01660-01 | B11-01660 | A11A | 12169 | ↓ | 5-6-11 1033 | | ↓ |
| 11-01660-02 | ↓ | A11B | 12193 | ↓ | ↓ | | ↓ |
| 11-01660-03 | ↓ | A12A | 12192 | ↓ | ↓ | | ↓ |
| 11-01660-04 | ↓ | A12B | 12191 | ↓ | ↓ | | ↓ |

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Reviewed By: JSW Date: 5-10-11
Initials

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01660-05 | B11-01660 | A13A | 12221 | Th | 3-6-11 1033 | | 86400 |
| 11-01660-06 | ↓ | A13B | 12182 | ↓ | ↓ | | ↓ |
| 11-01660-07 | ↓ | A14A | 12181 | ↓ | ↓ | | ↓ |
| 11-01660-08 | ↓ | A14B | 12186 | ↓ | ↓ | | ↓ |
| 11-01660-09 | ↓ | A15A | 12187 | ↓ | ↓ | | ↓ |
| 11-01660-10 | ↓ | A15B | 12173 | ↓ | ↓ | | ↓ |
| 11-01660-11 | ↓ | A16A | 12185 | ↓ | ↓ | | ↓ |
| 11-01660-12 | ↓ | A16B | 12177 | ↓ | ↓ | | ↓ |
| 11-01660-13 | ↓ | A21A | 12189 | ↓ | ↓ | | ↓ |
| 11-01660-14 | ↓ | A21B | 12180 | ↓ | ↓ | | ↓ |
| 11-01660-15 | ↓ | A22A | 12190 | ↓ | ↓ | | ↓ |
| 11-01648-01 | B11-01648 | A23B | 12222 | U | ↓ | | ↓ |
| 11-01648-02 | ↓ | A24A | 12188 | ↓ | ↓ | | ↓ |
| 11-01648-03 | ↓ | A24B | 12176 | ↓ | ↓ | | ↓ |
| 11-01648-04 | ↓ | A25A | 12183 | ↓ | ↓ | | ↓ |

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Reviewed By: LSW Initials Date: 5-11-11 (10) LSW 5-10-11

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01985**

| Method | ARS-031 | Analysis | ASP-A-008 | Matrix | AQ |
|---|---|---|---|---|---|
| Description | Thorium in Water | | | | |

| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | LCS | B-09934 | | | | | | | | |
| ARS1-B11-01985-02 | LCSD | B-09933 | | | | | | | | |
| ARS1-B11-01985-03 | MBL | | | | | | | | | |
| ARS1-B11-01985-04 | TRG | | | | **ARS1-11-00897** | 014 | 2 | PR-SW-01-110420 | STD | 05/03/11 |
| ARS1-B11-01985-05 | TRG | | | | **ARS1-11-00897** | 015 | 2 | RB-01-110420 | STD | 05/03/11 |
| ARS1-B11-01985-06 | TRG | | | | **ARS1-11-00897** | 016 | 2 | RB-02-110421 | STD | 05/03/11 |
| ARS1-B11-01985-07 | TRG | | | | **ARS1-11-00897** | 017 | 2 | RM-JM-SW-02-110420 | STD | 05/03/11 |
| ARS1-B11-01985-08 | TRG | | | | **ARS1-11-00897** | 018 | 2 | RM-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01985-09 | TRG | | | | **ARS1-11-00897** | 019 | 2 | RM-SW-BG-110419 | STD | 05/03/11 |
| ARS1-B11-01985-10 | TRG | | | | **ARS1-11-00897** | 020 | 2 | RP-JM-SW-01-110420 | STD | 05/03/11 |
| ARS1-B11-01985-11 | TRG | | | | **ARS1-11-00897** | 021 | 2 | RP-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01985-12 | TRG | | | | **ARS1-11-00897** | 022 | 2 | RP-SW-01-110419 | STD | 05/03/11 |
| ARS1-B11-01985-13 | TRG | | | | **ARS1-11-00897** | 023 | 2 | RP-SW-BG-041911 | STD | 05/03/11 |
| ARS1-B11-01985-14 | TRG | | | | **ARS1-11-00897** | 024 | 2 | SPOP35-110421 | STD | 05/03/11 |
| ARS1-B11-01985-15 | TRG | | | | **ARS1-11-00897** | 025 | 2 | MW-RM-110420 | STD | 05/03/11 |

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# Technical Notes

| | |
|---|---|
| Batch | ARS1-B11-01985 |
| Analysis Code | ASP-A-008 |
| Procedure No | ARS-031 |
| Matrix | AQ |

| # | Date | Dept | Batch Technical Notes | User ID |
|---|---|---|---|---|
| 1 | 06/02/11 15:54 | REPORTING | The tracer recovery for ARS1-B11-01985-04, and 05 are biased low; however, after management review the data is being released as valid. | HWRIGHT |
| 2 | 06/02/11 15:59 | REPORTING | The method blank is biased high; however, method blank evaluation was performed per procedure and results are being released as valid. | HWRIGHT |

# LCS Report
## Analytical Batch: ARS1-B11-01985



| BlindID | ABatch | ABatchSampleID | BlindGroup | StdID | Isotope | ExpectedAddition | ExpectedValue | EmptyWt | GrossWt | NetWt | UserID | ModDate | ExpectedValue_CT | MidPointCountDate | KnownValue |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| B-09933 | ARS1-B11-01985 | ARS1-B11-01985-02 | B-Th230 | S-0231 | Th-230 | 1 | 5.65698594 | 13.2439 | 14.2557 | 1.0118 | WSTICKLE | 4/14/2010 | 5.656927696 | 5/28/2011 | 5.723679443 |
| B-09934 | ARS1-B11-01985 | ARS1-B11-01985-01 | B-Th230 | S-0231 | Th-230 | 1 | 5.65698594 | 13.2092 | 14.2333 | 1.0241 | WSTICKLE | 4/14/2010 | 5.656927696 | 5/28/2011 | 5.793259653 |

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| ABatch | ABatchSampleID | ClientID | SampleType | EmptyWt | FilledWt | NetWt | Exp Val | StdID | Isotope | TracerDate | UserID | ModDate | HL days | Ref Date | Cert dpm/g | Curr ACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985 | ARS1-B11-01985-01 | | LCS | 88.905 | 89.941 | 1.036 | 11.601 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-02 | | LCSD | 83.563 | 84.588 | 1.025 | 11.483 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-03 | | MBL | 64.308 | 65.334 | 1.026 | 11.496 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-04 | PR-SW-01-110420 | TRG | 1.819 | 2.844 | 1.025 | 11.484 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-05 | RB-01-110420 | TRG | 1.833 | 2.850 | 1.017 | 11.396 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-06 | RB-02-110421 | TRG | 1.829 | 2.844 | 1.016 | 11.377 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-07 | RM-JM-SW-02-110420 | TRG | 1.814 | 2.828 | 1.015 | 11.367 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-08 | RM-JM-SW-110420 | TRG | 1.816 | 2.830 | 1.014 | 11.361 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-09 | RM-SW-BG-110419 | TRG | 1.799 | 2.813 | 1.014 | 11.358 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-10 | RP-JM-SW-01-110420 | TRG | 1.742 | 2.756 | 1.013 | 11.352 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-11 | RP-JM-SW-110420 | TRG | 1.797 | 2.810 | 1.013 | 11.348 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-12 | RP-SW-01-110419 | TRG | 1.796 | 2.809 | 1.013 | 11.350 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-13 | RP-SW-BG-041911 | TRG | 1.797 | 2.811 | 1.013 | 11.354 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-14 | SPOP35-110421 | TRG | 1.775 | 2.788 | 1.013 | 11.346 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |
| ARS1-B11-01985 | ARS1-B11-01985-15 | MW-RM-110420 | TRG | 1.799 | 2.810 | 1.011 | 11.328 | S-0246 | Th-229 | 5/24/2011 | JBROWN | 5/24/2011 | 2680555.556 | 9/20/2010 | 11.204 | 11.204 |

| ID_31001_031 | ABatch | ABatchSampleID | ClientID | Aliquot | AliquotUnits | UserID | ModDate | IC_ID |
|---|---|---|---|---|---|---|---|---|
| 3044 | ARS1-B11-01985 | ARS1-B11-01985-01 | | 1 | L | JBROWN | 05/26/2011 10:55:47 | |
| 3045 | ARS1-B11-01985 | ARS1-B11-01985-02 | | 1 | L | JBROWN | 05/26/2011 10:55:47 | |
| 3046 | ARS1-B11-01985 | ARS1-B11-01985-03 | | 1 | L | JBROWN | 05/26/2011 10:55:48 | |
| 3047 | ARS1-B11-01985 | ARS1-B11-01985-04 | PR-SW-01-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3048 | ARS1-B11-01985 | ARS1-B11-01985-05 | RB-01-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3049 | ARS1-B11-01985 | ARS1-B11-01985-06 | RB-02-110421 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3050 | ARS1-B11-01985 | ARS1-B11-01985-07 | RM-JM-SW-02-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3051 | ARS1-B11-01985 | ARS1-B11-01985-08 | RM-JM-SW-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3052 | ARS1-B11-01985 | ARS1-B11-01985-09 | RM-SW-BG-110419 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3053 | ARS1-B11-01985 | ARS1-B11-01985-10 | RP-JM-SW-01-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3054 | ARS1-B11-01985 | ARS1-B11-01985-11 | RP-JM-SW-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3055 | ARS1-B11-01985 | ARS1-B11-01985-12 | RP-SW-01-110419 | 0.5 | L | JBROWN | 05/26/2011 10:55:48 | 87857 |
| 3056 | ARS1-B11-01985 | ARS1-B11-01985-13 | RP-SW-BG-041911 | 0.5 | L | JBROWN | 05/26/2011 10:55:49 | 87857 |
| 3057 | ARS1-B11-01985 | ARS1-B11-01985-14 | SPOP35-110421 | 0.5 | L | JBROWN | 05/26/2011 10:55:49 | 87857 |
| 3058 | ARS1-B11-01985 | ARS1-B11-01985-15 | MW-RM-110420 | 0.5 | L | JBROWN | 05/26/2011 10:55:49 | 87857 |

| ABatchSampleID | SDG | Fraction | ClientID | Run | Isotope | ACT | TPU | TPU1s | TPU2s | MDA | DL | CU | CU1s | CU2s | ActivityReportUnits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | | | | 2 | TH-228 | 0.011048997 | 0.008941322 | 0.004561899 | 0.008941322 | 0.004990464 | 0 | 0.008841039 | 0.00451073 | 0.00884104 | pCi |
| ARS1-B11-01985-01 | | | | 2 | TH-229 | 5.225844136 | 0.660047501 | 0.336758929 | 0.660047501 | 0.019670109 | 0.007360039 | 0.191693997 | 0.09780306 | 0.191694 | pCi |
| ARS1-B11-01985-01 | | | | 2 | TH-230 | 6.784696469 | 0.848803069 | 0.43306279 | 0.848803069 | 0.036822661 | 0.015931356 | 0.219234658 | 0.11185442 | 0.21923466 | pCi |
| ARS1-B11-01985-01 | | | | 2 | TH-232 | 0.045664464 | 0.021887376 | 0.011167029 | 0.021887376 | 0.023953557 | 0.009501764 | 0.021180122 | 0.01080618 | 0.02118012 | pCi |
| ARS1-B11-01985-02 | | | | 2 | TH-228 | 0.002126671 | 0.011031217 | 0.005628172 | 0.011031217 | 0.022901745 | 0.008569233 | 0.011028222 | 0.00562664 | 0.01102822 | pCi |
| ARS1-B11-01985-02 | | | | 2 | TH-229 | 5.172349256 | 0.658245261 | 0.335839419 | 0.658245261 | 0.046183746 | 0.02023358 | 0.206145572 | 0.10517631 | 0.20614557 | pCi |
| ARS1-B11-01985-02 | | | | 2 | TH-230 | 6.389616106 | 0.805250126 | 0.410841901 | 0.805250126 | 0.027718407 | 0.010995184 | 0.228154425 | 0.11640532 | 0.22815442 | pCi |
| ARS1-B11-01985-02 | | | | 2 | TH-232 | 0.021094398 | 0.016733367 | 0.008537432 | 0.016733367 | 0.02271618 | 0.008499799 | 0.016538008 | 0.00843776 | 0.01653801 | pCi |
| ARS1-B11-01985-03 | | | | 2 | TH-228 | 0.013337565 | 0.011318928 | 0.005774963 | 0.011318928 | 0.01402876 | 0.004432609 | 0.011203554 | 0.0057161 | 0.01120355 | pCi |
| ARS1-B11-01985-03 | | | | 2 | TH-229 | 5.17840528 | 0.655442895 | 0.33440964 | 0.655442895 | 0.034286085 | 0.014582189 | 0.194676434 | 0.09932471 | 0.19467643 | pCi |
| ARS1-B11-01985-03 | | | | 2 | TH-230 | 0.140134941 | 0.03836197 | 0.019572434 | 0.03836197 | 0.026714443 | 0.010791237 | 0.034420725 | 0.01756159 | 0.03442072 | pCi |
| ARS1-B11-01985-03 | | | | 2 | TH-232 | 0.017009351 | 0.013513181 | 0.00689448 | 0.013513181 | 0.01755743 | 0.006217863 | 0.013355895 | 0.00681423 | 0.01335589 | pCi |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 2 | TH-228 | 0.049811802 | 0.056687945 | 0.028922421 | 0.056687945 | 0.044996661 | 0 | 0.056367361 | 0.02875886 | 0.05636736 | pCi |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 2 | TH-229 | 10.34580404 | 1.491385293 | 0.760910864 | 1.491385293 | 0.329445874 | 0.143189044 | 0.812854636 | 0.41472175 | 0.81285464 | pCi |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 2 | TH-230 | 0.207010421 | 0.131095042 | 0.066885226 | 0.131095042 | 0.147932832 | 0.052389561 | 0.128685433 | 0.06565583 | 0.12868543 | pCi |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | PR-SW-01-110420 | 2 | TH-232 | -0.015892016 | 0.069676308 | 0.035549137 | 0.069676308 | 0.171138275 | 0.064035456 | 0.069649829 | 0.03553563 | 0.06964983 | pCi |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | RB-01-110420 | 2 | TH-228 | 0.087617669 | 0.065766225 | 0.033554196 | 0.065766225 | 0.033920555 | 0 | 0.064908077 | 0.03311637 | 0.06490808 | pCi |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | RB-01-110420 | 2 | TH-229 | 10.26707499 | 1.420503788 | 0.724746831 | 1.420503788 | 0.157107734 | 0.062320627 | 0.691403434 | 0.35275685 | 0.69140343 | pCi |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | RB-01-110420 | 2 | TH-230 | 0.528182717 | 0.184304229 | 0.09403277 | 0.184304229 | 0.15742118 | 0.062444963 | 0.172895807 | 0.08821215 | 0.17289581 | pCi |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | RB-01-110420 | 2 | TH-232 | -0.143761594 | 0.129779428 | 0.066213994 | 0.129779428 | 0.287902203 | 0.127718022 | 0.128611065 | 0.06561789 | 0.12861106 | pCi |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | RB-02-110421 | 2 | TH-228 | 0.025369587 | 0.016020392 | 0.008173669 | 0.016020392 | 0.006875158 | 0 | 0.015724233 | 0.00802257 | 0.01572423 | pCi |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | RB-02-110421 | 2 | TH-229 | 10.24991345 | 1.276907738 | 0.65148354 | 1.276907738 | 0.026174884 | 0.009793955 | 0.309587352 | 0.15795273 | 0.30958735 | pCi |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | RB-02-110421 | 2 | TH-230 | 0.353142753 | 0.073168084 | 0.037330655 | 0.073168084 | 0.031938458 | 0.012669171 | 0.059429793 | 0.03032132 | 0.05942979 | pCi |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | RB-02-110421 | 2 | TH-232 | 0.019444752 | 0.017979376 | 0.009173151 | 0.017979376 | 0.026174633 | 0.009793862 | 0.017825122 | 0.00909445 | 0.01782512 | pCi |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 2 | TH-228 | 0.023327371 | 0.024261794 | 0.012378466 | 0.024261794 | 0.036118547 | 0.012791175 | 0.024097424 | 0.0122946 | 0.02409742 | pCi |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 2 | TH-229 | 10.24083198 | 1.29566743 | 0.661054811 | 1.29566743 | 0.044712564 | 0.017314012 | 0.383175227 | 0.19549756 | 0.38317523 | pCi |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 2 | TH-230 | 0.253548661 | 0.069938148 | 0.035682728 | 0.069938148 | 0.040153238 | 0.015024289 | 0.062867232 | 0.03207512 | 0.06286723 | pCi |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | RM-JM-SW-02-110420 | 2 | TH-232 | 0.022327175 | 0.020805 | 0.010614796 | 0.020805 | 0.027398282 | 0.008656921 | 0.020629258 | 0.01052513 | 0.02062926 | pCi |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 2 | TH-228 | 0.019655299 | 0.017391633 | 0.008873282 | 0.017391633 | 0.010653172 | 0 | 0.017228629 | 0.00879012 | 0.01722863 | pCi |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 2 | TH-229 | 10.2347759 | 1.298033814 | 0.66226215 | 1.298033814 | 0.042293351 | 0.015825063 | 0.393411077 | 0.20071994 | 0.39341108 | pCi |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 2 | TH-230 | 0.208566904 | 0.064384674 | 0.032849324 | 0.064384674 | 0.04237773 | 0.015856636 | 0.059244986 | 0.03022703 | 0.05924499 | pCi |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | RM-JM-SW-110420 | 2 | TH-232 | 0.035346153 | 0.028080964 | 0.014327022 | 0.028080964 | 0.036485085 | 0.012920983 | 0.027754116 | 0.01416026 | 0.02775412 | pCi |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 2 | TH-228 | 0.023571956 | 0.026825886 | 0.013686676 | 0.026825886 | 0.042307029 | 0.015830181 | 0.026674179 | 0.01360927 | 0.02667418 | pCi |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 2 | TH-229 | 10.23275985 | 1.295187806 | 0.660810105 | 1.295187806 | 0.04045329 | 0.015136561 | 0.384700786 | 0.19627591 | 0.38470079 | pCi |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 2 | TH-230 | 0.207020744 | 0.062817828 | 0.032049912 | 0.062817828 | 0.040533989 | 0.015166756 | 0.057619855 | 0.02939789 | 0.05761986 | pCi |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | RM-SW-BG-110419 | 2 | TH-232 | 0.026295373 | 0.024625266 | 0.012563911 | 0.024625266 | 0.034897716 | 0.012358825 | 0.024419328 | 0.01245884 | 0.02441933 | pCi |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 2 | TH-228 | 0.016146164 | 0.022462368 | 0.011460392 | 0.022462368 | 0.037499466 | 0.01328022 | 0.022377441 | 0.01141706 | 0.02237744 | pCi |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 2 | TH-229 | 10.22670112 | 1.296173082 | 0.661312797 | 1.296173082 | 0.05066561 | 0.020097754 | 0.390331384 | 0.19914867 | 0.39033138 | pCi |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 2 | TH-230 | 0.259371362 | 0.074369482 | 0.037943613 | 0.074369482 | 0.054610812 | 0.02205991 | 0.067439888 | 0.03440811 | 0.06743989 | pCi |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | RP-JM-SW-01-110420 | 2 | TH-232 | 0.030907746 | 0.024235639 | 0.012365122 | 0.024235639 | 0.028445799 | 0.0089879 | 0.023946024 | 0.01221736 | 0.02394602 | pCi |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 2 | TH-228 | 0.004494258 | 0.026431818 | 0.013485622 | 0.026431818 | 0.05400087 | 0.020910715 | 0.026426237 | 0.01348277 | 0.02642624 | pCi |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 2 | TH-229 | 10.22367308 | 1.296533965 | 0.661496921 | 1.296533965 | 0.047030169 | 0.018211456 | 0.392681552 | 0.20034773 | 0.39268155 | pCi |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 2 | TH-230 | 0.2274717 | 0.068232991 | 0.03481275 | 0.068232991 | 0.047123999 | 0.01824779 | 0.062449277 | 0.03186188 | 0.06244928 | pCi |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | RP-JM-SW-110420 | 2 | TH-232 | 0.046968939 | 0.033039143 | 0.016856706 | 0.033039143 | 0.042150009 | 0.015771428 | 0.032547814 | 0.01660603 | 0.03254781 | pCi |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 2 | TH-228 | 0.029004243 | 0.021770718 | 0.011107509 | 0.021770718 | 0.011228785 | 0 | 0.021486644 | 0.01096257 | 0.02148664 | pCi |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 2 | TH-229 | 10.22569442 | 1.297413738 | 0.661945785 | 1.297413738 | 0.036806161 | 0.01303469 | 0.394812733 | 0.20143507 | 0.39481273 | pCi |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 2 | TH-230 | 0.500196729 | 0.107354906 | 0.054772911 | 0.107354906 | 0.036879584 | 0.013060692 | 0.088715203 | 0.04526286 | 0.0887152 | pCi |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | RP-SW-01-110419 | 2 | TH-232 | 0.06735182 | 0.03303562 | 0.016854908 | 0.03303562 | 0.010736673 | 0 | 0.032017023 | 0.01633522 | 0.03201702 | pCi |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 2 | TH-228 | 0.017963804 | 0.02499105 | 0.012750535 | 0.02499105 | 0.041720935 | 0.014775229 | 0.024896562 | 0.01270233 | 0.02489656 | pCi |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 2 | TH-229 | 10.22872246 | 1.302762383 | 0.664674685 | 1.302762383 | 0.031616984 | 0.009989886 | 0.410949858 | 0.20966829 | 0.41094986 | pCi |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 2 | TH-230 | 0.245256197 | 0.073207276 | 0.037350651 | 0.073207276 | 0.046335441 | 0.017337507 | 0.066937807 | 0.03415194 | 0.06693781 | pCi |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | RP-SW-BG-041911 | 2 | TH-232 | 0.012882392 | 0.02232232 | 0.011388939 | 0.02232232 | 0.039892473 | 0.01412769 | 0.022267955 | 0.0113612 | 0.02226796 | pCi |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 2 | TH-228 | 0.135673321 | 0.052927416 | 0.027003784 | 0.052927416 | 0.044273992 | 0.016566167 | 0.050323274 | 0.02567514 | 0.05032327 | pCi |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 2 | TH-229 | 10.22165175 | 1.296530341 | 0.661495072 | 1.296530341 | 0.029001771 | 0.009163568 | 0.393437511 | 0.20073342 | 0.39343751 | pCi |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 2 | TH-230 | 0.556504307 | 0.114373627 | 0.058353891 | 0.114373627 | 0.029059639 | 0.009181853 | 0.092506768 | 0.04719733 | 0.09250677 | pCi |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | SPOP35-110421 | 2 | TH-232 | 0.0472673 | 0.029446282 | 0.015023613 | 0.029446282 | 0.029001493 | 0.00916348 | 0.028886814 | 0.01473817 | 0.02888681 | pCi |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 2 | TH-228 | 0.029618273 | 0.027737118 | 0.014151591 | 0.027737118 | 0.03930768 | 0.013920588 | 0.027505156 | 0.01403324 | 0.02750516 | pCi |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 2 | TH-229 | 10.20550484 | 1.296353475 | 0.661404834 | 1.296353475 | 0.04361161 | 0.016318321 | 0.398939186 | 0.2035404 | 0.39893919 | pCi |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 2 | TH-230 | 0.47071446 | 0.105263843 | 0.053706042 | 0.105263843 | 0.048757599 | 0.018880368 | 0.088565884 | 0.04518668 | 0.08856588 | pCi |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | MW-RM-110420 | 2 | TH-232 | 0.0445474 | 0.026870747 | 0.013709565 | 0.026870747 | 0.010974859 | 0 | 0.026325831 | 0.01343155 | 0.02632583 | pCi |

350001329

| ABatchSampleID | SDG | Fraction | AliquotReportUnits | ChemRecovery | TracerRecovery | SampleCounts | SampleCountMins | BKG_Counts | BKG_CountMins | EFF | ALIQ | SampleCollDate | MidPointCountDate | BP_DL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | | | L | | 0.806090574 | 6 | 1440 | 0 | 1440 | 0.212452739 | 1 | 5/26/2011 | 5/28/2011 | 0.1155543 |
| ARS1-B11-01985-01 | | | L | | 0.806090574 | 2864 | 1440 | 3 | 1440 | 0.212452739 | 1 | 5/26/2011 | 5/28/2011 | 0.196581488 |
| ARS1-B11-01985-01 | | | L | | 0.806090574 | 3721 | 1440 | 14 | 1440 | 0.212452739 | 1 | 5/26/2011 | 5/28/2011 | 0.188467166 |
| ARS1-B11-01985-01 | | | L | | 0.806090574 | 30 | 1440 | 5 | 1440 | 0.212452739 | 1 | 5/26/2011 | 5/28/2011 | 0.030244075 |
| ARS1-B11-01985-02 | | | L | | 0.771546579 | 4 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/26/2011 | 5/28/2011 | 0.1155543 |
| ARS1-B11-01985-02 | | | L | | 0.771546579 | 2469 | 1440 | 17 | 1440 | 0.192200825 | 1 | 5/26/2011 | 5/28/2011 | 0.196581488 |
| ARS1-B11-01985-02 | | | L | | 0.771546579 | 3028 | 1440 | 5 | 1440 | 0.192200825 | 1 | 5/26/2011 | 5/28/2011 | 0.188467166 |
| ARS1-B11-01985-02 | | | L | | 0.771546579 | 13 | 1440 | 3 | 1440 | 0.192200825 | 1 | 5/26/2011 | 5/28/2011 | 0.030244075 |
| ARS1-B11-01985-03 | | | L | | 0.764891512 | 8 | 1440 | 1 | 1440 | 0.216391131 | 1 | 5/26/2011 | 5/28/2011 | 0.115554299 |
| ARS1-B11-01985-03 | | | L | | 0.764891512 | 2751 | 1440 | 11 | 1440 | 0.216391131 | 1 | 5/26/2011 | 5/28/2011 | 0.196581488 |
| ARS1-B11-01985-03 | | | L | | 0.764891512 | 80 | 1440 | 6 | 1440 | 0.216391131 | 1 | 5/26/2011 | 5/28/2011 | 0.188467166 |
| ARS1-B11-01985-03 | | | L | | 0.764891512 | 11 | 1440 | 2 | 1440 | 0.216391131 | 1 | 5/26/2011 | 5/28/2011 | 0.030244075 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | L | | 0.179297569 | 3 | 1440 | 0 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | L | | 0.179297569 | 666 | 1440 | 15 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | L | | 0.179297569 | 15 | 1440 | 2 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | L | | 0.179297569 | 2 | 1440 | 3 | 1440 | 0.219564006 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | L | | 0.24613195 | 7 | 1440 | 0 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | L | | 0.24613195 | 862 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | L | | 0.24613195 | 49 | 1440 | 5 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | L | | 0.24613195 | 9 | 1440 | 21 | 1440 | 0.212170452 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | L | | 1.24880876 | 10 | 1440 | 0 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/28/2011 | 0.239267553 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | L | | 1.24880876 | 4220 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/28/2011 | 0.393166529 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | L | | 1.24880876 | 150 | 1440 | 5 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/28/2011 | 0.376934663 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | L | | 1.24880876 | 11 | 1440 | 3 | 1440 | 0.206113368 | 0.5 | 4/21/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | L | | 0.744145735 | 8 | 1440 | 2 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | L | | 0.744145735 | 2756 | 1440 | 4 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | L | | 0.744145735 | 71 | 1440 | 3 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | L | | 0.744145735 | 7 | 1440 | 1 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | L | | 0.735974724 | 5 | 1440 | 0 | 1440 | 0.22593005 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | L | | 0.735974724 | 2609 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | L | | 0.735974724 | 56 | 1440 | 3 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | L | | 0.735974724 | 11 | 1440 | 2 | 1440 | 0.216447204 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | L | | 0.79606879 | 9 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/28/2011 | 0.23974299 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | L | | 0.79606879 | 2727 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/28/2011 | 0.393166733 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | L | | 0.79606879 | 58 | 1440 | 3 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/28/2011 | 0.376934682 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | L | | 0.79606879 | 9 | 1440 | 2 | 1440 | 0.209210098 | 0.5 | 4/19/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | L | | 0.790942438 | 6 | 1440 | 2 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | L | | 0.790942438 | 2652 | 1440 | 5 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | L | | 0.790942438 | 73 | 1440 | 6 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | L | | 0.790942438 | 9 | 1440 | 1 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | L | | 0.710389034 | 5 | 1440 | 4 | 1440 | 0.2047351 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | L | | 0.710389034 | 2616 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | L | | 0.710389034 | 62 | 1440 | 4 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | L | | 0.710389034 | 15 | 1440 | 3 | 1440 | 0.225003242 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | L | | 0.704019614 | 7 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/28/2011 | 0.23974299 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | L | | 0.704019614 | 2583 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/28/2011 | 0.393166733 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | L | | 0.704019614 | 128 | 1440 | 2 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/28/2011 | 0.376934682 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | L | | 0.704019614 | 17 | 1440 | 0 | 1440 | 0.224300042 | 0.5 | 4/19/2011 | 5/28/2011 | 0.06048815 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | L | | 0.660678989 | 6 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/28/2011 | 0.23974299 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | L | | 0.660678989 | 2383 | 1440 | 1 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/28/2011 | 0.393166733 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | L | | 0.660678989 | 60 | 1440 | 3 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/28/2011 | 0.376934682 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | L | | 0.660678989 | 5 | 1440 | 2 | 1440 | 0.220520407 | 0.5 | 4/19/2011 | 5/28/2011 | 0.06048815 |
| -B11-01985-14 | ARS1-11-00897 | 024 | L | | 0.739533608 | 36 | 1440 | 3 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/28/2011 | 0.239267553 |
| -B11-01985-14 | ARS1-11-00897 | 024 | L | | 0.739533608 | 2596 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/28/2011 | 0.393166529 |
| -B11-01985-14 | ARS1-11-00897 | 024 | L | | 0.739533608 | 142 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/28/2011 | 0.376934663 |
| -B11-01985-14 | ARS1-11-00897 | 024 | L | | 0.739533608 | 13 | 1440 | 1 | 1440 | 0.214771703 | 0.5 | 4/21/2011 | 5/28/2011 | 0.06048815 |
| -B11-01985-15 | ARS1-11-00897 | 025 | L | | 0.69217083 | 9 | 1440 | 2 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/28/2011 | 0.239505153 |
| -B11-01985-15 | ARS1-11-00897 | 025 | L | | 0.69217083 | 2523 | 1440 | 3 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/28/2011 | 0.393166631 |
| -B11-01985-15 | ARS1-11-00897 | 025 | L | | 0.69217083 | 120 | 1440 | 4 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/28/2011 | 0.376934673 |
| -B11-01985-15 | ARS1-11-00897 | 025 | L | | 0.69217083 | 11 | 1440 | 0 | 1440 | 0.22318837 | 0.5 | 4/20/2011 | 5/28/2011 | 0.06048815 |

3500001330

| ABatchSampleID | SDG | Fraction | BP_MDA | Sb_Val | UCF | CF | GrossCountRate | BKGCountRate | NetCountRate | PlatingRecovery | InstFileName | DetectorID | InstrumentkeV | NuclideAbd | TracerMeasACT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | | | 0.235603123 | 0.109866052 | 2.22 | 1.96 | 0.004166667 | 0 | 0.004166667 | 0.715 | ApexAlpha | A_1_1A | 4.88256979 | | |
| ARS1-B11-01985-01 | | | 0.397269309 | 0.187300713 | 2.22 | 1.96 | 1.988888889 | 0.002083333 | 1.986805556 | 0.715 | ApexAlpha | A_1_1A | 75.69419098 | | |
| ARS1-B11-01985-01 | | | 0.381085408 | 0.179569565 | 2.22 | 1.96 | 2.584027778 | 0.009722222 | 2.574305556 | 0.715 | ApexAlpha | A_1_1A | 53.68243408 | | |
| ARS1-B11-01985-01 | | | 0.065308375 | 0.028816243 | 2.22 | 1.96 | 0.020833333 | 0.003472222 | 0.017361111 | 0.715 | ApexAlpha | A_1_1A | 4.88256979 | | |
| ARS1-B11-01985-02 | | | 0.236375939 | 0.109866052 | 2.22 | 1.96 | 0.002777778 | 0.002083333 | 0.000694444 | 0.715 | ApexAlpha | A_1_1B | 9.76653862 | | |
| ARS1-B11-01985-02 | | | 0.398035863 | 0.187300713 | 2.22 | 1.96 | 1.714583333 | 0.011805556 | 1.702777778 | 0.715 | ApexAlpha | A_1_1B | 45.17024231 | | |
| ARS1-B11-01985-02 | | | 0.381853498 | 0.179569565 | 2.22 | 1.96 | 2.102777778 | 0.003472222 | 2.099305556 | 0.715 | ApexAlpha | A_1_1B | 30.33912277 | | |
| ARS1-B11-01985-02 | | | 0.066074929 | 0.028816243 | 2.22 | 1.96 | 0.009027778 | 0.002083333 | 0.006944444 | 0.715 | ApexAlpha | A_1_1B | 7.324903965 | | |
| ARS1-B11-01985-03 | | | 0.2357762 | 0.109866052 | 2.22 | 1.96 | 0.005555556 | 0.000694444 | 0.004861111 | 0.715 | ApexAlpha | A_1_2A | 4.912463665 | | |
| ARS1-B11-01985-03 | | | 0.397440986 | 0.187300713 | 2.22 | 1.96 | 1.910416667 | 0.007638889 | 1.902777778 | 0.715 | ApexAlpha | A_1_2A | 49.25256729 | | |
| ARS1-B11-01985-03 | | | 0.381257428 | 0.179569565 | 2.22 | 1.96 | 0.055555556 | 0.004166667 | 0.051388889 | 0.715 | ApexAlpha | A_1_2A | 7.204946995 | | |
| ARS1-B11-01985-03 | | | 0.065480052 | 0.028816243 | 2.22 | 1.96 | 0.007638889 | 0.001388889 | 0.00625 | 0.715 | ApexAlpha | A_1_2A | 4.912463665 | | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | 0.522979049 | 0.109866052 | 2.22 | 1.96 | 0.002083333 | 0 | 0.002083333 | 0.715 | ApexAlpha | A_1_2B | 4.888912201 | | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | 0.827713638 | 0.187300713 | 2.22 | 1.96 | 0.4625 | 0.010416667 | 0.452083333 | 0.715 | ApexAlpha | A_1_2B | 28.79026031 | | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | 0.795405311 | 0.179569565 | 2.22 | 1.96 | 0.010416667 | 0.001388889 | 0.009027778 | 0.715 | ApexAlpha | A_1_2B | 5.703730583 | | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | 0.163784056 | 0.028816243 | 2.22 | 1.96 | 0.001388889 | 0.002083333 | -0.000694444 | 0.715 | ApexAlpha | A_1_2B | 4.888912201 | | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | 0.511902942 | 0.109866052 | 2.22 | 1.96 | 0.004861111 | 0 | 0.004861111 | 0.715 | ApexAlpha | A_1_3A | 4.911292076 | | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | 0.817112331 | 0.187300713 | 2.22 | 1.96 | 0.598611111 | 0.003472222 | 0.595138889 | 0.715 | ApexAlpha | A_1_3A | 49.31755829 | | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | 0.784782854 | 0.179569565 | 2.22 | 1.96 | 0.034027778 | 0.003472222 | 0.030555556 | 0.715 | ApexAlpha | A_1_3A | 9.822584152 | | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | 0.153182854 | 0.028816243 | 2.22 | 1.96 | 0.00625 | 0.014583333 | -0.008333333 | 0.715 | ApexAlpha | A_1_3A | 4.911292076 | | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | 0.484383364 | 0.109866052 | 2.22 | 1.96 | 0.006944444 | 0 | 0.006944444 | 0.715 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | 0.791232622 | 0.187300713 | 2.22 | 1.96 | 2.930555556 | 0.002083333 | 2.928472222 | 0.715 | ApexAlpha | A_1_3B | 50.81935883 | | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | 0.758851697 | 0.179569565 | 2.22 | 1.96 | 0.104166667 | 0.003472222 | 0.100694444 | 0.715 | ApexAlpha | A_1_3B | 41.76770782 | | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | 0.127303604 | 0.028816243 | 2.22 | 1.96 | 0.007638889 | 0.002083333 | 0.005555556 | 0.715 | ApexAlpha | A_1_3B | 4.913847923 | | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | 0.488518583 | 0.109866052 | 2.22 | 1.96 | 0.005555556 | 0.001388889 | 0.004166667 | 0.715 | ApexAlpha | A_1_4A | 7.365706444 | | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | 0.794730392 | 0.187300713 | 2.22 | 1.96 | 1.913888889 | 0.002777778 | 1.911111111 | 0.715 | ApexAlpha | A_1_4A | 45.73434448 | | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | 0.76235626 | 0.179569565 | 2.22 | 1.96 | 0.049305556 | 0.002083333 | 0.047222222 | 0.715 | ApexAlpha | A_1_4A | 6.301770687 | | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | 0.130801135 | 0.028816243 | 2.22 | 1.96 | 0.004861111 | 0.000694444 | 0.004166667 | 0.715 | ApexAlpha | A_1_4A | 4.910470963 | | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | 0.488635559 | 0.109866052 | 2.22 | 1.96 | 0.003472222 | 0 | 0.003472222 | 0.715 | ApexAlpha | A_1_4B | | | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | 0.795289076 | 0.187300713 | 2.22 | 1.96 | 1.811805556 | 0.002083333 | 1.809722222 | 0.715 | ApexAlpha | A_1_4B | 50.13162994 | | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | 0.762916059 | 0.179569565 | 2.22 | 1.96 | 0.038888889 | 0.002083333 | 0.036805556 | 0.715 | ApexAlpha | A_1_4B | 7.335418701 | | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | 0.131359814 | 0.028816243 | 2.22 | 1.96 | 0.007638889 | 0.001388889 | 0.00625 | 0.715 | ApexAlpha | A_1_4B | 7.335418701 | | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | 0.489103706 | 0.109866052 | 2.22 | 1.96 | 0.00625 | 0.002083333 | 0.004166667 | 0.715 | ApexAlpha | A_1_5A | 4.889725208 | | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | 0.794826223 | 0.187300713 | 2.22 | 1.96 | 1.89375 | 0.002083333 | 1.891666667 | 0.715 | ApexAlpha | A_1_5A | 43.27672195 | | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | 0.762452096 | 0.179569565 | 2.22 | 1.96 | 0.040277778 | 0.002083333 | 0.038194444 | 0.715 | ApexAlpha | A_1_5A | 10.4314146 | | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | 0.13089676 | 0.028816243 | 2.22 | 1.96 | 0.00625 | 0.001388889 | 0.004861111 | 0.715 | ApexAlpha | A_1_5A | 4.889725208 | | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | 0.488921413 | 0.109866052 | 2.22 | 1.96 | 0.004166667 | 0.001388889 | 0.002777778 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | 0.795115953 | 0.187300713 | 2.22 | 1.96 | 1.841666667 | 0.003472222 | 1.838194444 | 0.715 | ApexAlpha | A_1_5B | 62.37139511 | | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | 0.762742591 | 0.179569565 | 2.22 | 1.96 | 0.050694444 | 0.004166667 | 0.046527778 | 0.715 | ApexAlpha | A_1_5B | 12.67516136 | | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | 0.131186693 | 0.028816243 | 2.22 | 1.96 | 0.00625 | 0.000694444 | 0.005555556 | 0.715 | ApexAlpha | A_1_5B | 4.906514168 | | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | 0.490161826 | 0.109866052 | 2.22 | 1.96 | 0.003472222 | 0.002777778 | 0.000694444 | 0.715 | ApexAlpha | A_1_6A | | | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | 0.795253108 | 0.187300713 | 2.22 | 1.96 | 1.816666667 | 0.002777778 | 1.813888889 | 0.715 | ApexAlpha | A_1_6A | 43.58675385 | | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | 0.762880019 | 0.179569565 | 2.22 | 1.96 | 0.043055556 | 0.002777778 | 0.040277778 | 0.715 | ApexAlpha | A_1_6A | 14.25100708 | | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | 0.131323846 | 0.028816243 | 2.22 | 1.96 | 0.010416667 | 0.002083333 | 0.008333333 | 0.715 | ApexAlpha | A_1_6A | 4.886059284 | | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | 0.489685825 | 0.109866052 | 2.22 | 1.96 | 0.004861111 | 0 | 0.004861111 | 0.715 | ApexAlpha | A_1_6B | 4.899281502 | | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | 0.795382835 | 0.187300713 | 2.22 | 1.96 | 1.79375 | 0.001388889 | 1.792361111 | 0.715 | ApexAlpha | A_1_6B | 48.9505806 | | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | 0.763009819 | 0.179569565 | 2.22 | 1.96 | 0.088888889 | 0.001388889 | 0.0875 | 0.715 | ApexAlpha | A_1_6B | 8.340443611 | | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | 0.131453367 | 0.028816243 | 2.22 | 1.96 | 0.011805556 | 0 | 0.011805556 | 0.715 | ApexAlpha | A_1_6B | 4.899281502 | | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | 0.490627517 | 0.109866052 | 2.22 | 1.96 | 0.004166667 | 0.001388889 | 0.002777778 | 0.715 | ApexAlpha | A_2_1A | 4.908117771 | | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | 0.796283266 | 0.187300713 | 2.22 | 1.96 | 1.654861111 | 0.000694444 | 1.654166667 | 0.715 | ApexAlpha | A_2_1A | 57.21987915 | | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | 0.763912045 | 0.179569565 | 2.22 | 1.96 | 0.041666667 | 0.002083333 | 0.039583333 | 0.715 | ApexAlpha | A_2_1A | 6.441904545 | | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | 0.132353788 | 0.028816243 | 2.22 | 1.96 | 0.003472222 | 0.001388889 | 0.002083333 | 0.715 | ApexAlpha | A_2_1A | 4.908117771 | | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | 0.488649863 | 0.109866052 | 2.22 | 1.96 | 0.025 | 0.002083333 | 0.022916667 | 0.715 | ApexAlpha | A_2_1B | 11.46585655 | | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | 0.795320283 | 0.187300713 | 2.22 | 1.96 | 1.802777778 | 0.000694444 | 1.802083333 | 0.715 | ApexAlpha | A_2_1B | 70.95007324 | | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | 0.762947515 | 0.179569565 | 2.22 | 1.96 | 0.098611111 | 0.000694444 | 0.097916667 | 0.715 | ApexAlpha | A_2_1B | 31.91736603 | | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | 0.131391226 | 0.028816243 | 2.22 | 1.96 | 0.009027778 | 0.000694444 | 0.008333333 | 0.715 | ApexAlpha | A_2_1B | 4.879087925 | | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | 0.48944889 | 0.109866052 | 2.22 | 1.96 | 0.00625 | 0.001388889 | 0.004861111 | 0.715 | ApexAlpha | A_2_2A | 4.902958393 | | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | 0.795620819 | 0.187300713 | 2.22 | 1.96 | 1.752083333 | 0.002083333 | 1.75 | 0.715 | ApexAlpha | A_2_2A | 59.61180496 | | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | 0.763248464 | 0.179569565 | 2.22 | 1.96 | 0.083333333 | 0.002777778 | 0.080555556 | 0.715 | ApexAlpha | A_2_2A | 9.805916786 | | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | 0.131691554 | 0.028816243 | 2.22 | 1.96 | 0.007638889 | 0 | 0.007638889 | 0.715 | ApexAlpha | A_2_2A | 4.902958393 | | |

| ABatchSampleID | SDG | Fraction | TracerKnownACT | TracerIsotope | TracerRefDate | TracerRefACT | TracerKnown | Halflife1 | Halflife2 | Halflife3 | TPUF_1 | TPUF_2 | TPUF_3 | TPUF_4 | TPUF_5 | TPUF_6 | DeltaT1 | DeltaT2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-01 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-01 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-01 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-02 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-02 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-02 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-02 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133483796 | |
| ARS1-B11-01985-03 | | | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133472222 | |
| ARS1-B11-01985-03 | | | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133472222 | |
| ARS1-B11-01985-03 | | | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133472222 | |
| ARS1-B11-01985-03 | | | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 2.133472222 | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 39.08888889 | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 37.08888889 | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 698.3564815 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 2680555.556 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 27534722.22 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | TH-229 | 9/20/2010 | | | 5.13194E+12 | | | 0 | 0.02 | 0.05833 | 0 | 0 | 0 | 38.08888889 | |

3500001332

| ABatchSampleID | SDG | Fraction | DeltaT3 | DeltaT4 | DeltaT5 | DeltaT6 | DF1 | DF2 | DF3 | IF1 | IF2 | SysErr | K_Val | K_MDA | AnalysisCode | UserID | ModDate |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01985-01 | | | | | | | 0.997884671 | | | | | 0.061663514 | 0.377108124 | 543.0356987 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-01 | | | | | | | 0.999999448 | | | | | 0.061663514 | 0.380188445 | 547.4713608 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-01 | | | | | | | 0.999999946 | | | | | 0.061663514 | 0.379428257 | 546.3766901 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-01 | | | | | | | 1 | | | | | 0.061663514 | 0.380188655 | 547.4716628 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-02 | | | | | | | 0.997884671 | | | | | 0.061663514 | 0.32654054 | 470.2183777 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-02 | | | | | | | 0.999999448 | | | | | 0.061663514 | 0.329207811 | 474.0592483 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-02 | | | | | | | 0.999999946 | | | | | 0.061663514 | 0.328549559 | 473.1113654 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-02 | | | | | | | 1 | | | | | 0.061663514 | 0.329207993 | 474.0595098 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-03 | | | | | | | 0.997884683 | | | | | 0.061663514 | 0.364467673 | 524.8334494 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-03 | | | | | | | 0.999999448 | | | | | 0.061663514 | 0.367444739 | 529.1204245 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-03 | | | | | | | 0.999999946 | | | | | 0.061663514 | 0.366710032 | 528.0624466 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-03 | | | | | | | 1 | | | | | 0.061663514 | 0.367444942 | 529.1207164 | | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | | | | 0.96290091 | | | | | 0.061663514 | 0.041824091 | 60.22669055 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | | | | 0.999990151 | | | | | 0.061663514 | 0.043697264 | 62.92406057 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | | | | 0.999999041 | | | | | 0.061663514 | 0.043610257 | 62.79877075 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-04 | ARS1-11-00897 | 014 | | | | | 1 | | | | | 0.061663514 | 0.043697695 | 62.92468032 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | | | | 0.96290091 | | | | | 0.061663514 | 0.055480946 | 79.89256169 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | | | | 0.999990151 | | | | | 0.061663514 | 0.057965768 | 83.47070617 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | | | | 0.999999041 | | | | | 0.061663514 | 0.057850351 | 83.30450536 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-05 | ARS1-11-00897 | 015 | | | | | 1 | | | | | 0.061663514 | 0.057966339 | 83.47152829 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | | | | 0.963857103 | | | | | 0.061663514 | 0.273731081 | 394.1727565 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | | | | 0.999990409 | | | | | 0.061663514 | 0.28570702 | 411.4181082 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | | | | 0.999999066 | | | | | 0.061663514 | 0.285138074 | 410.5988265 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-06 | ARS1-11-00897 | 016 | | | | | 1 | | | | | 0.061663514 | 0.28570976 | 411.4220539 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | | | | 0.96290091 | | | | | 0.061663514 | 0.178617068 | 257.2085777 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | | | | 0.999990151 | | | | | 0.061663514 | 0.186616782 | 268.7281664 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | | | | 0.999999041 | | | | | 0.061663514 | 0.186245204 | 268.1930944 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-07 | ARS1-11-00897 | 017 | | | | | 1 | | | | | 0.061663514 | 0.18661862 | 268.7308132 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | | | | 0.96290091 | | | | | 0.061663514 | 0.176655783 | 254.384327 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | | | | 0.999990151 | | | | | 0.061663514 | 0.176820894 | 254.6220871 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | | | | 0.999999041 | | | | | 0.061663514 | 0.176468821 | 254.1151021 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-08 | ARS1-11-00897 | 018 | | | | | 1 | | | | | 0.061663514 | 0.176822635 | 254.6245949 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | | | | 0.961945666 | | | | | 0.061663514 | 0.176763725 | 254.5397643 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | | | | 0.999989892 | | | | | 0.061663514 | 0.18486378 | 266.2038433 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | | | | 0.999999016 | | | | | 0.061663514 | 0.184495736 | 265.6738596 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-09 | ARS1-11-00897 | 019 | | | | | 1 | | | | | 0.061663514 | 0.184865649 | 266.2065341 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | | | | 0.96290091 | | | | | 0.061663514 | 0.172039489 | 247.7368644 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | | | | 0.999990151 | | | | | 0.061663514 | 0.179744614 | 258.8322439 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | | | | 0.999999041 | | | | | 0.061663514 | 0.179386719 | 258.316876 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-10 | ARS1-11-00897 | 020 | | | | | 1 | | | | | 0.061663514 | 0.179746384 | 258.8347932 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | | | | 0.96290091 | | | | | 0.061663514 | 0.154518155 | 222.5061435 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | | | | 0.999990151 | | | | | 0.061663514 | 0.177420471 | 255.4854775 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | | | | 0.999999041 | | | | | 0.061663514 | 0.177067204 | 254.9767734 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-11 | ARS1-11-00897 | 021 | | | | | 1 | | | | | 0.061663514 | 0.177422218 | 255.4879939 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | | | | 0.961945666 | | | | | 0.061663514 | 0.167600002 | 241.3440023 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | | | | 0.999989892 | | | | | 0.061663514 | 0.175280136 | 252.4033962 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | | | | 0.999999016 | | | | | 0.061663514 | 0.174931172 | 251.9008876 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-12 | ARS1-11-00897 | 022 | | | | | 1 | | | | | 0.061663514 | 0.175281908 | 252.4059474 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | | | | 0.961945666 | | | | | 0.061663514 | 0.154631934 | 222.6699843 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | | | | 0.999989892 | | | | | 0.061663514 | 0.161717817 | 232.8736564 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | | | | 0.999999016 | | | | | 0.061663514 | 0.161395854 | 232.4100295 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-13 | ARS1-11-00897 | 023 | | | | | 1 | | | | | 0.061663514 | 0.161719452 | 232.8760102 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | | | | 0.963857103 | | | | | 0.061663514 | 0.168910634 | 243.2313125 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | | | | 0.999990409 | | | | | 0.061663514 | 0.1763006 | 253.8728636 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | | | | 0.999999066 | | | | | 0.061663514 | 0.175949522 | 253.3673113 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-14 | ARS1-11-00897 | 024 | | | | | 1 | | | | | 0.061663514 | 0.176302291 | 253.8752984 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | | | | 0.96290091 | | | | | 0.061663514 | 0.164125406 | 236.3405852 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | | | | 0.999990151 | | | | | 0.061663514 | 0.171476083 | 246.9255602 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | | | | 0.999999041 | | | | | 0.061663514 | 0.171134653 | 246.4338999 | ASP-A-008 | VMULLIGAN | 6/2/2011 |
| ARS1-B11-01985-15 | ARS1-11-00897 | 025 | | | | | 1 | | | | | 0.061663514 | 0.171477772 | 246.9279922 | ASP-A-008 | VMULLIGAN | 6/2/2011 |

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Detector |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ApexAlpha | ARS1-B11-01985-01 | TH-228 | 6 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:08 | A_1_1A |
| 2 | ApexAlpha | ARS1-B11-01985-01 | TH-229 | 2864 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_1A |
| 3 | ApexAlpha | ARS1-B11-01985-01 | TH-230 | 3721 | 1440 | 14 | 1440 | 0.21 | 05/28/11 14:08 | A_1_1A |
| 4 | ApexAlpha | ARS1-B11-01985-01 | TH-232 | 30 | 1440 | 5 | 1440 | 0.21 | 05/28/11 14:08 | A_1_1A |
| 5 | ApexAlpha | ARS1-B11-01985-02 | TH-228 | 4 | 1440 | 3 | 1440 | 0.19 | 05/28/11 14:08 | A_1_1B |
| 6 | ApexAlpha | ARS1-B11-01985-02 | TH-229 | 2469 | 1440 | 17 | 1440 | 0.19 | 05/28/11 14:08 | A_1_1B |
| 7 | ApexAlpha | ARS1-B11-01985-02 | TH-230 | 3028 | 1440 | 5 | 1440 | 0.19 | 05/28/11 14:08 | A_1_1B |
| 8 | ApexAlpha | ARS1-B11-01985-02 | TH-232 | 13 | 1440 | 3 | 1440 | 0.19 | 05/28/11 14:08 | A_1_1B |
| 9 | ApexAlpha | ARS1-B11-01985-03 | TH-228 | 8 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2A |
| 10 | ApexAlpha | ARS1-B11-01985-03 | TH-229 | 2751 | 1440 | 11 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2A |
| 11 | ApexAlpha | ARS1-B11-01985-03 | TH-230 | 80 | 1440 | 6 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2A |
| 12 | ApexAlpha | ARS1-B11-01985-03 | TH-232 | 11 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2A |
| 13 | ApexAlpha | ARS1-B11-01985-04 | TH-228 | 3 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2B |
| 14 | ApexAlpha | ARS1-B11-01985-04 | TH-229 | 666 | 1440 | 15 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2B |
| 15 | ApexAlpha | ARS1-B11-01985-04 | TH-230 | 15 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2B |
| 16 | ApexAlpha | ARS1-B11-01985-04 | TH-232 | 2 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:08 | A_1_2B |
| 17 | ApexAlpha | ARS1-B11-01985-05 | TH-228 | 7 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3A |
| 18 | ApexAlpha | ARS1-B11-01985-05 | TH-229 | 862 | 1440 | 5 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3A |
| 19 | ApexAlpha | ARS1-B11-01985-05 | TH-230 | 49 | 1440 | 5 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3A |
| 20 | ApexAlpha | ARS1-B11-01985-05 | TH-232 | 9 | 1440 | 21 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3A |
| 21 | ApexAlpha | ARS1-B11-01985-06 | TH-228 | 10 | 1440 | 0 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3B |
| 22 | ApexAlpha | ARS1-B11-01985-06 | TH-229 | 4220 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3B |
| 23 | ApexAlpha | ARS1-B11-01985-06 | TH-230 | 150 | 1440 | 5 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3B |
| 24 | ApexAlpha | ARS1-B11-01985-06 | TH-232 | 11 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_3B |
| 25 | ApexAlpha | ARS1-B11-01985-07 | TH-228 | 8 | 1440 | 2 | 1440 | 0.23 | 05/28/11 14:08 | A_1_4A |
| 26 | ApexAlpha | ARS1-B11-01985-07 | TH-229 | 2756 | 1440 | 4 | 1440 | 0.23 | 05/28/11 14:08 | A_1_4A |
| 27 | ApexAlpha | ARS1-B11-01985-07 | TH-230 | 71 | 1440 | 3 | 1440 | 0.23 | 05/28/11 14:08 | A_1_4A |
| 28 | ApexAlpha | ARS1-B11-01985-07 | TH-232 | 7 | 1440 | 1 | 1440 | 0.23 | 05/28/11 14:08 | A_1_4A |
| 29 | ApexAlpha | ARS1-B11-01985-08 | TH-228 | 5 | 1440 | 0 | 1440 | 0.23 | 05/28/11 14:08 | A_1_4B |
| 30 | ApexAlpha | ARS1-B11-01985-08 | TH-229 | 2609 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:08 | A_1_4B |
| 31 | ApexAlpha | ARS1-B11-01985-08 | TH-230 | 56 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:08 | A_1_4B |
| 32 | ApexAlpha | ARS1-B11-01985-08 | TH-232 | 11 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_1_4B |
| 33 | ApexAlpha | ARS1-B11-01985-09 | TH-228 | 9 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_5A |
| 34 | ApexAlpha | ARS1-B11-01985-09 | TH-229 | 2727 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_5A |
| 35 | ApexAlpha | ARS1-B11-01985-09 | TH-230 | 58 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_1_5A |
| 36 | ApexAlpha | ARS1-B11-01985-09 | TH-232 | 9 | 1440 | 2 | 1440 | 0.21 | 05/28/11 14:08 | A_1_5A |
| 37 | ApexAlpha | ARS1-B11-01985-10 | TH-228 | 6 | 1440 | 2 | 1440 | 0.20 | 05/28/11 14:08 | A_1_5B |
| 38 | ApexAlpha | ARS1-B11-01985-10 | TH-229 | 2652 | 1440 | 5 | 1440 | 0.20 | 05/28/11 14:08 | A_1_5B |
| 39 | ApexAlpha | ARS1-B11-01985-10 | TH-230 | 73 | 1440 | 6 | 1440 | 0.20 | 05/28/11 14:08 | A_1_5B |
| 40 | ApexAlpha | ARS1-B11-01985-10 | TH-232 | 9 | 1440 | 1 | 1440 | 0.20 | 05/28/11 14:08 | A_1_5B |
| 41 | ApexAlpha | ARS1-B11-01985-11 | TH-228 | 5 | 1440 | 4 | 1440 | 0.20 | 05/28/11 14:08 | A_1_6A |
| 42 | ApexAlpha | ARS1-B11-01985-11 | TH-229 | 2616 | 1440 | 4 | 1440 | 0.23 | 05/28/11 14:08 | A_1_6A |
| 43 | ApexAlpha | ARS1-B11-01985-11 | TH-230 | 62 | 1440 | 4 | 1440 | 0.23 | 05/28/11 14:08 | A_1_6A |
| 44 | ApexAlpha | ARS1-B11-01985-11 | TH-232 | 15 | 1440 | 3 | 1440 | 0.23 | 05/28/11 14:08 | A_1_6A |
| 45 | ApexAlpha | ARS1-B11-01985-12 | TH-228 | 7 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:08 | A_1_6B |
| 46 | ApexAlpha | ARS1-B11-01985-12 | TH-229 | 2583 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_1_6B |
| 47 | ApexAlpha | ARS1-B11-01985-12 | TH-230 | 128 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_1_6B |
| 48 | ApexAlpha | ARS1-B11-01985-12 | TH-232 | 17 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:08 | A_1_6B |
| 49 | ApexAlpha | ARS1-B11-01985-13 | TH-228 | 6 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_2_1A |
| 50 | ApexAlpha | ARS1-B11-01985-13 | TH-229 | 2383 | 1440 | 1 | 1440 | 0.22 | 05/28/11 14:08 | A_2_1A |
| 51 | ApexAlpha | ARS1-B11-01985-13 | TH-230 | 60 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:08 | A_2_1A |
| 52 | ApexAlpha | ARS1-B11-01985-13 | TH-232 | 5 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_2_1A |

# Apex Alpha Instrument Data Transfer Report

| # | Report ID | Batch Sample ID | Isotope | Gross Area | Count Mins | BKG Counts | BKG Count Mins | EFF | Analysis Date | Detector |
|---|---|---|---|---|---|---|---|---|---|---|
| 53 | ApexAlpha | ARS1-B11-01985-14 | TH-228 | 36 | 1440 | 3 | 1440 | 0.21 | 05/28/11 14:08 | A_2_1B |
| 54 | ApexAlpha | ARS1-B11-01985-14 | TH-229 | 2596 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:08 | A_2_1B |
| 55 | ApexAlpha | ARS1-B11-01985-14 | TH-230 | 142 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:08 | A_2_1B |
| 56 | ApexAlpha | ARS1-B11-01985-14 | TH-232 | 13 | 1440 | 1 | 1440 | 0.21 | 05/28/11 14:08 | A_2_1B |
| 57 | ApexAlpha | ARS1-B11-01985-15 | TH-228 | 9 | 1440 | 2 | 1440 | 0.22 | 05/28/11 14:08 | A_2_2A |
| 58 | ApexAlpha | ARS1-B11-01985-15 | TH-229 | 2523 | 1440 | 3 | 1440 | 0.22 | 05/28/11 14:08 | A_2_2A |
| 59 | ApexAlpha | ARS1-B11-01985-15 | TH-230 | 120 | 1440 | 4 | 1440 | 0.22 | 05/28/11 14:08 | A_2_2A |
| 60 | ApexAlpha | ARS1-B11-01985-15 | TH-232 | 11 | 1440 | 0 | 1440 | 0.22 | 05/28/11 14:08 | A_2_2A |

5/28/2011 14:07:41

Apex-Alpha™

# ASSIGNED SAMPLES REPORT

Date : 5/28/2011
Time : 14:07:41
User : countroom

| SAMPLE | CHAMBER | GEOMETRY | DEVICE | CERTIFICATE |
|---|---|---|---|---|
| 11-01985-01 | A_1_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-02 | A_1_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-03 | A_1_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-04 | A_1_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-05 | A_1_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-06 | A_1_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-07 | A_1_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-08 | A_1_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-09 | A_1_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-10 | A_1_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-11 | A_1_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-12 | A_1_6B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-13 | A_2_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-14 | A_2_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01985-15 | A_2_2A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-01 | A_2_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-02 | A_2_4A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-03 | A_2_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-04 | A_2_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-05 | A_2_5B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-06 | A_3_1A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-07 | A_3_1B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-08 | A_3_2B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-09 | A_3_3A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-10 | A_3_3B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-11 | A_3_4B | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-12 | A_3_5A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-13 | A_3_6A | Shelf 2 | Alpha Analyst10139 | |
| 11-01984-14 | A_3_6B | Shelf 2 | Alpha Analyst10139 | |

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCS
Batch Identification: B11-01985
Sample Identification: 11-01985-01
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:00
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2125 +/- 0.0044 on 4/9/10 20:56:03
Effective Efficiency: 0.2125 +/- 0.0044

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

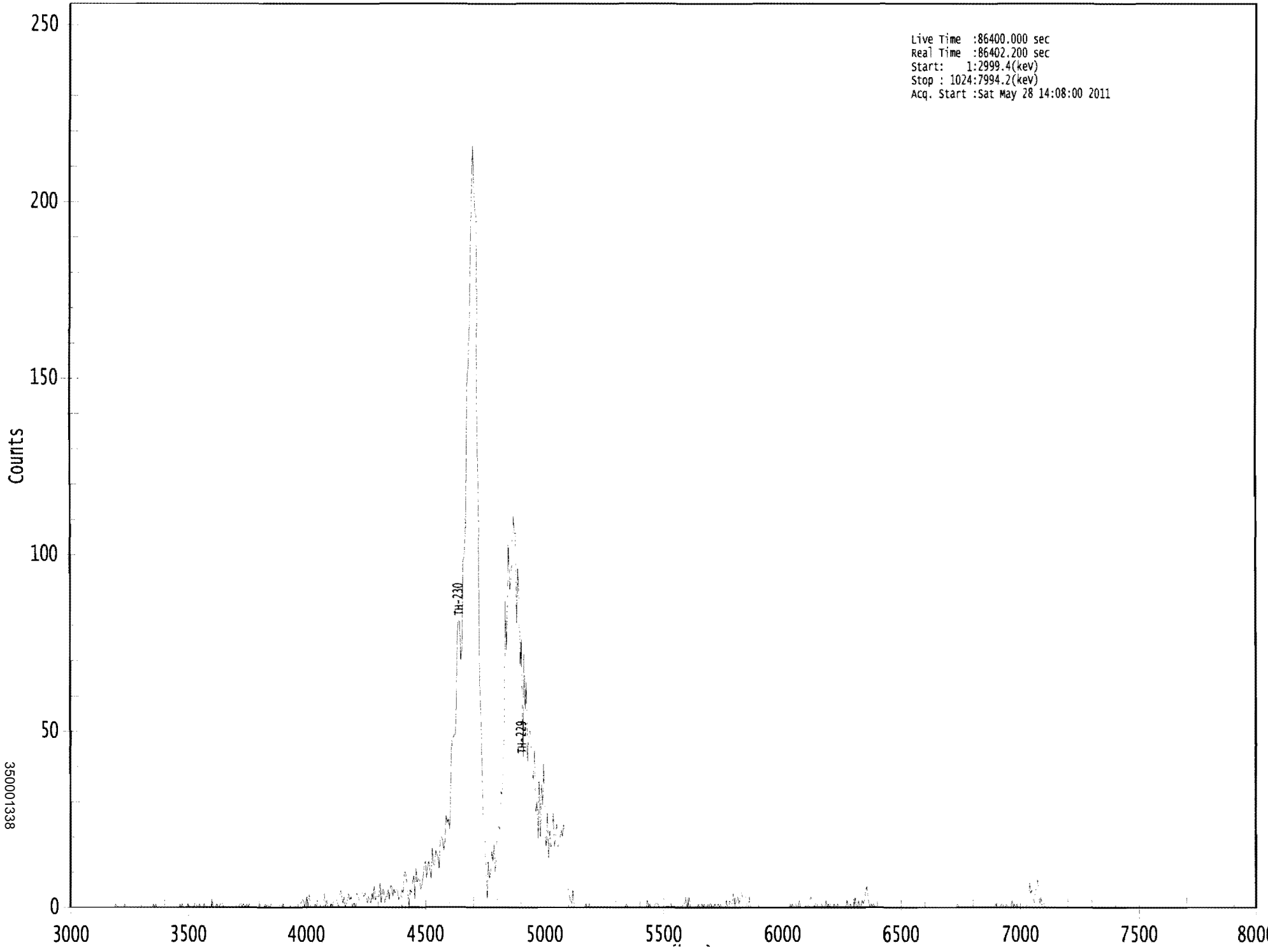
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5.452 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4.907 | 2864.00 | 53.52 | 0.00 | 0.00E+000 | 75 |
| TH-230 | 4.645 | 3721.00 | 61.00 | 0.00 | 0.00E+000 | 53 |
| TH-232 | 3.958 | 30.00 | 5.48 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 8.8396E-003 | 40.88 | 3.9867E-003 | 2.06 |
| TH-229 | 4.2373E+000 | 2.78 | 4.0035E-003 | 2.06 |
| TH-230 | 5.4886E+000 | 2.63 | 3.9915E-003 | 2.06 |
| TH-232 | 4.4172E-002 | 18.37 | 3.9843E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012900.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: LCSD
Batch Identification: B11-01985
Sample Identification: 11-01985-02
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:01
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.1922 +/- 0.0040 on 4/9/10 20:56:53
Effective Efficiency: 0.1922 +/- 0.0040

Peak Match Tolerance: 0.100 MeV

## PEAK AREA REPORT

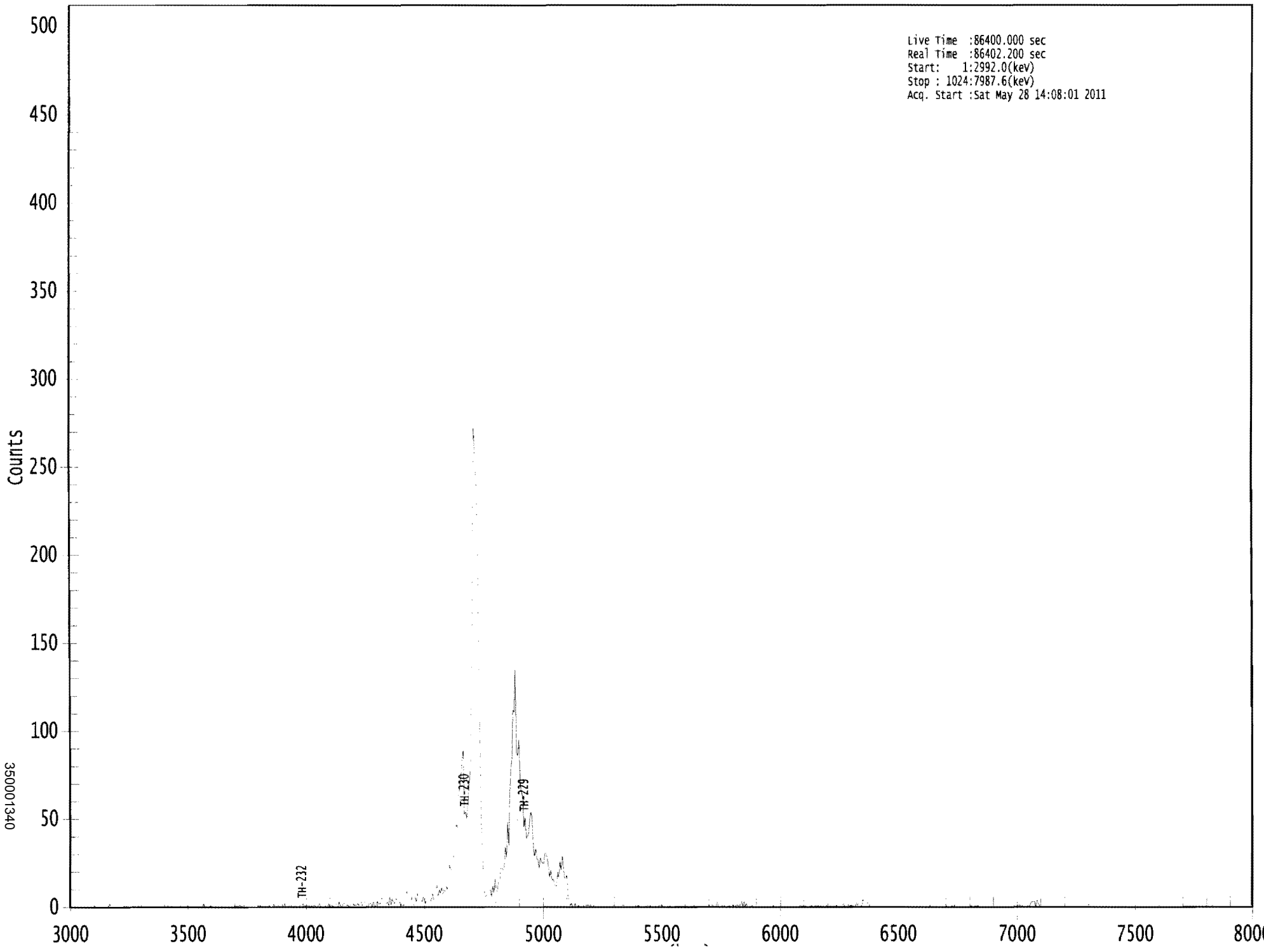
| Nuclide | Energy (MeV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5.358 | 4.00 | 2.00 | 0.00 | 0.00E+000 | 9 |
| TH-229 | 4.915 | 2469.00 | 49.69 | 0.00 | 0.00E+000 | 45 |
| TH-230 | 4.667 | 3028.00 | 55.03 | 0.00 | 0.00E+000 | 30 |
| TH-232 | 3.980 | 13.00 | 3.61 | 0.00 | 0.00E+000 | 7 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 6.5140E-003 | 50.04 | 4.4068E-003 | 2.06 |
| TH-229 | 4.0378E+000 | 2.88 | 4.4254E-003 | 2.06 |
| TH-230 | 4.9371E+000 | 2.75 | 4.4121E-003 | 2.06 |
| TH-232 | 2.1158E-002 | 27.81 | 4.4041E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012901.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: MBL
Batch Identification: B11-01985
Sample Identification: 11-01985-03
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:03
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/9/10 20:57:28
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

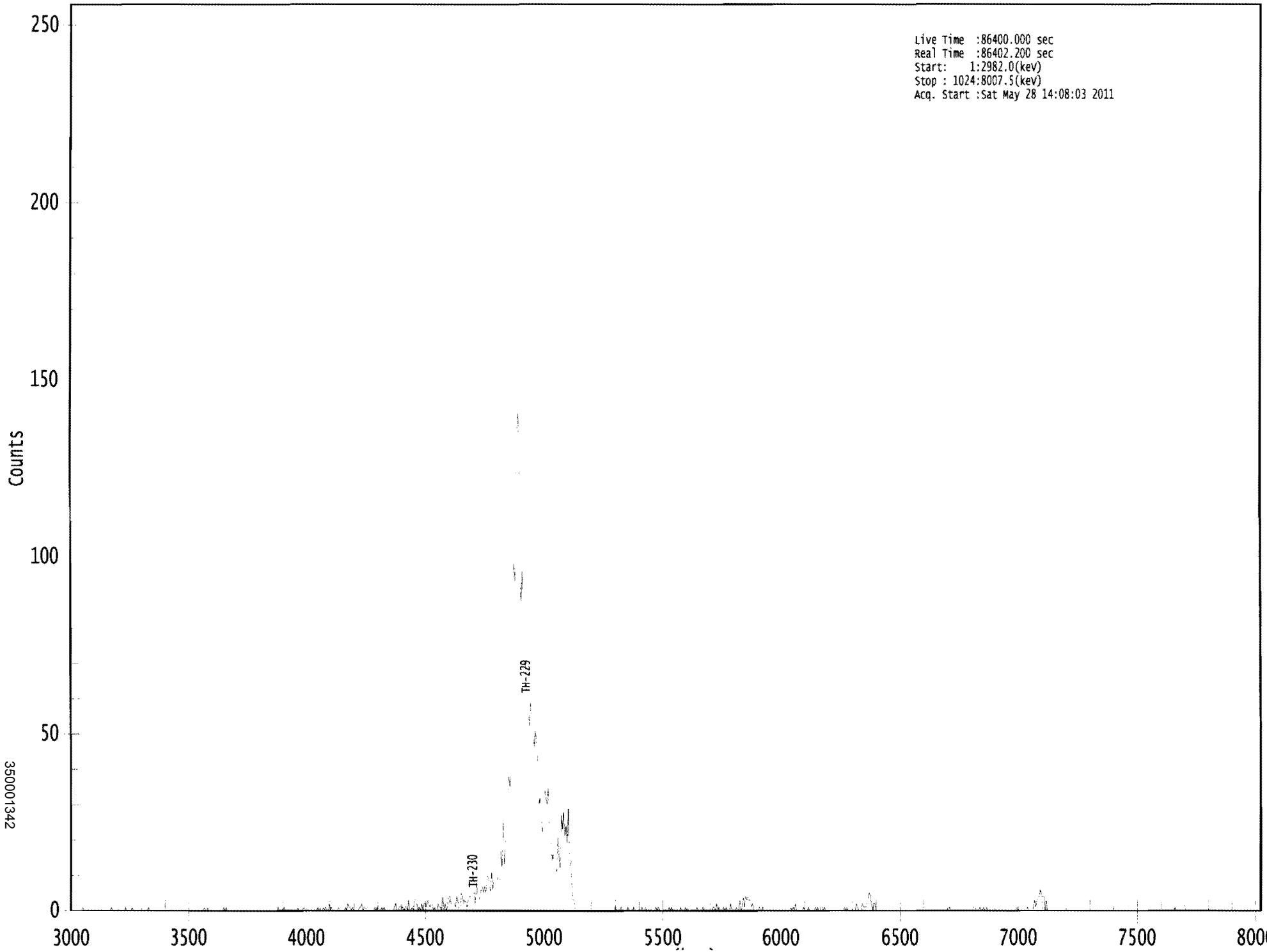
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5375.030 | 8.00 | 2.83 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4913.485 | 2751.00 | 52.45 | 0.00 | 0.00E+000 | 49 |
| TH-230 | 4684.890 | 80.00 | 8.94 | 0.00 | 0.00E+000 | 7 |
| TH-232 | 4007.858 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.1572E-002 | 35.41 | 3.9142E-003 | 2.05 |
| TH-229 | 3.9960E+000 | 2.80 | 3.9307E-003 | 2.05 |
| TH-230 | 1.1586E-001 | 11.37 | 3.9189E-003 | 2.05 |
| TH-232 | 1.5901E-002 | 30.22 | 3.9118E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012902.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S
**********

Sample Description: ARS1-11-00897-014
Batch Identification: B11-01985
Sample Identification: 11-01985-04
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:05
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2196 +/- 0.0045 on 4/9/10 20:58:18
Effective Efficiency: 0.2196 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

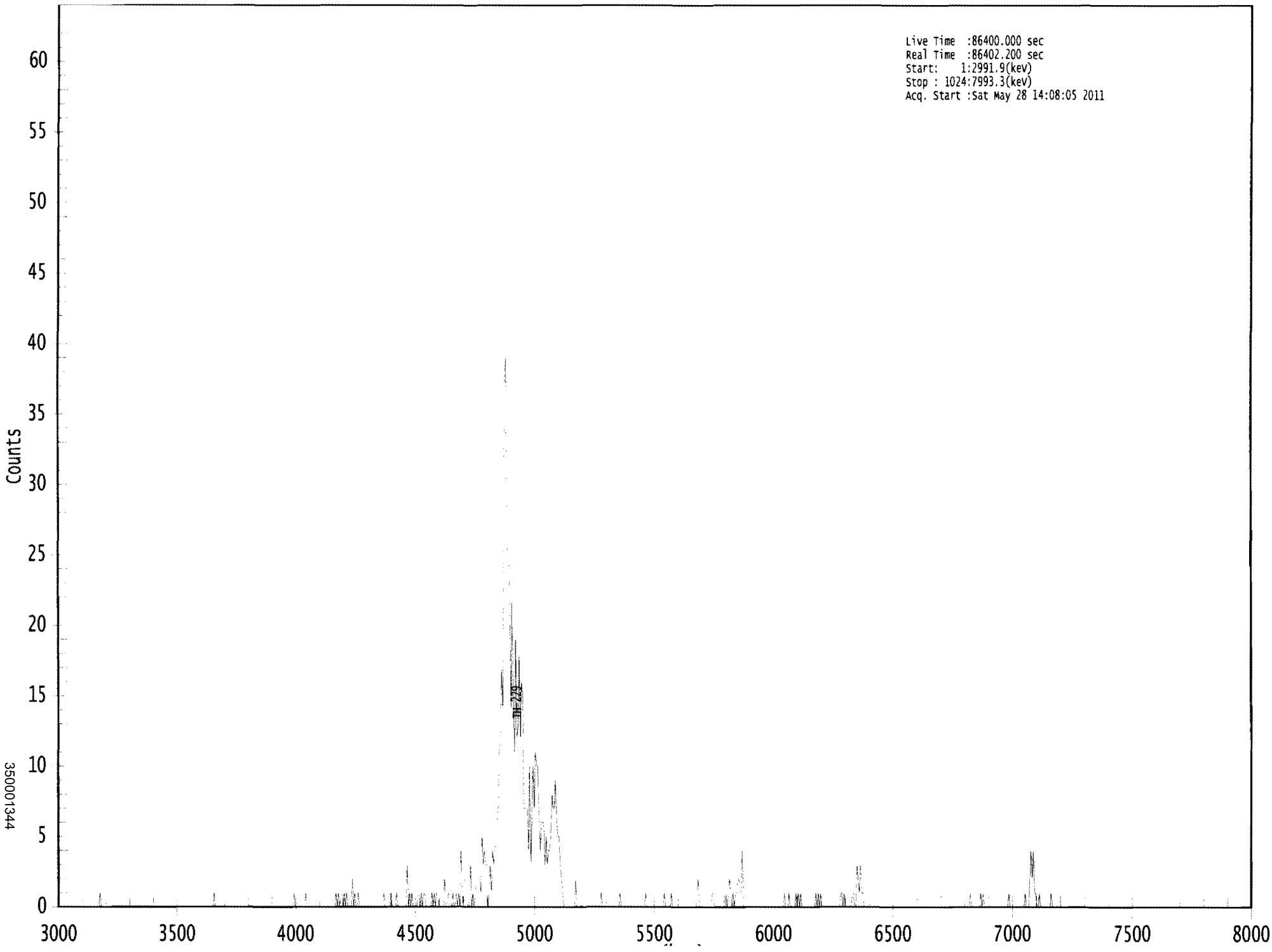
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5358.171 | 3.00 | 1.73 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4920.774 | 666.00 | 25.81 | 0.00 | 0.00E+000 | 28 |
| TH-230 | 4678.938 | 15.00 | 3.87 | 0.00 | 0.00E+000 | 5 |
| TH-232 | 4008.831 | 2.00 | 1.41 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 4.2767E-003 | 57.77 | 3.8576E-003 | 2.05 |
| TH-229 | 9.5343E-001 | 4.39 | 3.8739E-003 | 2.05 |
| TH-230 | 2.1409E-002 | 25.90 | 3.8622E-003 | 2.05 |
| TH-232 | 2.8494E-003 | 70.74 | 3.8553E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012928.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-015
Batch Identification: B11-01985
Sample Identification: 11-01985-05
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:06
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2122 +/- 0.0044 on 4/11/10 09:13:21
Effective Efficiency: 0.2122 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

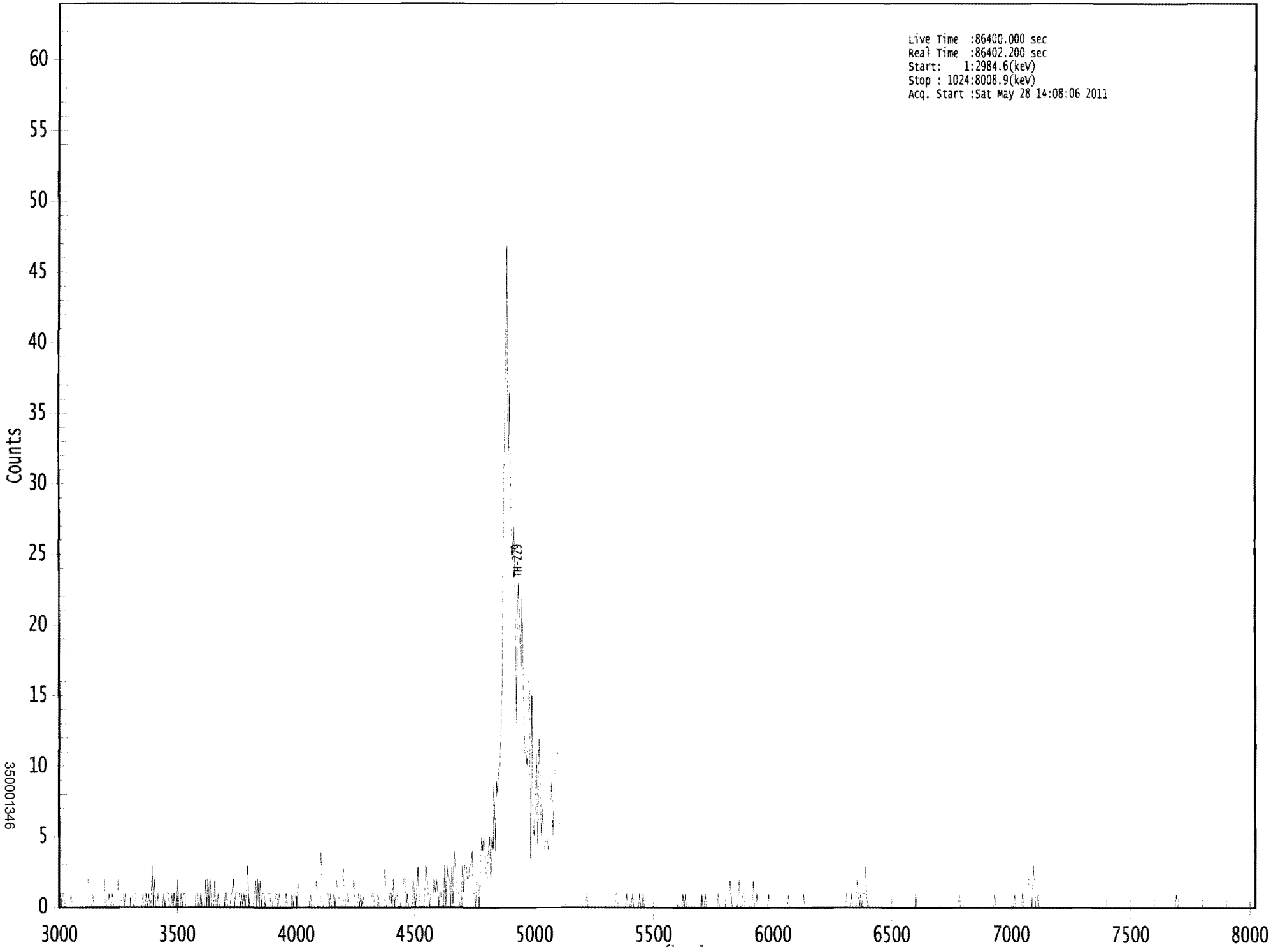
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5356.753 | 7.00 | 2.65 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4918.377 | 862.00 | 29.36 | 0.00 | 0.00E+000 | 49 |
| TH-230 | 4674.785 | 49.00 | 7.00 | 0.00 | 0.00E+000 | 9 |
| TH-232 | 3951.578 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.0327E-002 | 37.85 | 3.9920E-003 | 2.06 |
| TH-229 | 1.2770E+000 | 3.98 | 4.0089E-003 | 2.06 |
| TH-230 | 7.2373E-002 | 14.43 | 3.9968E-003 | 2.06 |
| TH-232 | 1.3269E-002 | 33.40 | 3.9896E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012929.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-016
Batch Identification: B11-01985
Sample Identification: 11-01985-06
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:08
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2061 +/- 0.0042 on 4/11/10 09:13:55
Effective Efficiency: 0.2061 +/- 0.0042

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

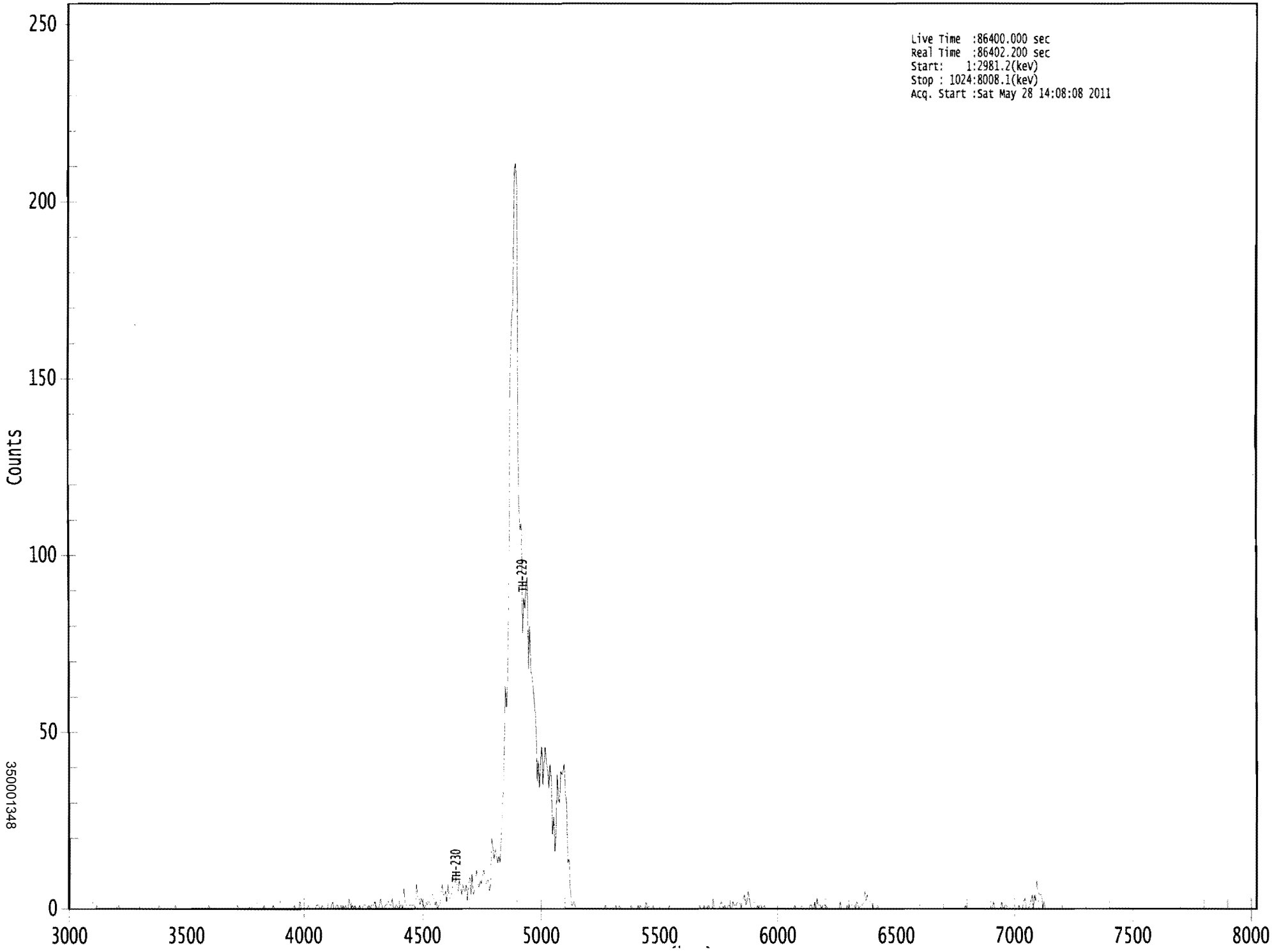
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5373.784 | 10.00 | 3.16 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4912.381 | 4220.00 | 64.96 | 0.00 | 0.00E+000 | 50 |
| TH-230 | 4625.241 | 150.00 | 12.25 | 0.00 | 0.00E+000 | 41 |
| TH-232 | 3981.422 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.5186E-002 | 31.69 | 4.1093E-003 | 2.06 |
| TH-229 | 6.4355E+000 | 2.57 | 4.1267E-003 | 2.06 |
| TH-230 | 2.2806E-001 | 8.42 | 4.1143E-003 | 2.06 |
| TH-232 | 1.6694E-002 | 30.22 | 4.1069E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012930.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-017
Batch Identification: B11-01985
Sample Identification: 11-01985-07
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:09
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2259 +/- 0.0046 on 4/11/10 09:14:49
Effective Efficiency: 0.2259 +/- 0.0046

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

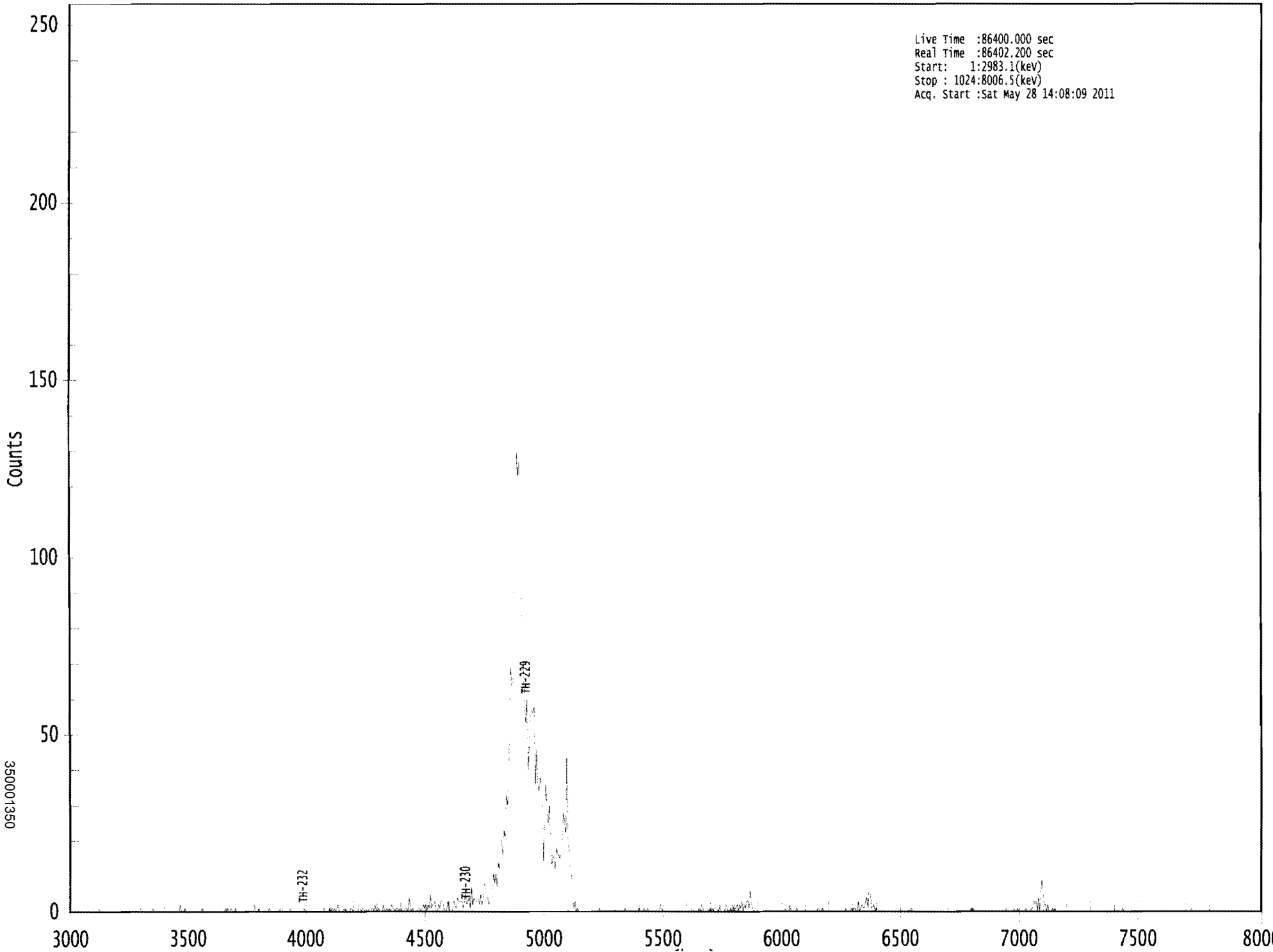
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5396.564 | 8.00 | 2.83 | 0.00 | 0.00E+000 | 7 |
| TH-229 | 4912.485 | 2756.00 | 52.50 | 0.00 | 0.00E+000 | 45 |
| TH-230 | 4659.820 | 71.00 | 8.43 | 0.00 | 0.00E+000 | 6 |
| TH-232 | 3974.983 | 7.00 | 2.65 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.1083E-002 | 35.41 | 3.7489E-003 | 2.05 |
| TH-229 | 3.8342E+000 | 2.80 | 3.7647E-003 | 2.05 |
| TH-230 | 9.8481E-002 | 12.04 | 3.7534E-003 | 2.05 |
| TH-232 | 9.6919E-003 | 37.85 | 3.7466E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012931.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-018
Batch Identification: B11-01985
Sample Identification: 11-01985-08
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:12
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2164 +/- 0.0044 on 4/11/10 09:15:19
Effective Efficiency: 0.2164 +/- 0.0044

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

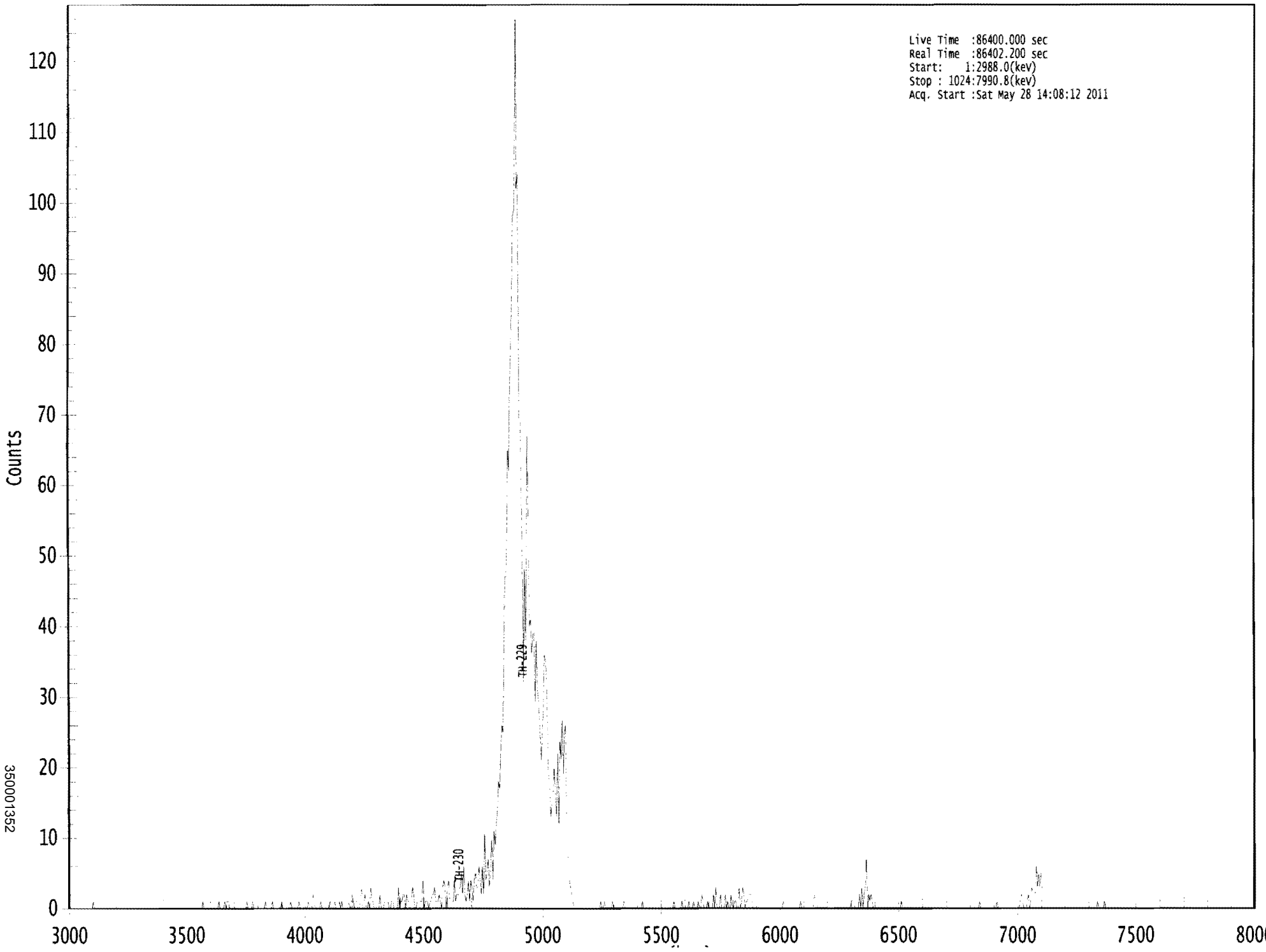
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-229 | 4910.063 | 2609.00 | 51.08 | 0.00 | 0.00E+000 | 50 |
| TH-230 | 4643.214 | 56.00 | 7.48 | 0.00 | 0.00E+000 | 7 |
| TH-232 | 3968.753 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 7 |
| <not ID'd> | 5300.153 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-229 | 3.7888E+000 | 2.84 | 3.9297E-003 | 2.05 |
| TH-230 | 8.1078E-002 | 13.52 | 3.9178E-003 | 2.05 |
| TH-232 | 1.5897E-002 | 30.22 | 3.9108E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012932.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-019
Batch Identification: B11-01985
Sample Identification: 11-01985-09
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:14
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2092 +/- 0.0043 on 4/11/10 18:32:55
Effective Efficiency: 0.2092 +/- 0.0043

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

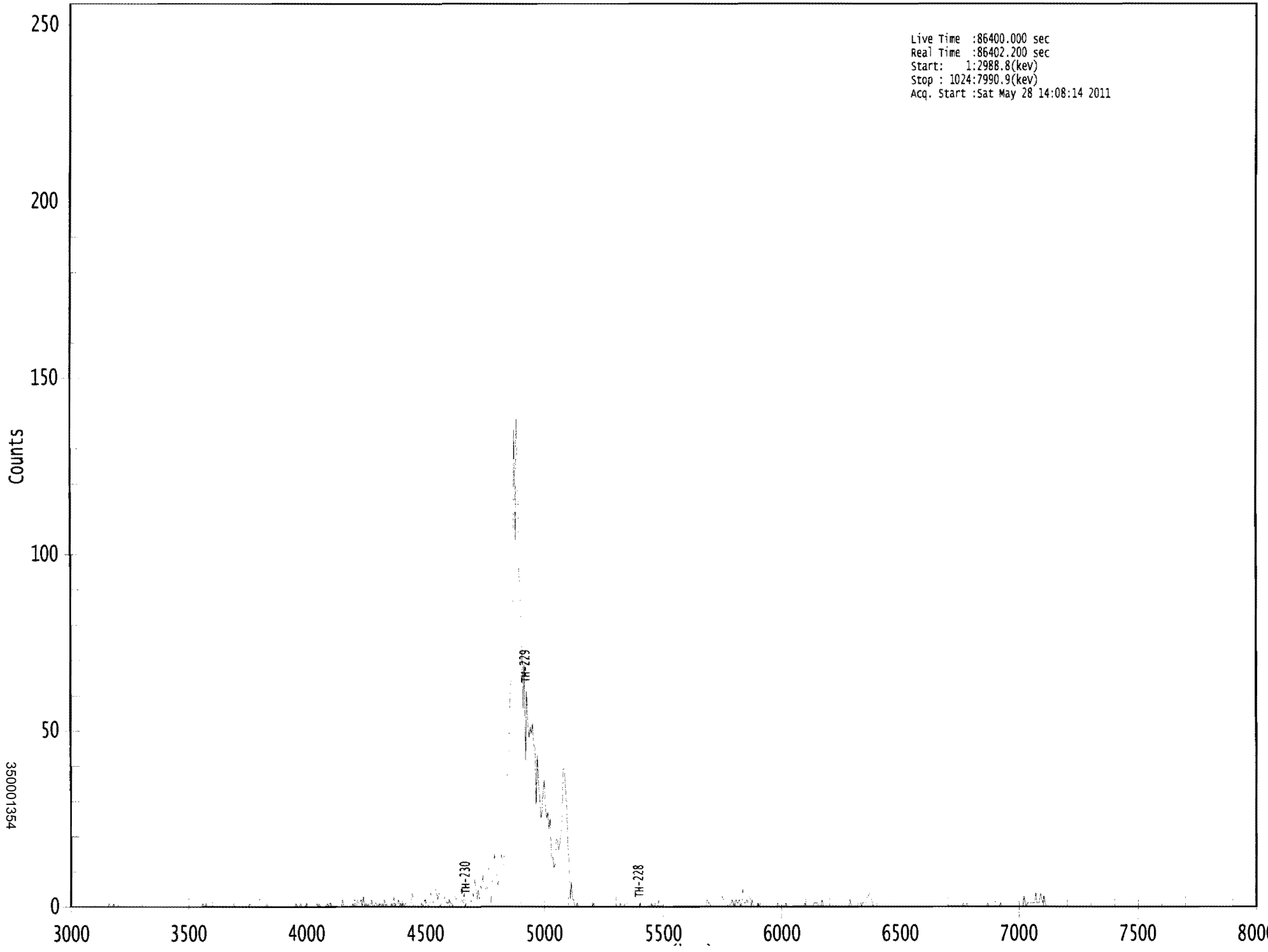
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5390.701 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4914.125 | 2727.00 | 52.22 | 0.00 | 0.00E+000 | 43 |
| TH-230 | 4659.949 | 58.00 | 7.62 | 0.00 | 0.00E+000 | 10 |
| TH-232 | 4003.105 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.3465E-002 | 33.40 | 4.0485E-003 | 2.06 |
| TH-229 | 4.0971E+000 | 2.81 | 4.0656E-003 | 2.06 |
| TH-230 | 8.6879E-002 | 13.29 | 4.0534E-003 | 2.06 |
| TH-232 | 1.3457E-002 | 33.40 | 4.0461E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012933.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-020
Batch Identification: B11-01985
Sample Identification: 11-01985-10
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:15
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2047 +/- 0.0042 on 4/11/10 18:33:27
Effective Efficiency: 0.2047 +/- 0.0042

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

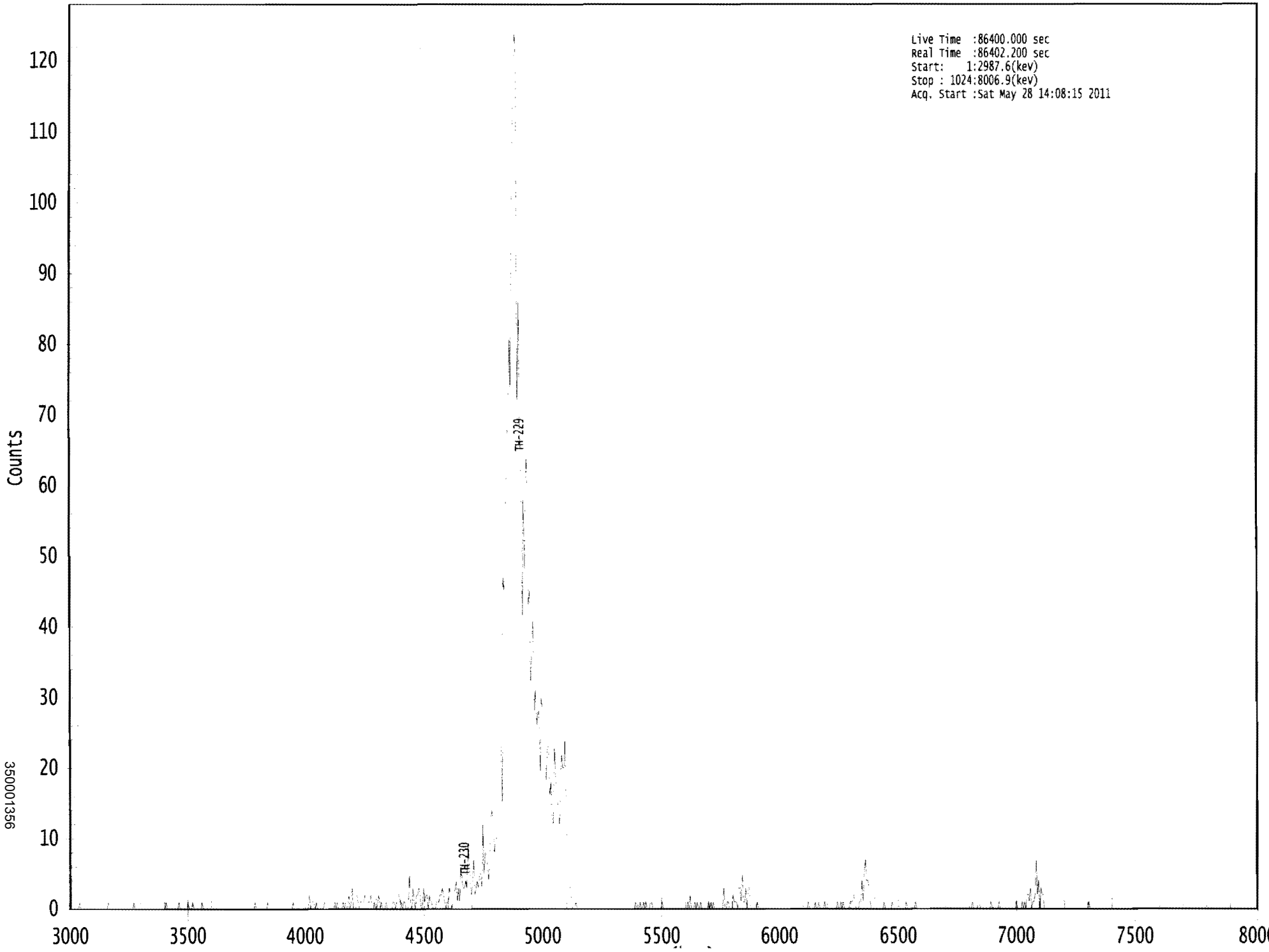
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5415.478 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4902.732 | 2652.00 | 51.50 | 0.00 | 0.00E+000 | 62 |
| TH-230 | 4660.155 | 73.00 | 8.54 | 0.00 | 0.00E+000 | 12 |
| TH-232 | 3991.226 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 9.1728E-003 | 40.88 | 4.1370E-003 | 2.06 |
| TH-229 | 4.0715E+000 | 2.83 | 4.1545E-003 | 2.06 |
| TH-230 | 1.1174E-001 | 11.88 | 4.1420E-003 | 2.06 |
| TH-232 | 1.3751E-002 | 33.40 | 4.1345E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012934.CNF




350001356

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-021
Batch Identification: B11-01985
Sample Identification: 11-01985-11
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:17
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2250 +/- 0.0046 on 4/11/10 18:33:56
Effective Efficiency: 0.2250 +/- 0.0046

Peak Match Tolerance: 100.000 keV

PEAK AREA REPORT

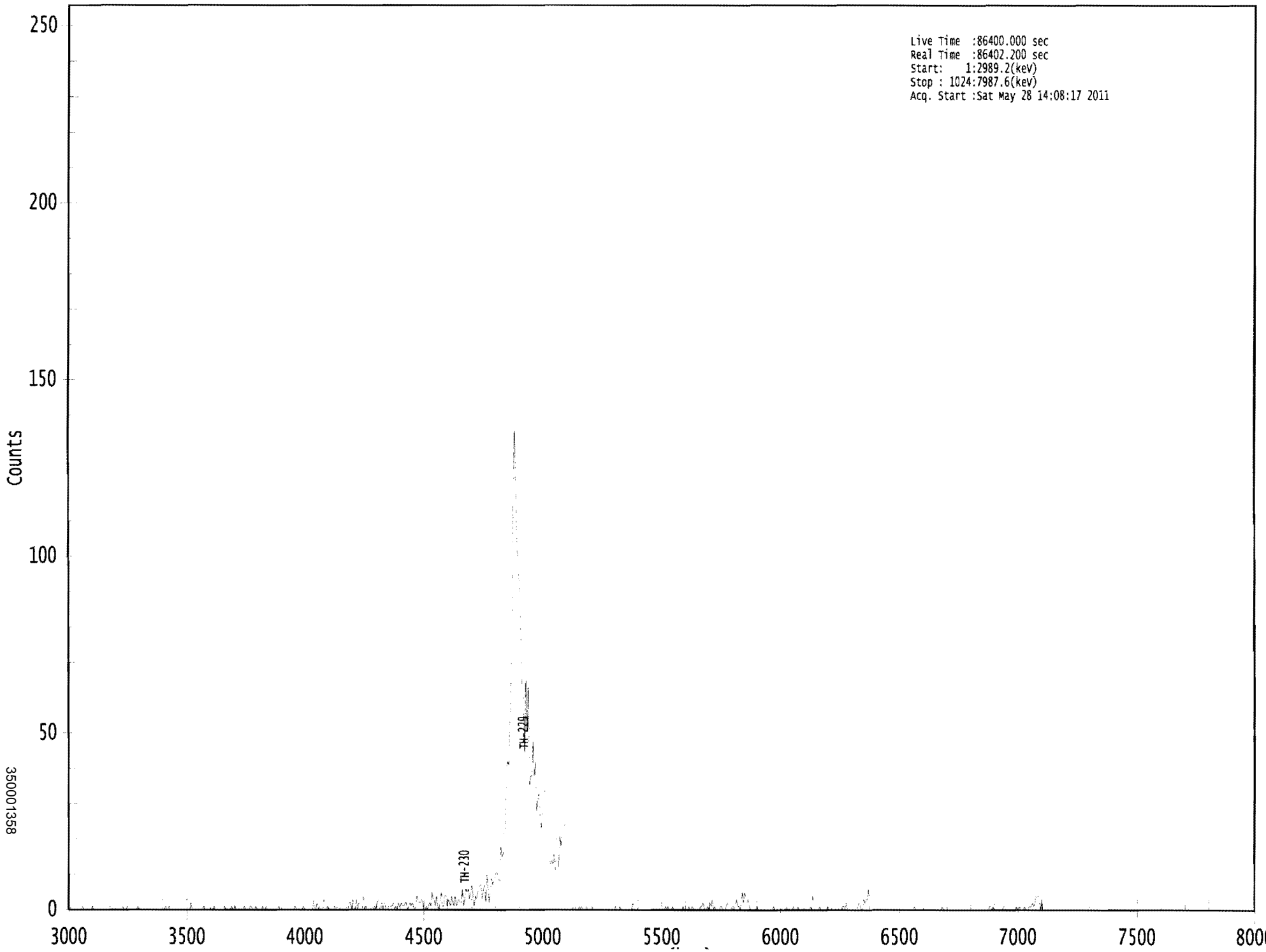
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-229 | 4914.471 | 2616.00 | 51.15 | 0.00 | 0.00E+000 | 43 |
| TH-230 | 4663.925 | 62.00 | 7.87 | 0.00 | 0.00E+000 | 14 |
| TH-232 | 3995.717 | 15.00 | 3.87 | 0.00 | 0.00E+000 | 4 |
| <not ID'd> | 5309.089 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4 |

NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-229 | 3.6545E+000 | 2.83 | 3.7802E-003 | 2.05 |
| TH-230 | 8.6351E-002 | 12.86 | 3.7689E-003 | 2.05 |
| TH-232 | 2.0854E-002 | 25.90 | 3.7621E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012935.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-022
Batch Identification: B11-01985
Sample Identification: 11-01985-12
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 1 6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:20
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86402.2 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2243 +/- 0.0046 on 4/11/10 18:34:27
Effective Efficiency: 0.2243 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

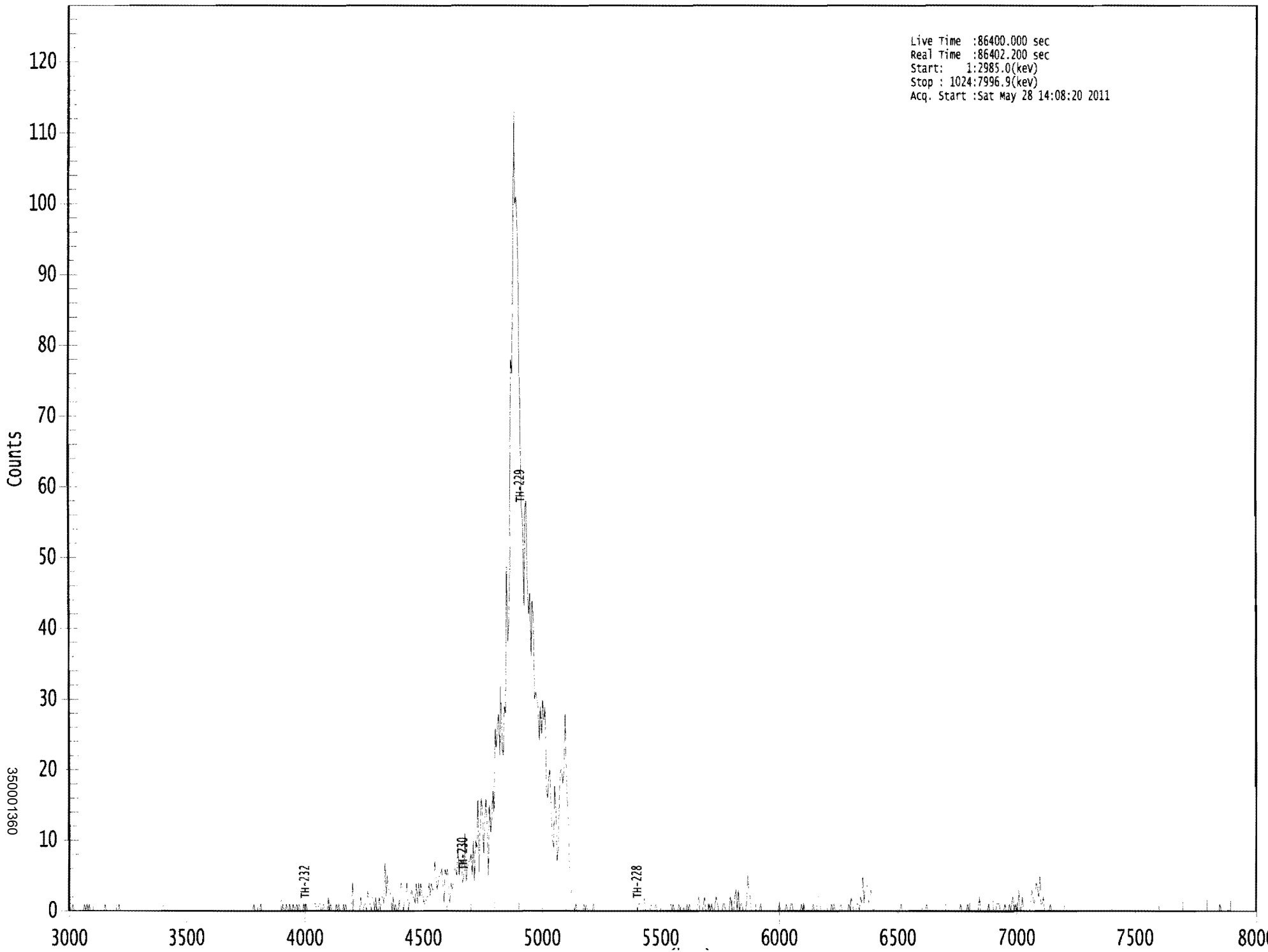
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5389.111 | 7.00 | 2.65 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4899.987 | 2583.00 | 50.82 | 0.00 | 0.00E+000 | 49 |
| TH-230 | 4653.819 | 128.00 | 11.31 | 0.00 | 0.00E+000 | 8 |
| TH-232 | 3987.875 | 17.00 | 4.12 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 9.7682E-003 | 37.85 | 3.7761E-003 | 2.05 |
| TH-229 | 3.6197E+000 | 2.84 | 3.7921E-003 | 2.05 |
| TH-230 | 1.7883E-001 | 9.07 | 3.7807E-003 | 2.05 |
| TH-232 | 2.3709E-002 | 24.34 | 3.7739E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012936.CNF




350001360

**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-023
Batch Identification: B11-01985
Sample Identification: 11-01985-13
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:22
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2205 +/- 0.0045 on 4/12/10 10:36:04
Effective Efficiency: 0.2205 +/- 0.0045

Peak Match Tolerance: 100.000 keV

----- PEAK AREA REPORT -----

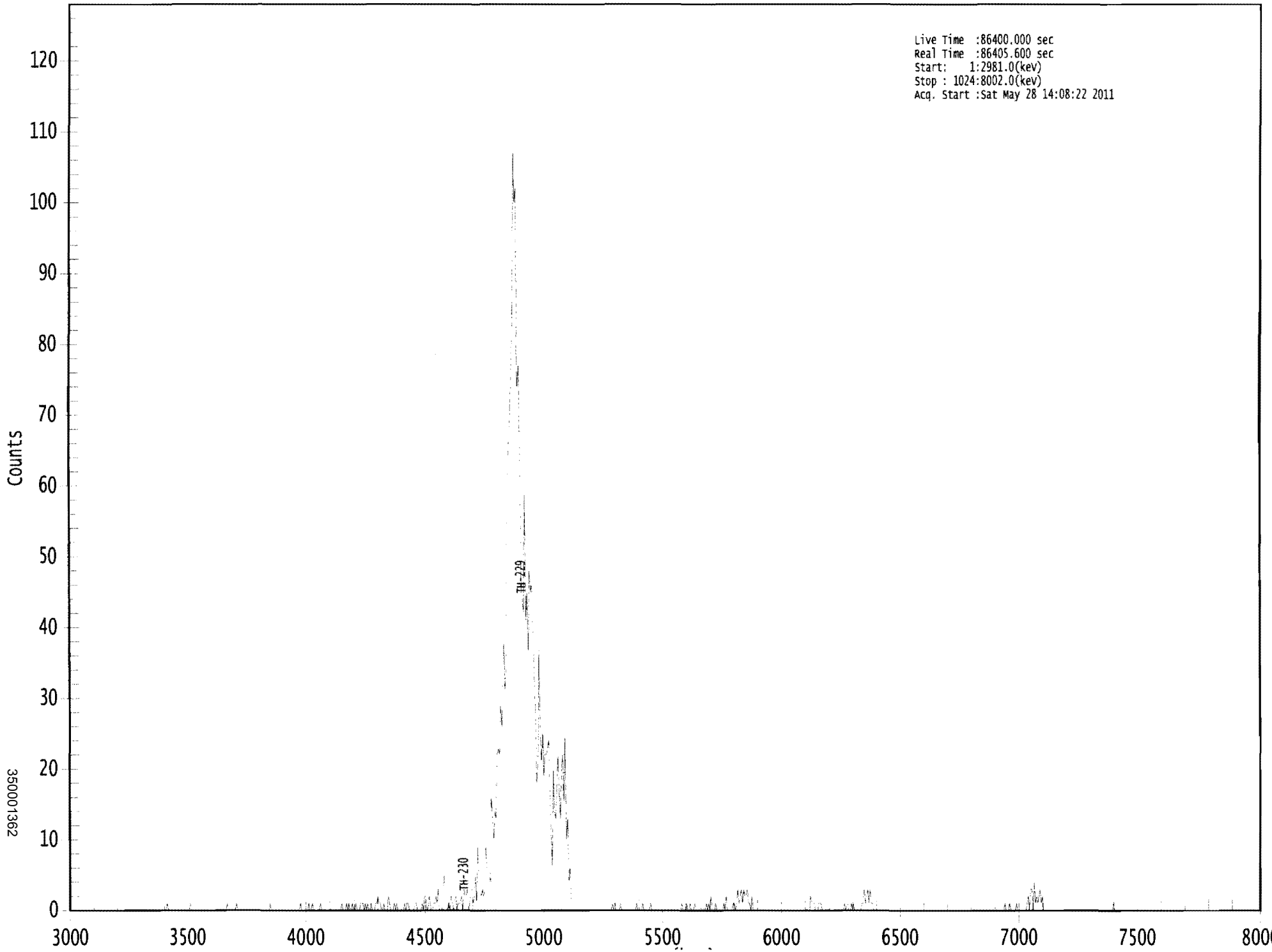
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5340.988 | 6.00 | 2.45 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4897.015 | 2383.00 | 48.82 | 0.00 | 0.00E+000 | 57 |
| TH-230 | 4648.289 | 60.00 | 7.75 | 0.00 | 0.00E+000 | 6 |
| TH-232 | 3965.570 | 5.00 | 2.24 | 0.00 | 0.00E+000 | 4 |

----- NUCLIDE ACTIVITY REPORT -----

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 8.5162E-003 | 40.88 | 3.8409E-003 | 2.06 |
| TH-229 | 3.3966E+000 | 2.90 | 3.8571E-003 | 2.06 |
| TH-230 | 8.5265E-002 | 13.07 | 3.8455E-003 | 2.06 |
| TH-232 | 7.0926E-003 | 44.77 | 3.8386E-003 | 2.06 |

Errors quoted at 1.000 sigma

# 0000012937.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-024
Batch Identification: B11-01985
Sample Identification: 11-01985-14
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:24
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2148 +/- 0.0044 on 4/13/10 09:49:08
Effective Efficiency: 0.2148 +/- 0.0044

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

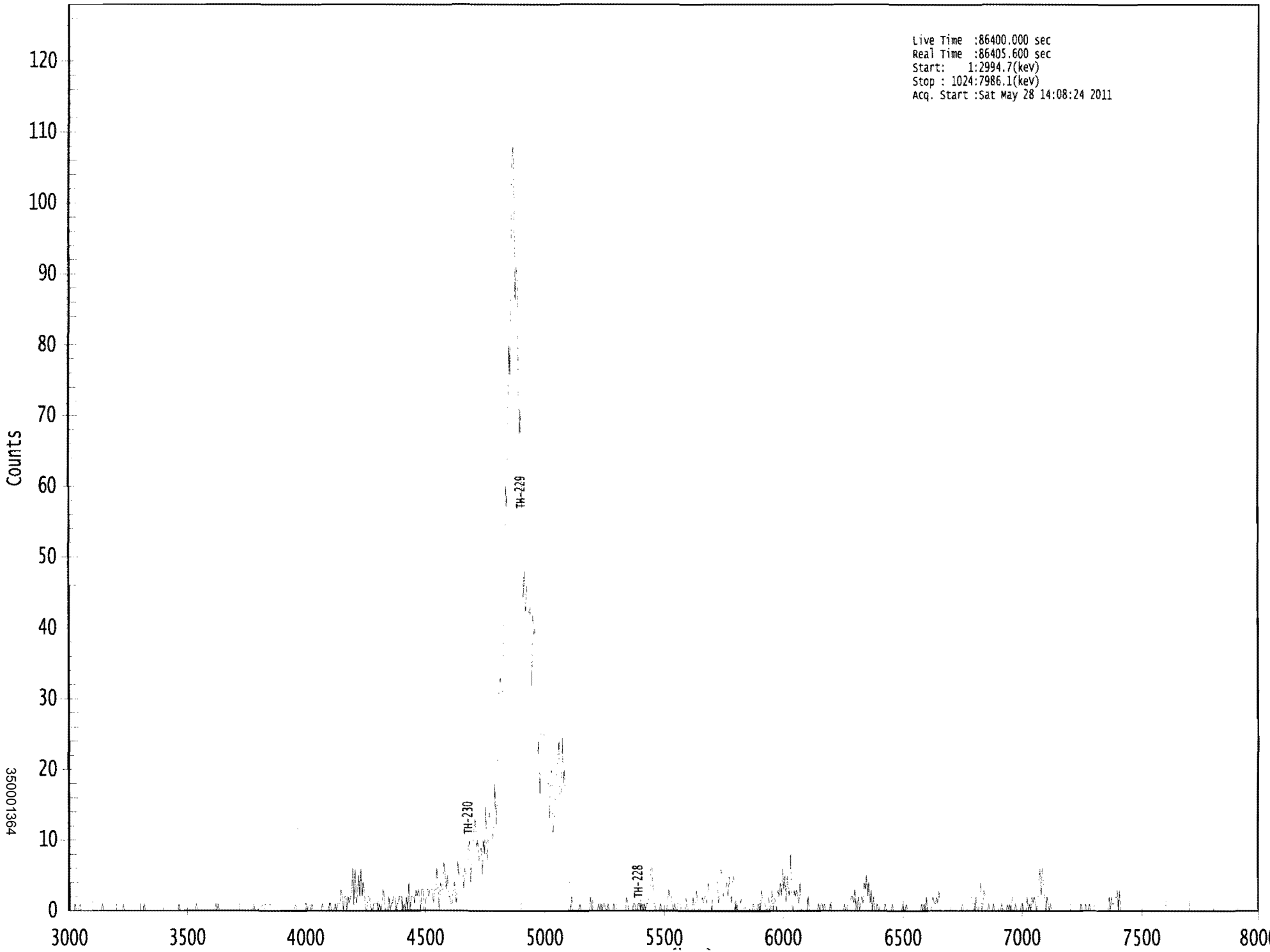
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5390.648 | 36.00 | 6.00 | 0.00 | 0.00E+000 | 11 |
| TH-229 | 4900.298 | 2596.00 | 50.95 | 0.00 | 0.00E+000 | 71 |
| TH-230 | 4678.649 | 142.00 | 11.92 | 0.00 | 0.00E+000 | 31 |
| TH-232 | 3975.817 | 13.00 | 3.61 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 5.2465E-002 | 16.79 | 3.9437E-003 | 2.05 |
| TH-229 | 3.7993E+000 | 2.84 | 3.9603E-003 | 2.05 |
| TH-230 | 2.0719E-001 | 8.64 | 3.9484E-003 | 2.05 |
| TH-232 | 1.8934E-002 | 27.81 | 3.9413E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012938.CNF



**********
***** A L P H A S P E C T R U M A N A L Y S I S *****
**********

Sample Description: ARS1-11-00897-025
Batch Identification: B11-01985
Sample Identification: 11-01985-15
Sample Geometry: Shelf 2
Protocol Description: Thorium - 24 Hrs

Detector Name: A 2 2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000012
Env. Background File: <not performed>
Reagent Blank File: <not performed>

Sample Size: 1.000 units
Sample Date/Time:
Acquisition Date/Time: 5/28/11 14:08:27
Acquisition Live Time: 86400.0 seconds
Acquisition Real Time: 86405.6 seconds

Chem. Recovery Factor: 1.0000 +/- 0.0000
Counting Efficiency: 0.2232 +/- 0.0046 on 4/12/10 10:37:23
Effective Efficiency: 0.2232 +/- 0.0046

Peak Match Tolerance: 100.000 keV

## PEAK AREA REPORT

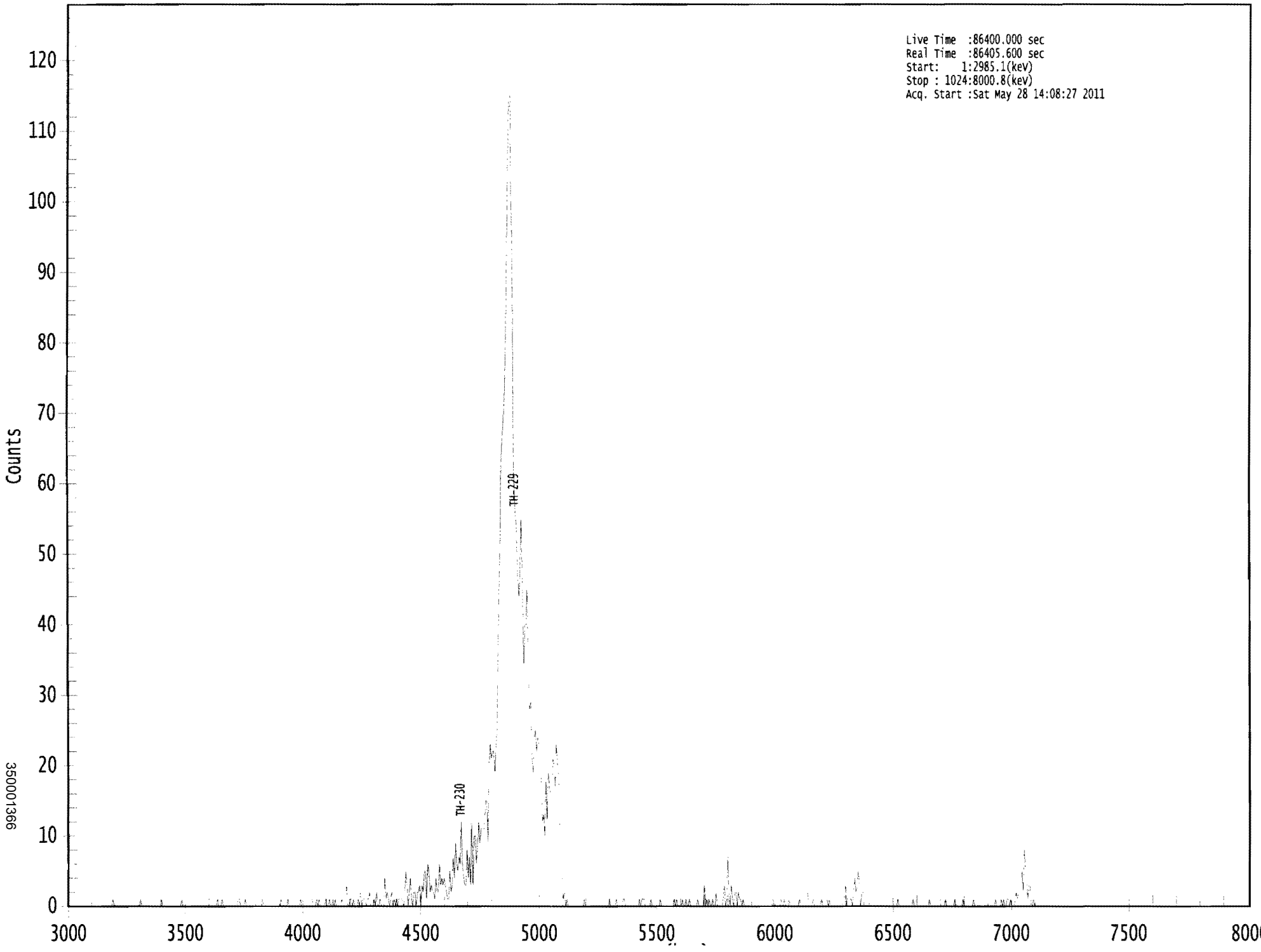
| Nuclide | Energy (keV) | Gross Pk Area | Pk Area Error % | Ambient Backgnd | Reagent Backgnd | FWH (ke |
|---|---|---|---|---|---|---|
| TH-228 | 5382.663 | 9.00 | 3.00 | 0.00 | 0.00E+000 | 4 |
| TH-229 | 4888.813 | 2523.00 | 50.23 | 0.00 | 0.00E+000 | 59 |
| TH-230 | 4658.251 | 120.00 | 10.95 | 0.00 | 0.00E+000 | 9 |
| TH-232 | 3994.680 | 11.00 | 3.32 | 0.00 | 0.00E+000 | 4 |

## NUCLIDE ACTIVITY REPORT

| Nuclide | Activity (pCi/units) | Activity Error % | MDA (pCi/units) | MDA Error % |
|---|---|---|---|---|
| TH-228 | 1.2622E-002 | 33.40 | 3.7949E-003 | 2.05 |
| TH-229 | 3.5532E+000 | 2.86 | 3.8110E-003 | 2.05 |
| TH-230 | 1.6849E-001 | 9.36 | 3.7995E-003 | 2.05 |
| TH-232 | 1.5417E-002 | 30.22 | 3.7927E-003 | 2.05 |

Errors quoted at 1.000 sigma

# 0000012939.CNF



# Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01914-12 | B11-0194 | A24B ~~A14B~~ 5-24-11 | 12773 | U | 5-24-11 1126 | [illegible] | 10800 |
| 11-01914-13 | ↓ | A25A ~~A15A~~ 5-24-11 | 12774 | ↓ | ↓ | [illegible] | ↓ |
| 11-01914-14 | ↓ | A25B | 12775 | ↓ | ↓ | [illegible] | ↓ |
| 11-01914-15 | ↓ | A31A | 12776 | ↓ | ↓ | [illegible] | ↓ |
| 11-01914-16 | ↓ | A31B | 12777 | ↓ | ↓ | [illegible] | ↓ LSW 5-25-11 |
| 1-36 | Source Check | A11A - A36B | N/A | Source | 5-27-11 1820 | [illegible] | 7200 |
| ↓ | ↓ | ↓ | ↓ | ↓ | 5-27-11 2055 | [illegible] | ↓ |
| 11-01985-01 | B11-01985 | A11A | 12900 | Th | 5-28-11 1410 | | 86400 |
| 11-01985-02 | ↓ | A11B | 12901 | ↓ | ↓ | | ↓ |
| 11-01985-03 | ↓ | A12A | | ↓ | ↓ | | ↓ |
| 11-01985-04 | ↓ | A12B | | ↓ | ↓ | | ↓ |
| 11-01985-05 | ↓ | A13A | | ↓ | ↓ | | ↓ |
| 11-01985 ~~-07~~ -06 5-28-11 | ↓ | A13B | | ↓ | ↓ | | ↓ |
| 11-01985 -07 | ↓ | A14A | | ↓ | ↓ | | ↓ |
| 11-01985 ~~-07~~ -08 5-28-11 | ↓ | A14B | | ↓ | ↓ | | ↓ |

Data unavailable LSW 6-02-11

350001367



Reviewed By: LSW Date: 6-02-11
Initials

## Alpha Spectroscopy Count Log Book – Canberra System

| Sample Number | Batch Number | Chamber Number | Spectrum Number | Type of Analysis | Analysis Date and Time | Analyst Initials | Count Time (seconds) |
|---|---|---|---|---|---|---|---|
| 11-01985-09 ~~10~~ | 5-28-11 B11-01985 | A15A | Data unavailable BW 6-02-11 | Th | 5 28-11 1410 | | 86400 |
| 11-01985 -10 ~~11~~ | 5-28-11 ↓ | A15B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01985 -11 ~~12~~ | 5-28-11 ↓ | A16A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01985 -12 ~~13~~ | 5-28-11 ↓ | A16B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01985 -13 ~~14~~ | 5-28-11 ↓ | A21A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01985 -14 ~~15~~ | 5-28-11 ↓ | A21B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01985 -15 | 5-28-11 ↓ | A22A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-01 | B11-01984A | A23B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-02 | ↓ | A24A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-03 | ↓ | A24B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-04 | ↓ | A25A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-05 | ↓ | A25B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-06 | ↓ 5-28-11 | ~~A11~~ A31A | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-07 | ↓ | A31B | ↓ | ↓ | ↓ | ↓ | ↓ |
| 11-01984-08 | ↓ | A32B | ↓ | ↓ | ↓ | ↓ | ↓ |

350001368



Reviewed By: LSW Date: 6-02-11
Initials

ARS
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2609 North River Road • Port Allen, Louisiana 70767
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# American Radiation Services Analytical Reports

for

# Summit Environmental Technologies

# Thorium Alpha Spectroscopy Control Charts

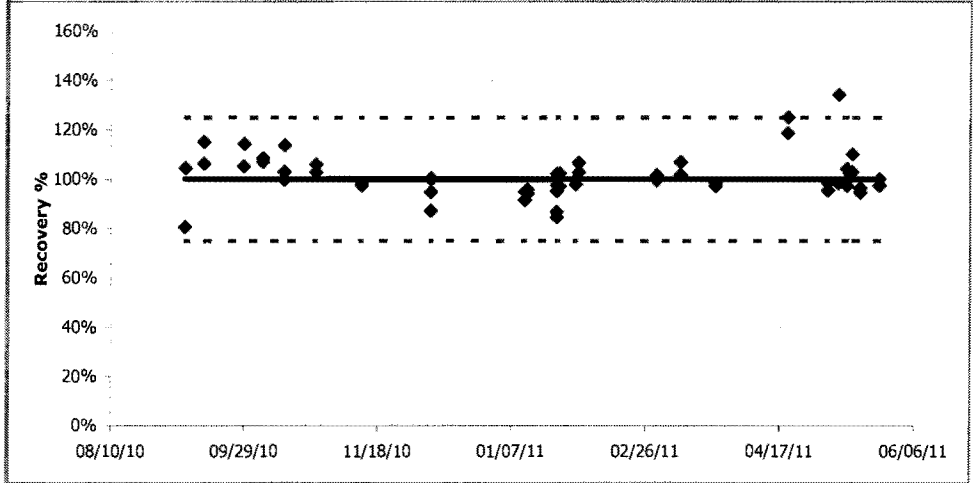
350001369

American Radiation Services
Baton Rouge Laboratory

# QC Chart

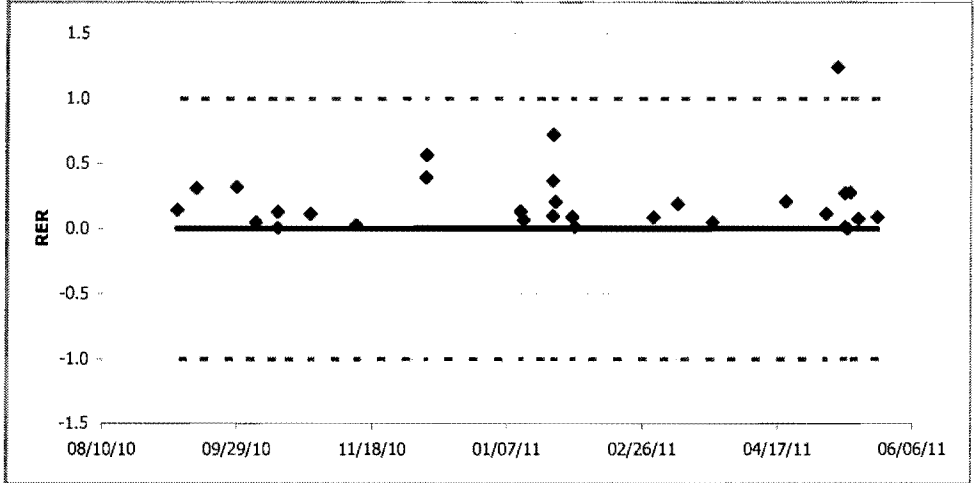
Printed: 6/2/2011 4:49 PM


## Th LCS



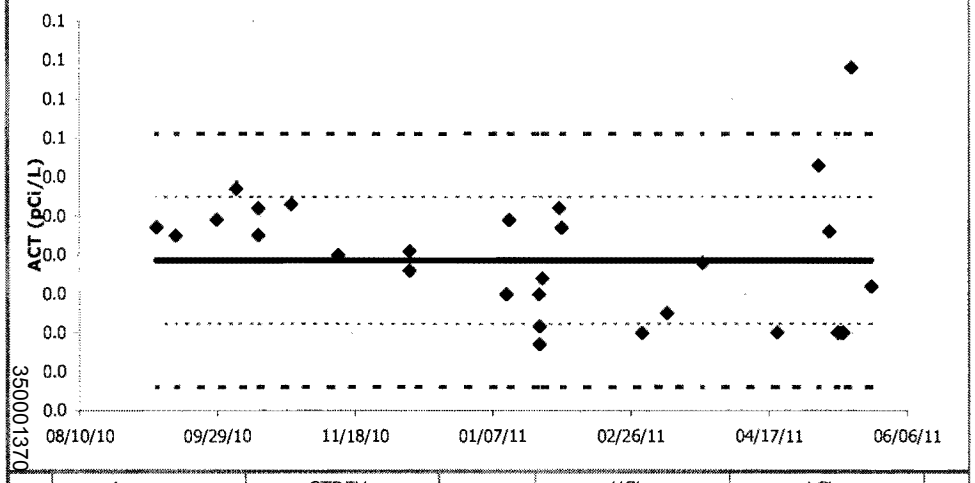

| Average | STDEV | n | UCL | LCL |
|---|---|---|---|---|
| 1.0148 | 0.0884 | 30 | 1.2500 | 0.7500 |

## Th RER



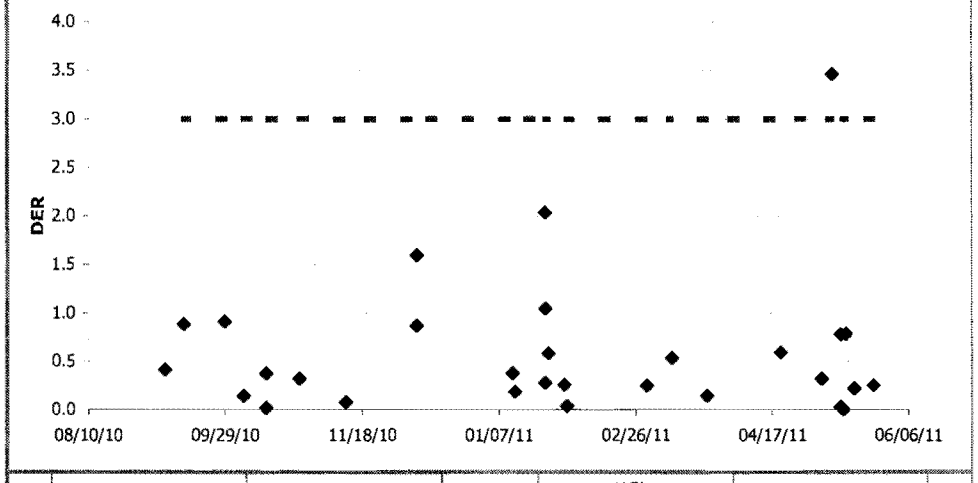

| n | UCL | LCL |
|---|---|---|
| 30 | 1.0000 | -1.0000 |

## Th Blank




| Average | STDEV | n | UCL | LCL |
|---|---|---|---|---|
| 0.0186 | 0.0163 | 30 | 0.0511 | -0.0139 |

## Th DER




| n | UCL |
|---|---|
| 30 | 3.0000 |

3500013

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# American Radiation Services Analytical Reports

for

# Summit Environmental Technologies

# Alpha Spectroscopy Calibration Information

350001371

# STD ID: S-0028

ARS INTERNATIONAL

## Add/Edit *Secondary Stds*

| Planning | |
|---|---|
| Planning Comments | Dilute working standard for LCS/MS from primary solution S-0028 |
| Target dpm/g (on dil. date) | 35 |
| Target Final volume ml. | 2000 |
| Appx mass g of Parent Sol'n | 4.820936645 |
| Appx vol ml of Parent Sol'n | 4.578287412 |
| Expected Addition for Analysis g | 1 |

| Standards Preparation / Dilution | |
|---|---|
| Secondary Solution # | S-0028 |
| Dilution Date (New Ref Date) | 10/26/2005 00:00 |
| Ampoule, Empty (g) | 0 |
| Ampoule /Solution Gross (g) | 5.067 |
| Net Wt Removed (g) | 5.067 |
| Transfer Container, empty (g) | 0 |
| Container Plus Solution (g) | 5.067 |
| Net Wt Transferred (g) | 5.067 |
| DPM Xferred on 10/26/2005 00:00 | 73572.83991 |
| Diluent/matrix | 1M HNO3 |
| Diluent Density Cont, empty (g) | |
| Test Mass of 5 ml of Diluent (g) | |
| Diluent Density Test - (g/mL) | |
| Dilution Empty Container Mass (g) | 1 |
| Dilution Full Cont g (if measured) | 2107 |
| Dilution Final Volume ml (if measured) | 2000 |
| Final Dilution Density (g/mL) | 1.053 |
| Final Dilution Measured Mass g | 2106 |
| Comments | |
| Final Dilution dpm/g | 34.93487175 |
| Final Dil New Ref Date/Time | 10/26/2005 00:00 |

## Parent Standard Data

| | | | | |
|---|---|---|---|---|
| Parent Solution Reference # | NIST SRM 4321C | | | |
| Parent Solution # | S-0063 | | | |
| Parent Principal Radionuclide | U-238 | Half Life (Days) | 1631944444444.4400000 | |
| Parent Reference Date | 09/01/1997 12:00 | | | |
| Parent Certified Act | 14520 | Certi Act/Vol Units | dpm | g |
| Parent Cert Act Uncert 1 Sigma | 0.003 | | | |
| Parent Sp. Gravity G/Ml | 1.053 | | | |
| Parent Supplier | NIST | | | |
| Parent Date Recvd | 01/02/00 | | | |
| Parent Received By | Unknown | | | |
| Parent Cert Exp Date | | | | |
| Parent Matrix | 1.0 M HNO3 | | | |
| Certified dpm/g At Ref Date | 14520 | | | |
| Certified dpm/g on 10/26/2005 00:00 | 14519.99998 | | | |
| Parent Comments | S-0028 Entered from dilution record on 4/6/2006 RTS | | | |
| Parent Tech | B Steffens | | | |
| Is_Primary | FALSE | | | |
| Is_LCS | TRUE | | | |
| Is_Tracer | FALSE | | | |
| Is_Calib | FALSE | | | |

| | |
|---|---|
| S-0028 | |
| U-238 | Verified 6/9/10 |
| S | Expires 6/9/11 |
| Manufactuer | NIST |
| Sol Matrix | 1.0 M HNO3 |
| Ref No | NIST SRM 4321C |
| Tech | B Steffens |
| Parent ID | S-0063 |

ARS INTERNATIONAL

RADIOACTIVE STANDARDS -- BATON ROUGE LABORATORY

ARS INTERNATIONAL

## QUALITY CONTROL PROGRAM

AMERICAN RADIATION SERVICES
RADIOACTIVE REFERENCE SOLUTIONS

# ANNUAL ACTIVITY VERIFICATION

VERIFICATION DATE: 6/9/2010 3:27 *date counted*
STANDARD REFERENCE #: S-0028

| Principal Radionuclide | | Half Life, Years | | Half Life, Days |
|---|---|---|---|---|
| U-238 | *ENTER -->* | | *OR -->* | 1.6320E+12 |
| | | 4.468E+09 | | 1.6320E+12 |

Radionuclide: U-238 Dilution Reference Date: 10/26/2005 0:00

| | | | |
|---|---|---|---|
| Dilution Activity | 15.74 | pCi per gram ===> dpm/g | 34.93 |
| Verif. Date Decay Corrected | 15.74 | pCi per gram ===> dpm/g | 34.93 |

***Minimum of 3 Required***

| Trial ID | Sample Counts | Count Time (min) | Detector | Efficiency | Bkg. (cpm) | Net Weight | Decay Corrected Activity Result (dpm/g) | Decay Corrected Activity Result (pCi/g) |
|---|---|---|---|---|---|---|---|---|
| S-0241-V1 | 5696.00 | 720 | A2 1A | 0.2205 | 0.00 | 1.088 | 32.98 | 14.85 |
| S-0241-V2 | 5721.00 | 720 | A2 2A | 0.2232 | 0.00 | 1.075 | 33.12 | 14.92 |
| S-0241-V4 | 5880.00 | 720 | A2 4A | 0.2250 | 0.00 | 1.076 | 33.73 | 15.19 |
| | | | | | | | | |
| | | | | | | | | |

| | | | |
|---|---|---|---|
| | | Average | 33.27 | 14.99 |
| | | Two Sigma Uncertainty | 0.79 | 0.36 |
| *10% Max* | *PASS* | Standard Deviation percent of known concentration | 1.15% | 1.15% |
| | | Target Activity | 34.93 | 15.74 |
| *5% Max* | *PASS* | % Diff | -4.75% | -4.75% |

**Verification Expiration Date:** June 9, 2011

Prepared & Counted By: [signature] Date: 6/9/2010 3:27

Verified & Approved By: Viviane Mulligan Date: 10-26-10 1545

QC Approval: [signature] Date: 10-26-10 / 15:48

# STD ID: S-0221

ARS INTERNATIONAL

## Add/Edit *Secondary Stds*

### Planning

| | |
|---|---|
| Planning Comments | NT1B Am-241 |
| Target dpm/g (on dil. date) | |
| Target Final volume mL | |
| Appx mass g of Parent Sol'n | 0 |
| Appx vol ml of Parent Sol'n | |
| Expected Addition for Analysis g | 1 |

### Standards Preparation / Dilution

| | |
|---|---|
| Secondary Solution # | S-0221 |
| Dilution Date (New Ref Date) | 08/19/2009 12:00 |
| Ampoule, Empty (g) | |
| Ampoule /Solution Gross (g) | |
| Net Wt Removed (g) | |
| Transfer Container, empty (g) | 0 |
| Container Plus Solution (g) | 1 |
| Net Wt Transferred (g) | 1 |
| DPM Xferred on 08/19/2009 12:00 | 26.725 |
| Diluent/matrix | |
| Diluent Density Cont, empty (g) | |
| Test Mass of 5 ml of Diluent (g) | |
| Diluent Density Test - (g/mL) | |
| Dilution Empty Container Mass (g) | 1 |
| Dilution Full Cont g (if measured) | 2 |
| Dilution Final Volume ml (if measured) | |
| Final Dilution Density (g/mL) | |
| Final Dilution Measured Mass g | 1 |
| Comments | NT1b Am-241 LCS standard. Activity determined by averaging 7 standard verifications. Standard was originally diluted by a now unknown tech. No dilution records exist. -BJS 8/19/09 |
| Final Dilution dpm/g | 26.725 |
| Final Dil New Ref Date/Time | 08/19/2009 12:00 |

## Parent Standard Data

| | |
|---|---|
| Parent Solution Reference # | NT1b |
| Parent Solution # | S-0220 |
| Parent Principal Radionuclide | Am-241 |
| Half Life (Days) | 157870.3703704 |
| Parent Reference Date | 08/19/2009 12:00 |
| Parent Certified Act | 26.725 |
| Certi Act/Vol Units | dpm / g |
| Parent Cert Act Uncert 1 Sigma | |
| Parent Sp. Gravity G/Ml | |
| Parent Supplier | |
| Parent Date Recvd | |
| Parent Received By | |
| Parent Cert Exp Date | |
| Parent Matrix | |
| Certified dpm/g At Ref Date | 26.725 |
| Certified dpm/g on 08/19/2009 12:00 | 26.725 |
| Parent Comments | |
| Parent Tech | B Steffens |
| Is_Primary | TRUE |
| Is_LCS | TRUE |
| Is_Tracer | FALSE |
| Is_Calib | FALSE |

ORIGINAL

350001374

## QUALITY CONTROL PROGRAM

AMERICAN RADIATION SERVICES
RADIOACTIVE REFERENCE SOLUTIONS

# ACTIVITY VERIFICATION

NT1b Am-241 Unknown Am-241 Standard
**S-0185 Am-243** Tracer **Expires:** 7/17/2010

| Am-241 Net | Am-243 Net | gram 243 | Am-243 dpm/g | dpm added | Am-241 in test source | grams Am-241 added | Am-241 dpm/g |
|---|---|---|---|---|---|---|---|
| 7740 | 3319 | 1.0084 | 10.98001285 | 11.07224495 | 25.821 | 0.9976 | 25.88290111 |
| 2153 | 882 | 1.0053 | 10.98001285 | 11.03820691 | 26.945 | 0.9954 | 27.06925723 |
| 7690 | 3141 | 1.008 | 10.98001285 | 11.06785295 | 27.097 | 0.9919 | 27.31831406 |
| 4481 | 1914 | 1.0073 | 10.98001285 | 11.06016694 | 25.894 | 0.9862 | 26.25606836 |
| 5010 | 2049 | 1.0067 | 10.98001285 | 11.05357893 | 27.027 | 0.9803 | 27.57018509 |
| 7850 | 3313 | 1.004 | 10.98001285 | 11.0239329 | 26.121 | 0.9923 | 26.32338832 |
| 6936 | 2908 | 1.0061 | 10.98001285 | 11.04699092 | 26.349 | 0.9884 | 26.65790051 |
| | | | | Average | 26.465 | Average | 26.725 |
| | | | | Standard Dev | 0.5505994 | Standard Dev | 0.616399877 |
| | | | | Average/stdev | 2.08% | Average/stdev | 2.306% |

Performed by: Jamaal Brown Date: 7/17/2009

Reviewed by: Dwayne Mulligan Date: 8-19-09

QA Approval: [signature] Date: 8-19-09

ORIGINAL

350001375

# STD ID: S-0024

ARS INTERNATIONAL

## Add/Edit *Secondary Stds*

### Planning

| | |
|---|---|
| Planning Comments | S-0024 Dilute working level control standard from SRM 4330B |
| Target dpm/g (on dil. date) | 11.72 |
| Target Final volume mL | 1000 |
| Appx mass g of Parent Sol'n | 4.978764745 |
| Appx vol ml of Parent Sol'n | 4.522038824 |
| Expected Addition for Analysis g | 1 |

### Standards Preparation / Dilution

| | |
|---|---|
| Secondary Solution # | S-0024 |
| Dilution Date (New Ref Date) | 10/26/2005 00:00 |
| Ampoule, Empty (g) | 0 |
| Ampoule /Solution Gross (g) | 5.357 |
| Net Wt Removed (g) | 5.357 |
| Transfer Container, empty (g) | 0 |
| Container Plus Solution (g) | 5.357 |
| Net Wt Transferred (g) | 5.357 |
| DPM Xferred on 10/26/2005 00:00 | 12610.36486 |
| Diluent/matrix | 3M HNO3 |
| Diluent Density Cont, empty (g) | |
| Test Mass of 5 ml of Diluent (g) | |
| Diluent Density Test - (g/mL) | |
| Dilution Empty Container Mass (g) | 1 |
| Dilution Full Cont g (if measured) | 1106 |
| Dilution Final Volume ml (if measured) | 1000 |
| Final Dilution Density (g/mL) | 1.105 |
| Final Dilution Measured Mass g | 1105 |
| Comments | |
| Final Dilution dpm/g | 11.4120949 |
| Final Dil New Ref Date/Time | 10/26/2005 00:00 |

## Parent Standard Data

| | | | | | |
|---|---|---|---|---|---|
| Parent Solution Reference # | NIST SRM 4330B | | | | |
| Parent Solution # | S-0073 | | | | |
| Parent Principal Radionuclide | Pu-239 | Half Life (Days) | 8806712.9629630 | | |
| Parent Reference Date | 11/15/1999 00:00 | | | | |
| Parent Certified Act | 2354.4 | Certi Act/Vol Units | dpm | g | |
| Parent Cert Act Uncert 1 Sigma | 0.0034 | | | | |
| Parent Sp. Gravity G/Ml | 1.101 | | | | |
| Parent Supplier | NIST | | | | |
| Parent Date Recvd | 01/02/00 | | | | |
| Parent Received By | Unknown | | | | |
| Parent Cert Exp Date | | | | | |
| Parent Matrix | 3.1M HNO3 | | | | |
| Certified dpm/g At Ref Date | 2354.4 | | | | |
| Certified dpm/g on 10/26/2005 00:00 | 2353.997548 | | | | |
| Parent Comments | S-0024 Information entered from dilution records | | | | |
| Parent Tech | B Steffens | | | | |
| Is_Primary | FALSE | | | | |
| Is_LCS | TRUE | | | | |
| Is_Tracer | FALSE | | | | |
| Is_Calib | FALSE | | | | |

| | |
|---|---|
| S-0024 | |
| Pu-239 | Verified 10/6/10 |
| S | Expires 10/6/11 |
| Manufactuer | NIST |
| Sol Matrix | 3.1M HNO3 |
| Ref No | NIST SRM 4330B |
| Tech | B Steffens |
| Parent ID | S-0073 |

ARS INTERNATIONAL

RADIOACTIVE STANDARDS -- BATON ROUGE LABORATORY

| S-0024 | | |
|---|---|---|
| Pu-239 | Verified | 10/6/10 |
| S | Expires | 10/6/11 |
| Manufactuer | NIST | |
| Sol Matrix | 3.1M HNO3 | |
| Ref No | NIST SRM 4330B | |
| Tech | B Steffens | |
| Parent ID | S-0073 | |

RADIOACTIVE STANDARDS -- BATON ROUGE LABORATORY

AMERICAN RADIATION SERVICES, INC.

## QUALITY CONTROL PROGRAM

AMERICAN RADIATION SERVICES
RADIOACTIVE REFERENCE SOLUTIONS

# ACTIVITY VERIFICATION

Pu Standard Verification 10/6/2010

S-0223 Pu-242
S-0024 Pu-239

| Pu239 counts | Pu242 counts | gram 242 | Pu-242 dpm/g | dpm added | Pu-239 in test source | grams 239 added | Pu-239/g | target | |
|---|---|---|---|---|---|---|---|---|---|
| 1578 | 1079 | 1.109 | 7.6699 | 8.505919 | 12.440 | 1.107 | 11.23723 | 11.41 | 98.5% |
| 1705 | 1173 | 1.098 | 7.6699 | 8.42155 | 12.241 | 1.099 | 11.13835 | 11.41 | 97.6% |
| 812 | 547 | 1.096 | 7.6699 | 8.40621 | 12.479 | 1.09 | 11.44834 | 11.41 | 100.3% |
| 1601 | 1085 | 1.099 | 7.6699 | 8.42922 | 12.438 | 1.09 | 11.41097 | 11.41 | 100.0% |
| 1747 | 1188 | 1.096 | 7.6699 | 8.40621 | 12.362 | 1.092 | 11.3202 | 11.41 | 99.2% |
| | | | | | | 12.392 | 11.311 | bias | 1.2% |
| | | | | | | 0.094343 | 0.12668 | stdev | 1.4% |
| | | | | | | 0.007613 | 1.120% | rsd | 1.4% |

10-6-10

10-6-10

Eugene Mellegan 10-11-10

350001377

# STD ID: S-0231

ARS INTERNATIONAL

## Add/Edit Secondary Stds

| Planning | |
|---|---|
| Planning Comments | Create a Th-230 LCS stock solution. |
| Target dpm/g (on dil. date) | 12.5 |
| Target Final volume mL | 1000 |
| Appx mass g of Parent Sol'n | 2.657312886 |
| Appx vol ml of Parent Sol'n | |
| Expected Addition for Analysis g | 1 |

| Standards Preparation / Dilution | |
|---|---|
| Secondary Solution # | S-0231 |
| Dilution Date (New Ref Date) | 02/19/2010 14:44 |
| Ampoule, Empty (g) | |
| Ampoule /Solution Gross (g) | |
| Net Wt Removed (g) | |
| Transfer Container, empty (g) | 13.115 |
| Container Plus Solution (g) | 15.824 |
| Net Wt Transferred (g) | 2.709 |
| DPM Xferred on 02/19/2010 14:44 | 12743.13619 |
| Diluent/matrix | 0.5M HNO3 |
| Diluent Density Cont, empty (g) | |
| Test Mass of 5 ml of Diluent (g) | |
| Diluent Density Test - (g/mL) | |
| Dilution Empty Container Mass (g) | 303.59 |
| Dilution Full Cont g (if measured) | 1318.29 |
| Dilution Final Volume ml (if measured) | 1000 |
| Final Dilution Density (g/mL) | 1.0147 |
| Final Dilution Measured Mass g | 1014.7 |
| Comments | Primary Th-230 LCS standard. Dilution performed as stated above by B Steffens on 2/19/10. -BJS 2/19/10 |
| Final Dilution dpm/g | 12.55852586 |
| Final Dil New Ref Date/Time | 02/19/2010 14:44 |

## Parent Standard Data

| | | | | |
|---|---|---|---|---|
| Parent Solution Reference # | 75861-526 | | | |
| Parent Solution # | S-0172 | | | |
| Parent Principal Radionuclide | Th-230 | Half Life (Days) | 27534722.2222222 | |
| Parent Reference Date | 02/05/2008 12:00 | | | |
| Parent Certified Act | 4704.088304 | Certi Act/Vol Units | dpm | D |
| Parent Cert Act Uncert 1 Sigma | 0.02 | | | |
| Parent Sp. Gravity G/Ml | | | | |
| Parent Supplier | Analytics | | | |
| Parent Date Recvd | 09/11/07 | | | |
| Parent Received By | S Clayton | | | |
| Parent Cert Exp Date | | | | |
| Parent Matrix | 0.5M HNO3 | | | |
| Certified dpm/g At Ref Date | 4704.088304 | | | |
| Certified dpm/g on 02/19/2010 14:44 | 4704.00007 | | | |
| Parent Comments | Intermediate level Th-230 standard for use in creating LCS stock solutions. Dilution performed as stated above by B Steffens on 2/5/08. -BJS 2/5/08 | | | |
| Parent Tech | B Steffens | | | |
| Is_Primary | FALSE | | | |
| Is_LCS | FALSE | | | |
| Is_Tracer | FALSE | | | |
| Is_Calib | FALSE | | | |

| | |
|---|---|
| S-0231 | |
| Th-230 | Verified 10/18/10 |
| SL | Expires 10/18/11 |
| Manufactuer | Analytics |
| Sol Matrix | 0.5M HNO3 |
| Ref No | 75861-526 |
| Tech | B Steffens |
| Parent ID | S-0172 |

ARS INTERNATIONAL

RADIOACTIVE STANDARDS -- BATON ROUGE LABORATORY

## QUALITY CONTROL PROGRAM

AMERICAN RADIATION SERVICES
RADIOACTIVE REFERENCE SOLUTIONS

# ACTIVITY VERIFICATION

**S-0246 Th-229**
**S-0231 Th-230** LCS

**Expires:** 10/15/2011

| Th-230 Net | Th-229 Net | gram 229 | Th-229 dpm/g | dpm added | Th-230 in test source | grams Th-230 added | Th-230 dpm/g |
|---|---|---|---|---|---|---|---|
| 3508 | 3097 | 1.0226 | 11.204 | 11.4572104 | 12.978 | 1.0226 | 12.69087246 |
| 3519 | 3099 | 1.0244 | 11.204 | 11.4773776 | 13.033 | 1.0256 | 12.70756525 |
| 3660 | 3346 | 1.0227 | 11.204 | 11.4583308 | 12.534 | 1.0251 | 12.22672858 |
| 3370 | 2999 | 1.0231 | 11.204 | 11.4628124 | 12.881 | 1.025 | 12.56668574 |
| 3626 | 3363 | 1.0243 | 11.204 | 11.4762572 | 12.374 | 1.0254 | 12.06723839 |
| | | | | Average | 12.760 | Average | 12.452 |
| | | | | Standard Dev | 0.29021346 | Standard Dev | 0.289099902 |
| | | | | Average/stdev | 2.27% | Average/stdev | 2.322% |

Performed by: Brian Steffens/Jamaal Brown Date: 10/15/2010

Reviewed by: [signature] Date: 10-18-10

QA Approval: [signature] Date: 10-18-10 / 1601

350001379

ANALYTICS

COPY

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

62919A-526

Mixed Alpha Source on Stainless Steel Disk

This standard radionuclide source was prepared by electro-deposition of a mixture of alpha emitters onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Regulatory Guide 4.15, Rev. 1.

CALIBRATION DATE: January 18, 2002 12:00 EST

Total Activity: 482.5 dpm
Expanded Uncertainty (dpm [k=3]): 16.0

| ISOTOPE: | U-238 | U-234 | Pu-239 | Am-241 |
|---|---|---|---|---|
| ACTIVITY (DPM): | 120.9 | 117.5 | 119.7 | 119.3 |
| HALF-LIFE: | 4.468 E9 y | 2.455 E5 y | 2.41 E4 y | 4.322 E2 y |
| EXPANDED UNCERTAINTY DPM (k=3): | 5.2 | 5.1 | 5.2 | 5.2 |
| ENERGY RANGE (keV): | 3900-4290 | 4640-4980 | 4950-5260 | 5260-5590 |

Impurities: U-235 <4.7 dpm.
Disk diameter: 19.3 mm; disk thickness: 0.75 mm; diameter of active area: 16 mm.

P O Number: 01-0192, Item 2

SOURCE CALIBRATED BY: _____, for
Daniel M. Montgomery, Radiochemist

Q A APPROVED: _____ 1/23/02

350001380

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

COPY

# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

70719-526

19.3 mm Diameter x 0.75 mm Thick Stainless Steel Disk

This standard radionuclide source was prepared by electrodeposition of a mixture of alpha emitters onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Regulatory Guide 4.15, Rev. 1.

CALIBRATION DATE: May 10, 2005 12:00 EST

TOTAL ACTIVITY (dpm): 507
EXPANDED UNCERTAINTY (dpm [k=2]): 15
ENERGY RANGE (keV): 3700-7950

| ISOTOPE | ACTIVITY (dpm) | HALF-LIFE | EXPANDED UNCERTAINTY (dpm [k=2]) | ENERGY RANGE (keV) |
|---|---|---|---|---|
| U-238 | 125 | 4.468 E9 y | 4 | 3900-4290 |
| U-234 | 122 | 2.455 E5 y | 4 | 4580-4860 |
| Pu-239 | 127 | 2.41 E4 y | 4 | 4950-5240 |
| Am-241 | 127 | 4.322 E2 y | 4 | 5275-6690 |

Impurities: U-235 ≈5.3 dpm

Diameter of active area: 16 mm.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

PO NUMBER 05-0248, Item 1

SOURCE CALIBRATED BY: D. M. Montgomery, Radiochemist

Q A APPROVED: 05-19-2005

350001381

ANALYTICS

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# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

70720-526

19.3 mm Diameter x 0.75 mm Thick Stainless Steel Disk

This standard radionuclide source was prepared by electrodeposition of a mixture of alpha emitters onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Regulatory Guide 4.15, Rev. 1.

CALIBRATION DATE: May 10, 2005 12:00 EST

TOTAL ACTIVITY (dpm): 509
EXPANDED UNCERTAINTY (dpm [k=2]): 15
ENERGY RANGE (keV): 3700-7950

| ISOTOPE | ACTIVITY (dpm) | HALF-LIFE | EXPANDED UNCERTAINTY (dpm [k=2]) | ENERGY RANGE (keV) |
|---|---|---|---|---|
| U-238 | 125 | 4.468 E9 y | 4 | 3900-4290 |
| U-234 | 123 | 2.455 E5 y | 4 | 4580-4860 |
| Pu-239 | 128 | 2.41 E4 y | 4 | 4950-5240 |
| Am-241 | 127 | 4.322 E2 y | 4 | 5275-6690 |

Impurities: U-235 ≈4.9 dpm

Diameter of active area: 16 mm.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

PO NUMBER 05-0248, Item 1

SOURCE CALIBRATED BY: _____
D. M. Montgomery, Radiochemist

Q A APPROVED: _____ 05-19-2005

350001382

ANALYTICS

1380 Seaboard Industrial Blvd.
Atlanta, Georgia 30318 · U.S.A.

Phone (404) 352-8677
Fax (404) 352-2837

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# CERTIFICATE OF CALIBRATION

## Standard Radionuclide Source

70721-526

19.3 mm Diameter x 0.75 mm Thick Stainless Steel Disk

This standard radionuclide source was prepared by electrodeposition of a mixture of alpha emitters onto a stainless steel disk. Total alpha activity was determined with a ZnS scintillation detector. Radionuclide activities were calculated from the total activity and the fraction of activity for each radionuclide determined by alpha spectroscopy.

Analytics maintains traceability to the National Institute of Standards and Technology through Measurements Assurance Programs as described in USNRC Regulatory Guide 4.15, Rev. 1.

CALIBRATION DATE: May 10, 2005 12:00 EST

TOTAL ACTIVITY (dpm): 509
EXPANDED UNCERTAINTY (dpm [k=2]): 15
ENERGY RANGE (keV): 3700-7950

| ISOTOPE | ACTIVITY (dpm) | HALF-LIFE | EXPANDED UNCERTAINTY (dpm [k=2]) | ENERGY RANGE (keV) |
|---|---|---|---|---|
| U-238 | 125 | 4.468 E9 y | 4 | 3900-4290 |
| U-234 | 125 | 2.455 E5 y | 4 | 4580-4860 |
| Pu-239 | 127 | 2.41 E4 y | 4 | 4950-5240 |
| Am-241 | 125 | 4.322 E2 y | 4 | 5275-6690 |

Impurities: U-235 ≈5.0 dpm

Diameter of active area: 16 mm.

CAUTION: Active material deposited on the unmarked surface. Handle carefully to prevent scratching or damaging the active surface of this source (i.e., use Teflon coated forceps). Store in the container provided when not in use.

PO NUMBER 05-0248, Item 1

SOURCE CALIBRATED BY: D. M. Montgomery, Radiochemist

Q A APPROVED: 05-19-2005

350001383

**AlphaVision v5.3** **Alpha-Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A1
09:04:14 05/25/10

### Calibration

Energy Calibration: A1 Calib 6-19-09
Description:

Analysis Date: 06/22/09 08:31:32
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

### Acquisition

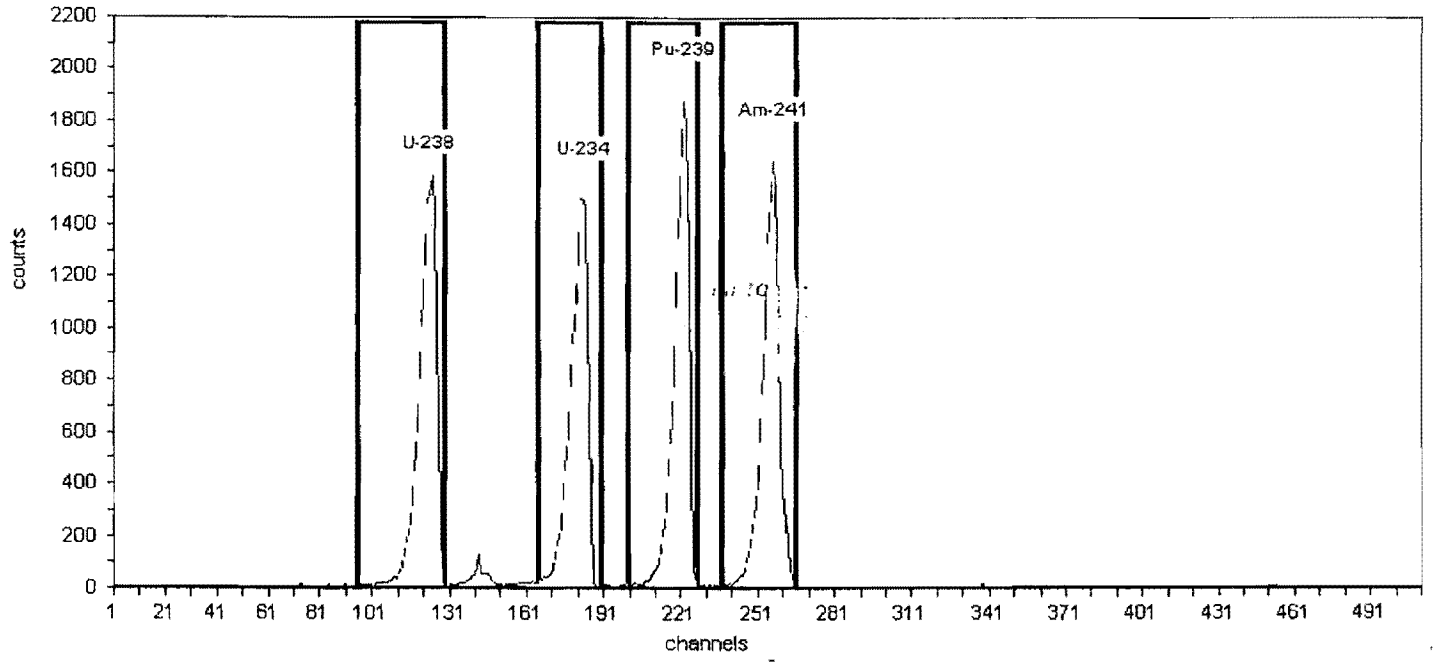
Detector: 219 - A1 , SN: 72012
Acquisition Start Date: 06/19/09 08:47:05

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A1 Calib 6-19-09

Energy Calibration Equation:
Gain = 9.6386 keV / Ch
Offset = 3,011.65 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.60% +/- 1.09% TPU(2 sigma)




Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,131.00 | 28.88 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-238 | 123 | 4.20 | 95 | 129 | 12,626.00 | 30.06 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,040.00 | 28.67 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,426.00 | 29.59 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A2
09:04:22 05/25/10

### Calibration

Energy Calibration: A2 Calib 6-19-09
Description:

Analysis Date: 06/22/09 19:53:02
Calibration Type: Energy

### Source Info

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

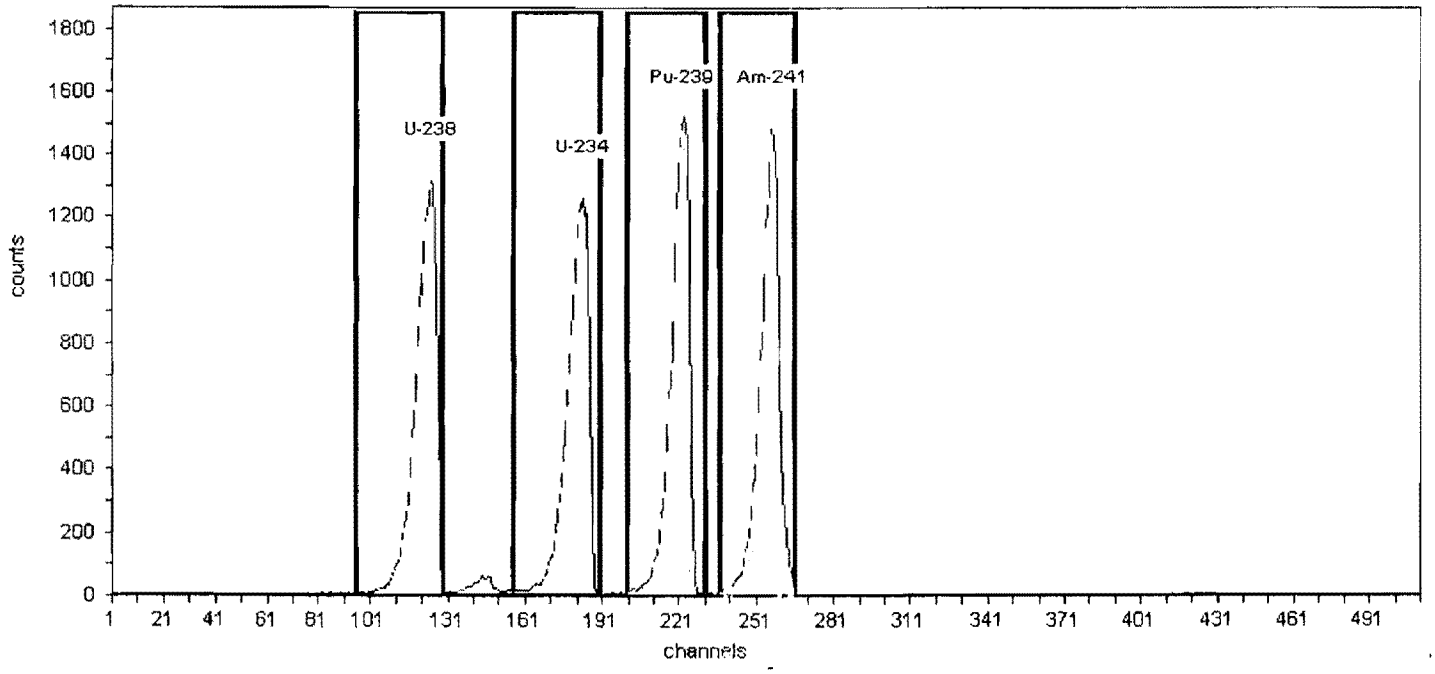
Detector: 219 - A2 , SN: 72013
Acquisition Start Date: 06/19/09 08:47:34

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A2 Calib 6-19-09

Energy Calibration Equation:
Gain = 9.7102 keV / Ch
Offset = 2,995.18 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 23.76% +/- 0.79% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 124 | 4.20 | 95 | 129 | 12,526.00 | 29.82 |
| U-234 | 183 | 4.78 | 156 | 190 | 12,105.00 | 28.82 |
| Pu-239 | 222 | 5.16 | 200 | 231 | 12,769.00 | 30.40 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,391.00 | 29.50 |

**AlphaVision v5.3**

# Alpha-Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A3

09:04:28 05/25/10

## Calibration

Energy Calibration: A3 Calib 6-20-08
Description:

Analysis Date: 06/20/08 15:48:31
Calibration Type: Energy And Efficiency

## Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

## Acquisition

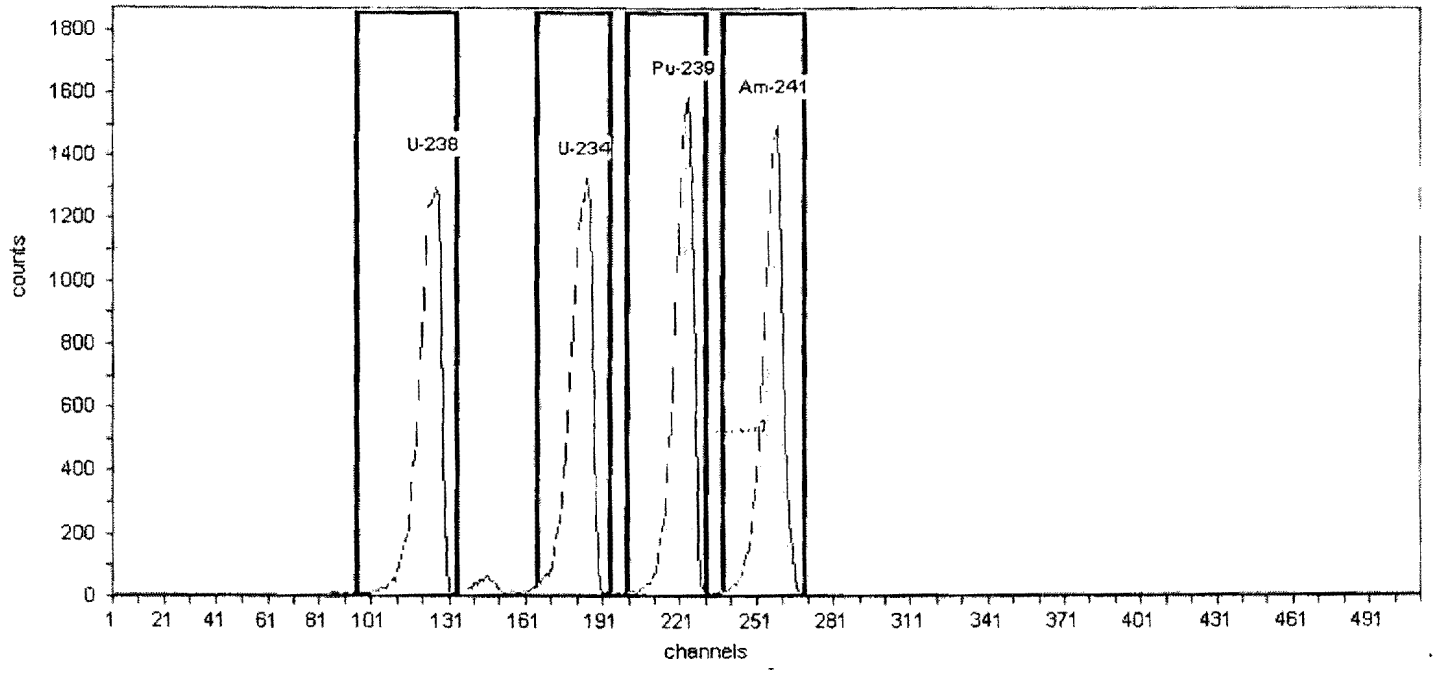
Detector: 219 - A3 , SN: 72014
Acquisition Start Date: 06/20/08 07:18:58

Live Time: 420.00 min.
Real Time: 420.05 min.

Efficiency Calibration Name: A3 Calib 6-20-08

Energy Calibration Equation:
Gain = 9.7102 keV / Ch
Offset = 2,985.47 keV
Quadratic = 0.0000 keV / $Ch^2$

Efficiency: 25.69% +/- 0.85% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 125 | 4.20 | 95 | 134 | 13,321.00 | 31.72 |
| U-234 | 184 | 4.78 | 165 | 194 | 13,318.00 | 31.71 |
| Pu-239 | 223 | 5.16 | 200 | 231 | 13,580.00 | 32.33 |
| Am-241 | 258 | 5.49 | 238 | 270 | 13,611.00 | 32.41 |

# AlphaVision v5.3

## Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A4
09:04:35 05/25/10

### Calibration

Energy Calibration: A4 Calib 6-19-09
Description:

Analysis Date: 06/22/09 19:53:40
Calibration Type: Energy

### Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

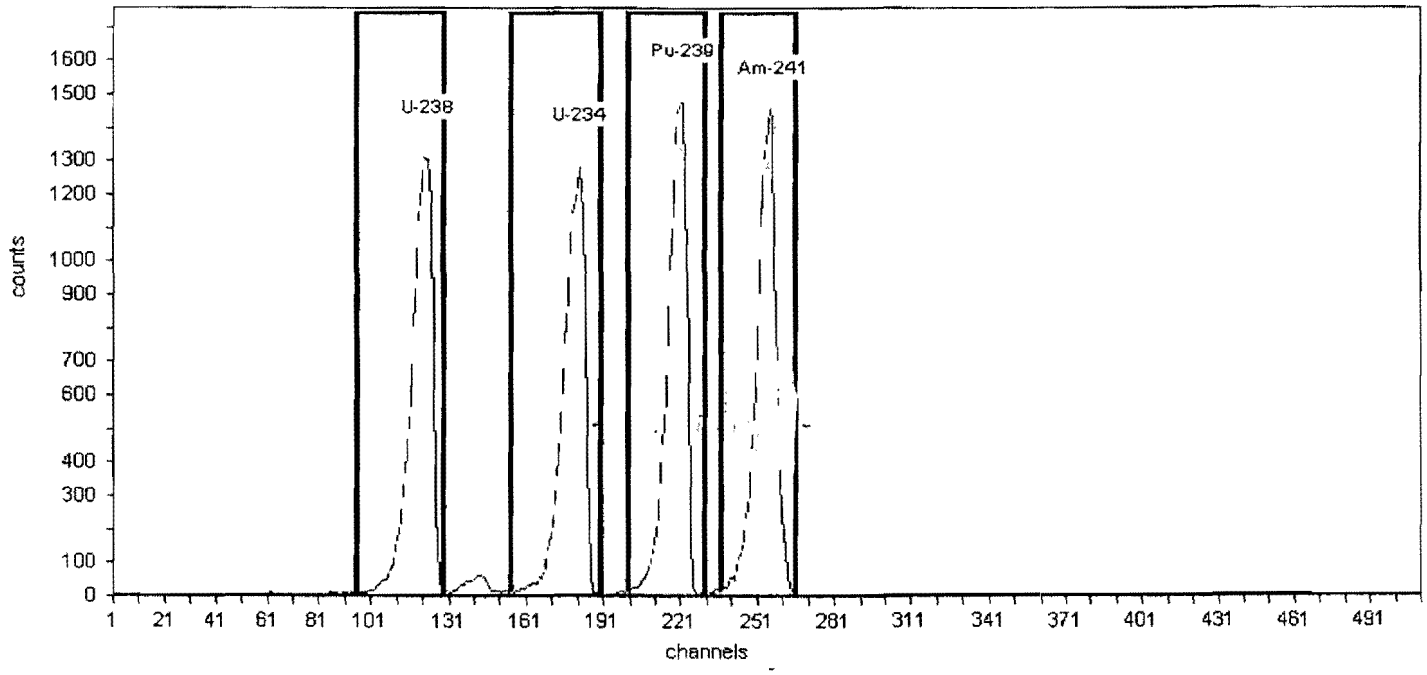
Detector: 219 - A4 , SN: 72015
Acquisition Start Date: 06/19/09 08:47:51

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A4 Calib 6-19-09

Energy Calibration Equation:
Gain = 9.6250 keV / Ch
Offset = 3,016.73 keV
Quadratic = 0.0000 keV / $Ch^2$

Efficiency: 24.50% +/- 0.81% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,895.00 | 30.70 |
| U-234 | 182 | 4.78 | 155 | 190 | 12,484.00 | 29.72 |
| Pu-239 | 222 | 5.16 | 200 | 230 | 13,039.00 | 31.05 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,978.00 | 30.90 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A5
09:04:41 05/25/10

### Calibration

Energy Calibration: A5 Calib 6-22-09
Description:

Analysis Date: 06/22/09 19:54:05
Calibration Type: Efficiency

### Source Info

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

### Acquisition

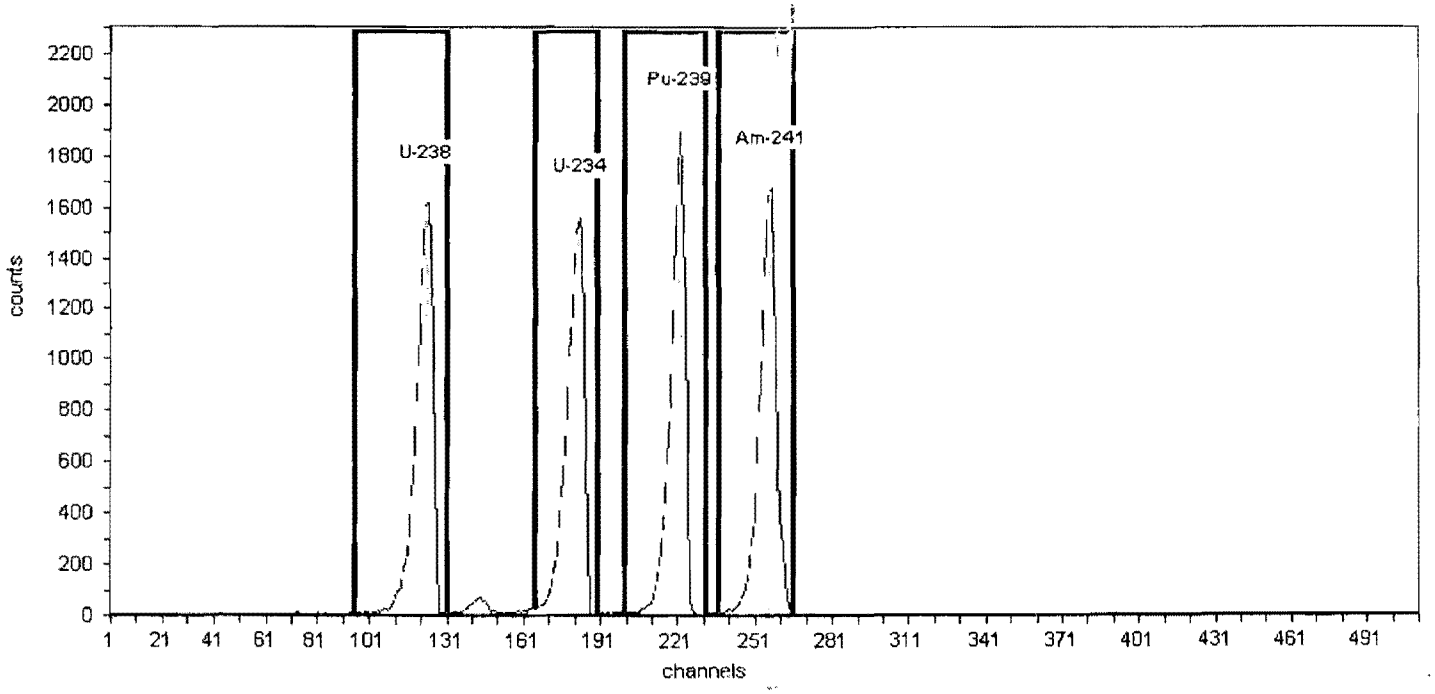
Detector: 219 - A5 , SN: 72016
Acquisition Start Date: 06/22/09 08:33:05

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A5 Calib 6-22-09

Energy Calibration Equation:
Gain = 9.6386 keV / Ch
Offset = 3,011.65 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.13% +/- 1 11% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 131 | 12,727.00 | 30.30 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,460.00 | 29.67 |
| Pu-239 | 222 | 5.16 | 200 | 232 | 12,486.00 | 29.73 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,545.00 | 29.87 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A6
09:04:47 05/25/10

***Calibration***

Energy Calibration: A6 Calib 6-22-09
Description:

Analysis Date: 06/22/09 19:54:40
Calibration Type: Energy

***Source Info***

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

***Acquisition***

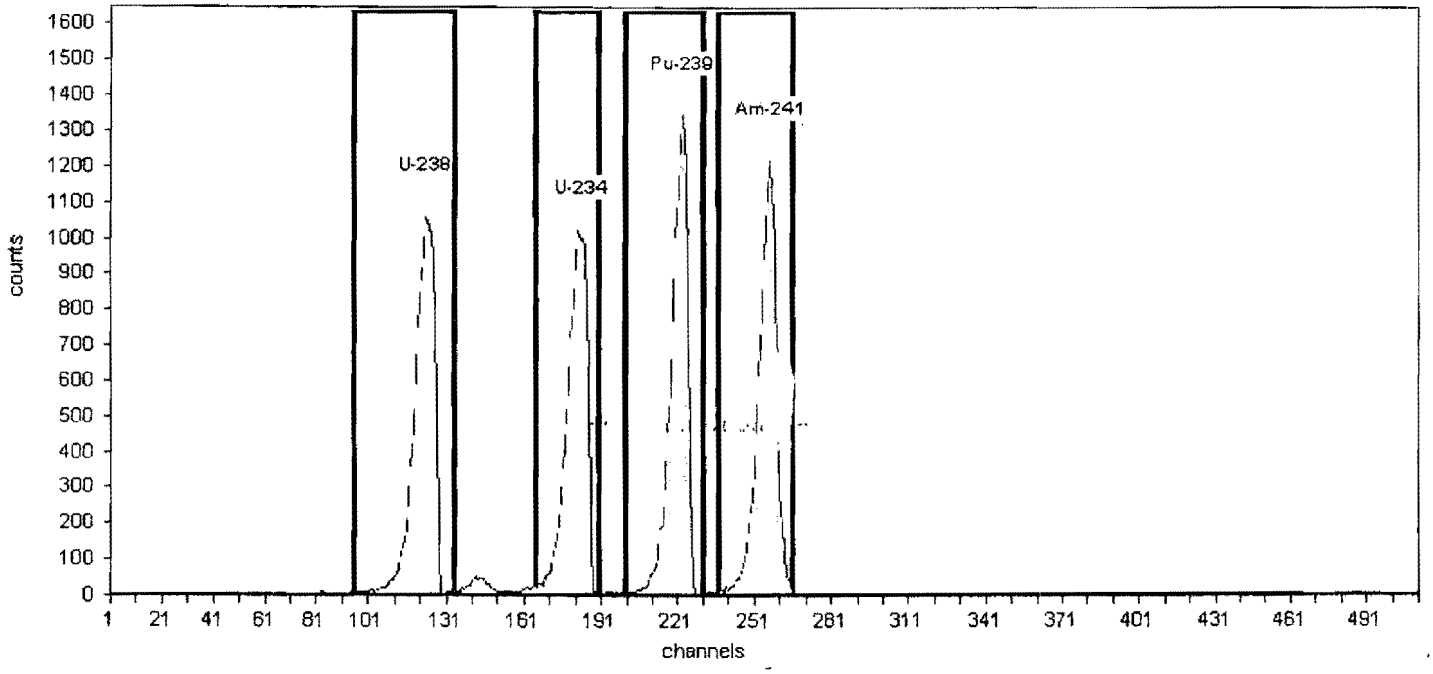
Detector: 219 - A6 , SN: 72017
Acquisition Start Date: 06/22/09 08:33:16

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A6 Calib 6-22-09

Energy Calibration Equation:
Gain = 9.6133 keV / Ch
Offset = 3,014.21 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 18.49% +/- 0.62% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

***Nuclide Activity Summary***

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 134 | 9,662.00 | 23.00 |
| U-234 | 183 | 4.78 | 165 | 190 | 9,573.00 | 22.79 |
| Pu-239 | 223 | 5.16 | 200 | 231 | 9,994.00 | 23.80 |
| Am-241 | 257 | 5.49 | 237 | 266 | 9,634.00 | 22.94 |

**AlphaVision v5.3** **Alpha-Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A7
09:04:54 05/25/10

### Calibration

Energy Calibration: A7 Calib 6-22-09
Description:

Analysis Date: 06/22/09 19:55:28
Calibration Type: Energy

### Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

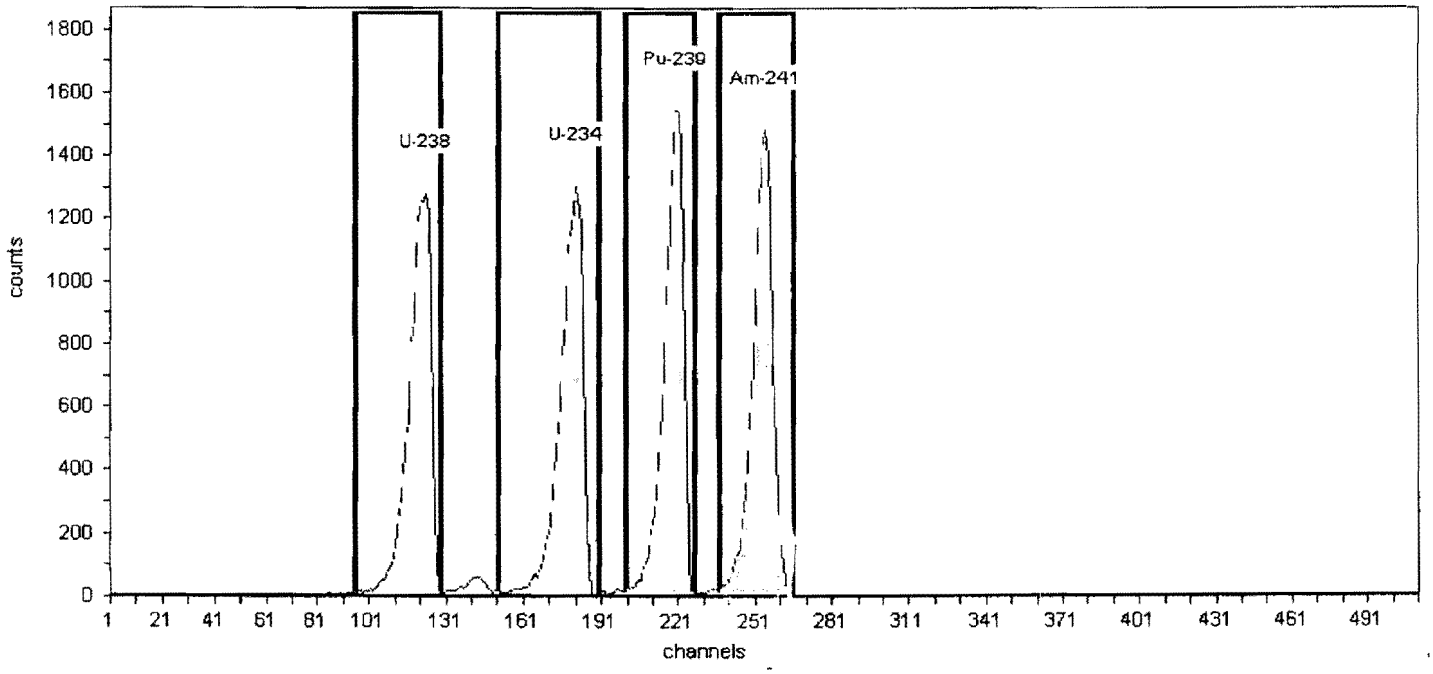
Detector: 219 - A7 , SN: 72018
Acquisition Start Date: 06/22/09 08:33:41

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A7 Calib 6-22-09

Energy Calibration Equation:
Gain = 9.7824 keV / Ch
Offset = 2,998.11 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.30% +/- 0.83% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,243.00 | 31.53 |
| U-234 | 181 | 4.78 | 151 | 190 | 12,904.00 | 30.72 |
| Pu-239 | 220 | 5.16 | 200 | 227 | 13,703.00 | 32.63 |
| Am-241 | 255 | 5.49 | 237 | 266 | 13,284.00 | 31.63 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 219 - A8
09:05:00 05/25/10

### Calibration

Energy Calibration: A8 Calib 6-19-08
Description:

Analysis Date: 06/20/08 07:06:56
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

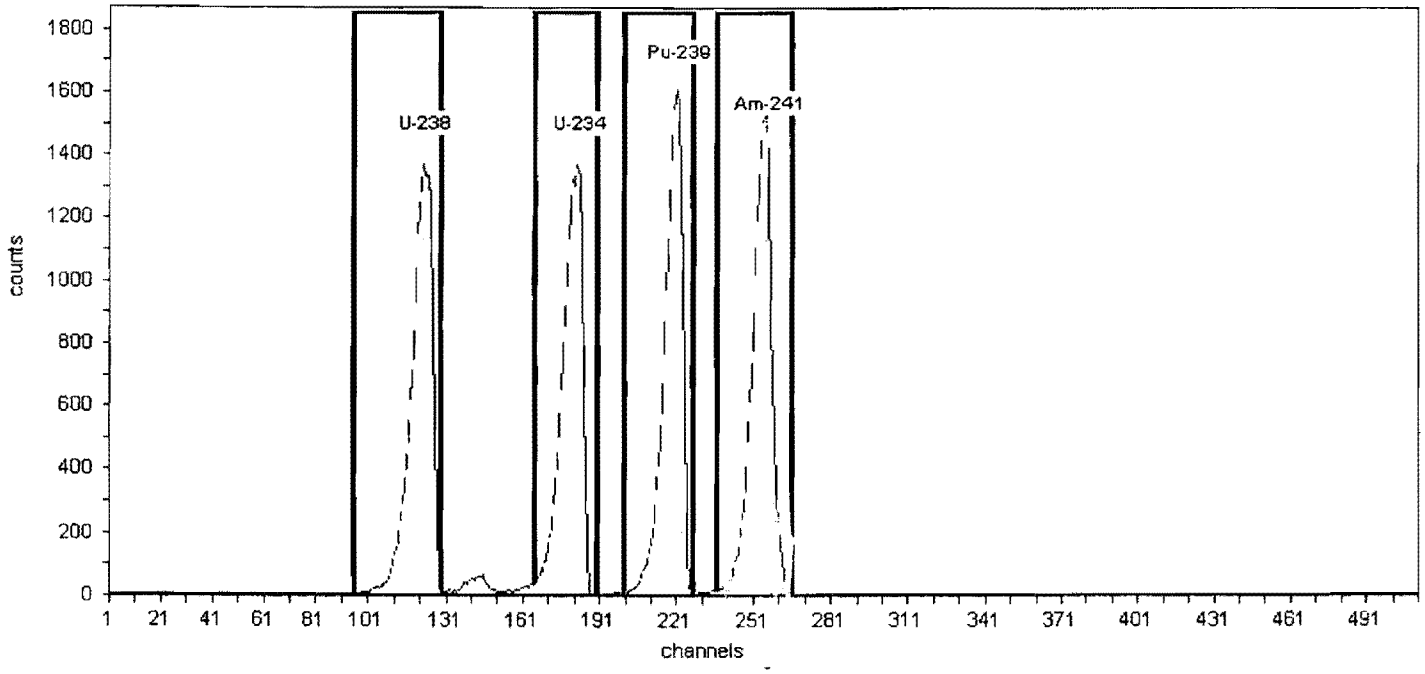
Detector: 219 - A8 , SN: 72019
Acquisition Start Date: 06/19/08 15:32:40

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: A8 Calib 6-19-08

Energy Calibration Equation:
Gain = 9.6386 keV / Ch
Offset = 3,011.65 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.04% +/- 0.83% TPU(2 sigma)




Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,216.00 | 31.47 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,857.00 | 30.61 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 13,437.00 | 31.99 |
| Am-241 | 257 | 5.49 | 237 | 266 | 13,271.00 | 31.60 |

**AlphaVision v5.3** **Alpha-Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B1

09:05:08 05/25/10

***Calibration***

Energy Calibration: B1 Calib 4-27-09
Description:

Analysis Date: 04/28/09 08:09:33
Calibration Type: Energy

***Source Info***

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

***Acquisition***

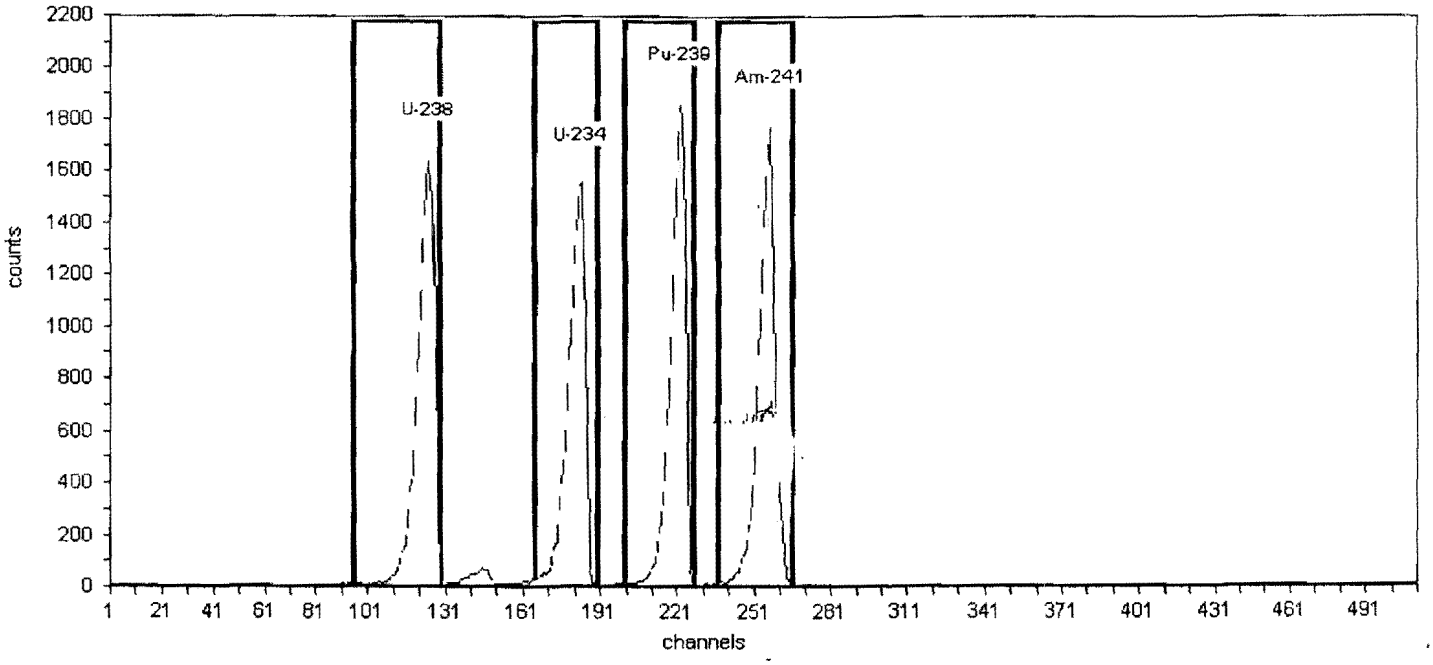
Detector: 262 - B1 , SN: 59507
Acquisition Start Date: 04/27/09 13:53:03

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: B1 Calib 4-27-09

Energy Calibration Equation:
Gain = 9.7102 keV / Ch
Offset = 2,995.18 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.08% +/- 1.11% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

***Nuclide Activity Summary***

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 124 | 4.20 | 95 | 129 | 12,880.00 | 30.67 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,186.00 | 29.01 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 12,629.00 | 30.07 |
| Am-241 | 257 | 5.49 | 237 | 266 | 12,486.00 | 29.73 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B2
09:05:14 05/25/10

### Calibration

Energy Calibration: B2 04-27-09 Calib
Description:

Analysis Date: 04/28/09 08:08:25
Calibration Type: Energy

### Source Info

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

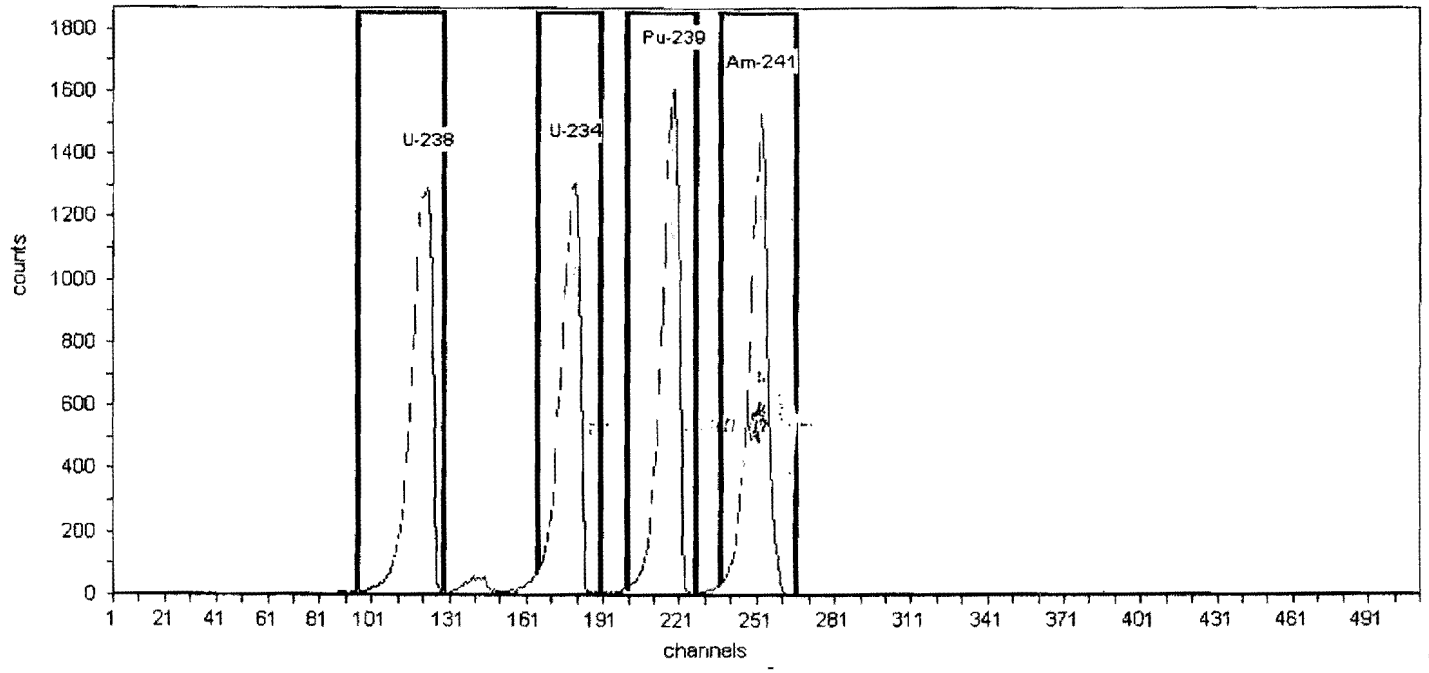
Detector: 262 - B2 , SN: 59505
Acquisition Start Date: 04/27/09 14:02:40

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: B2 04-27-09 Calib

Energy Calibration Equation:
Gain = 9.9186 keV / Ch
Offset = 2,981.49 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 23.61% +/- 0.78% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,452.00 | 29.65 |
| U-234 | 180 | 4.78 | 165 | 190 | 11,963.00 | 28.48 |
| Pu-239 | 219 | 5.16 | 200 | 227 | 12,967.00 | 30.87 |
| Am-241 | 253 | 5.49 | 237 | 266 | 12,271.00 | 29.22 |

# AlphaVision v5.3

## Alpha-Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B3

09:05:19 05/25/10

### Calibration

Energy Calibration: B3 Calib 4-27-09
Description:

Analysis Date: 04/28/09 08:07:04
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

Detector: 262 - B3 , SN: 59503
Acquisition Start Date: 04/27/09 13:54:55

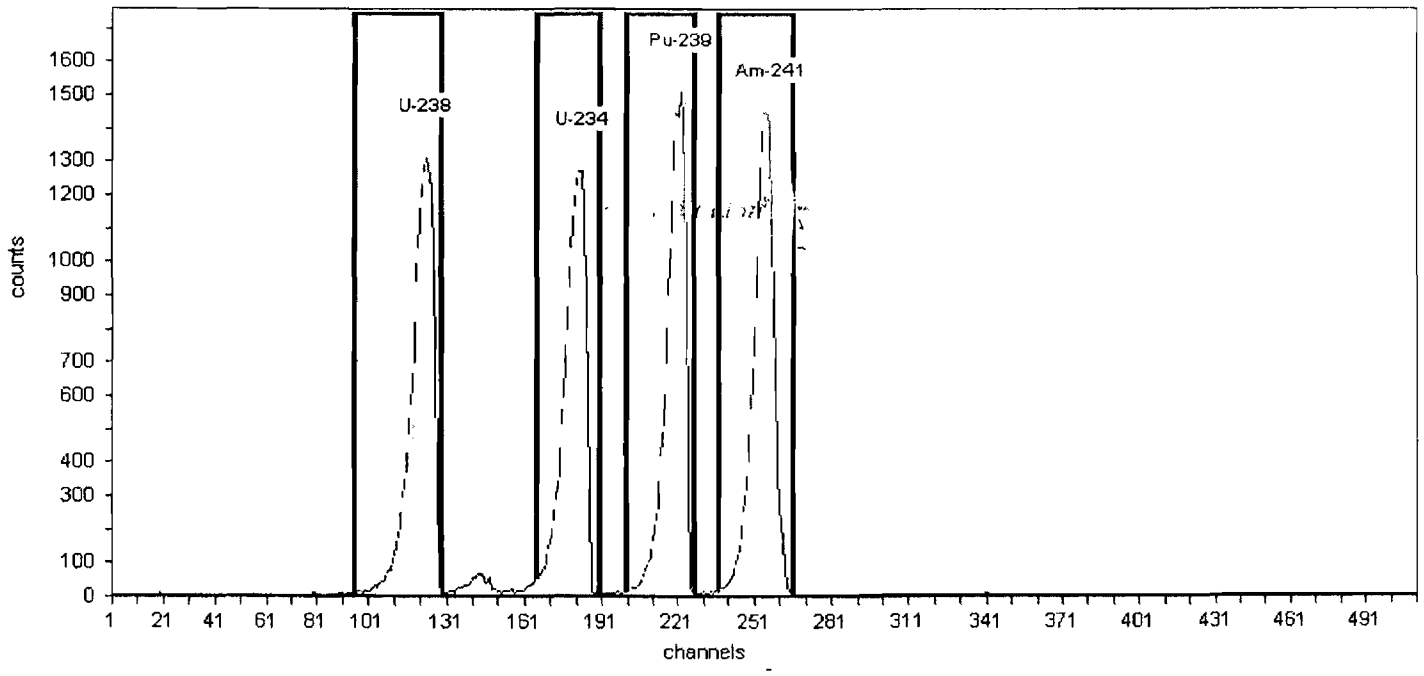
Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: B3 Calib 4-27-09

Energy Calibration Equation:
Gain = 9.6386 keV / Ch

Offset = 3,011.65 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.85% +/- 0.82% TPU(2 sigma)




Method: Manual (ROI)
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,095.00 | 31.18 |
| U-234 | 183 | 4.78 | 165 | 190 | 12,752.00 | 30.36 |
| Pu-239 | 222 | 5.16 | 200 | 227 | 13,311.00 | 31.69 |
| Am-241 | 257 | 5.49 | 237 | 266 | 13,296.00 | 31.66 |

# AlphaVision v5.3

## Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B4

09:05:25 05/25/10

### Calibration

Energy Calibration: B4 Calib 6-5-09
Description:

Analysis Date: 06/05/09 23:21:51
Calibration Type: Efficiency

### Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

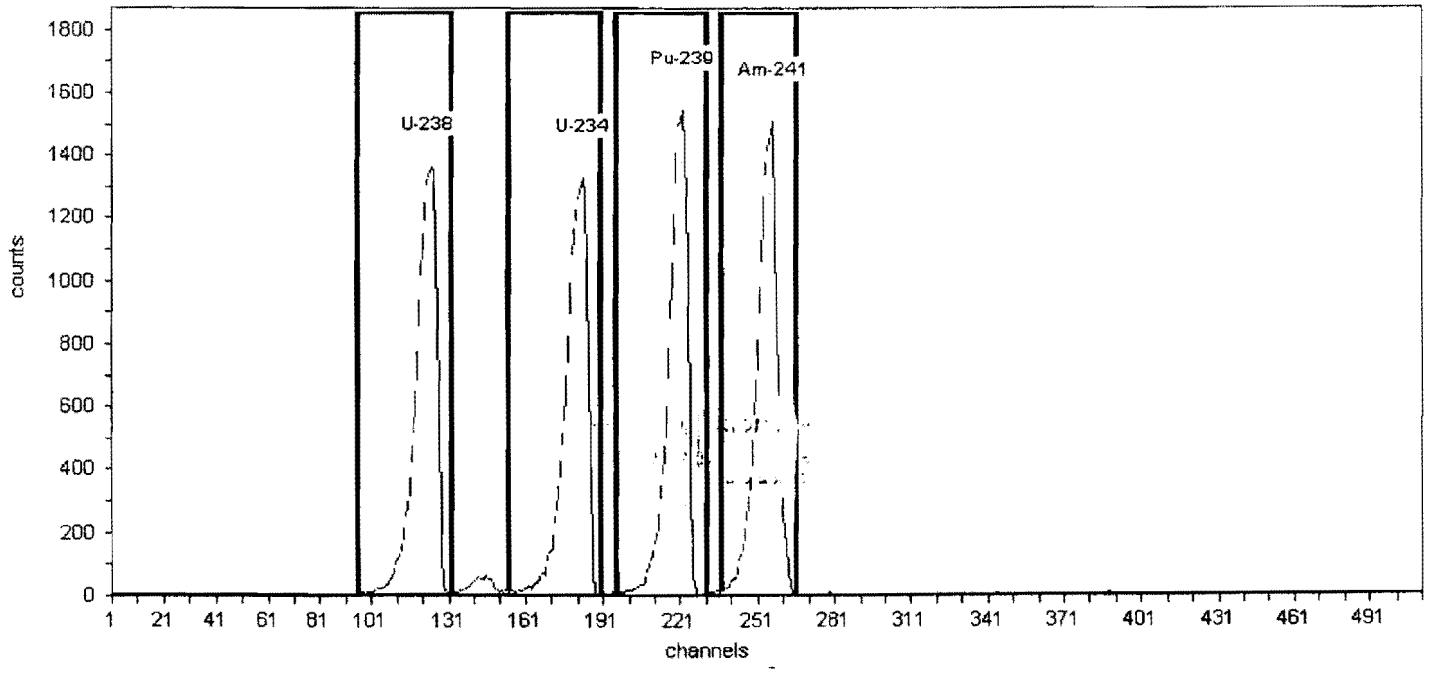
Detector: 262 - B4 , SN: 40018T3
Acquisition Start Date: 06/05/09 15:58:41

Live Time: 420.00 min.
Real Time: 420.03 min.

Efficiency Calibration Name: B4 Calib 6-5-09

Energy Calibration Equation:
Gain = 9.6386 keV / Ch
Offset = 3,011.65 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.48% +/- 0.84% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 132 | 13,339.00 | 31.76 |
| U-234 | 183 | 4.78 | 154 | 190 | 13,146.00 | 31.30 |
| Pu-239 | 222 | 5.16 | 196 | 231 | 13,600.00 | 32.38 |
| Am-241 | 257 | 5.49 | 237 | 266 | 13,331.00 | 31.74 |

**AlphaVision v5.3**

# Alpha-Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B5

09:05:31 05/25/10

## Calibration

Energy Calibration: B5 Calib 4-24-09
Description:

Analysis Date: 04/27/09 08:01:24
Calibration Type: Energy

## Source Info

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

## Acquisition

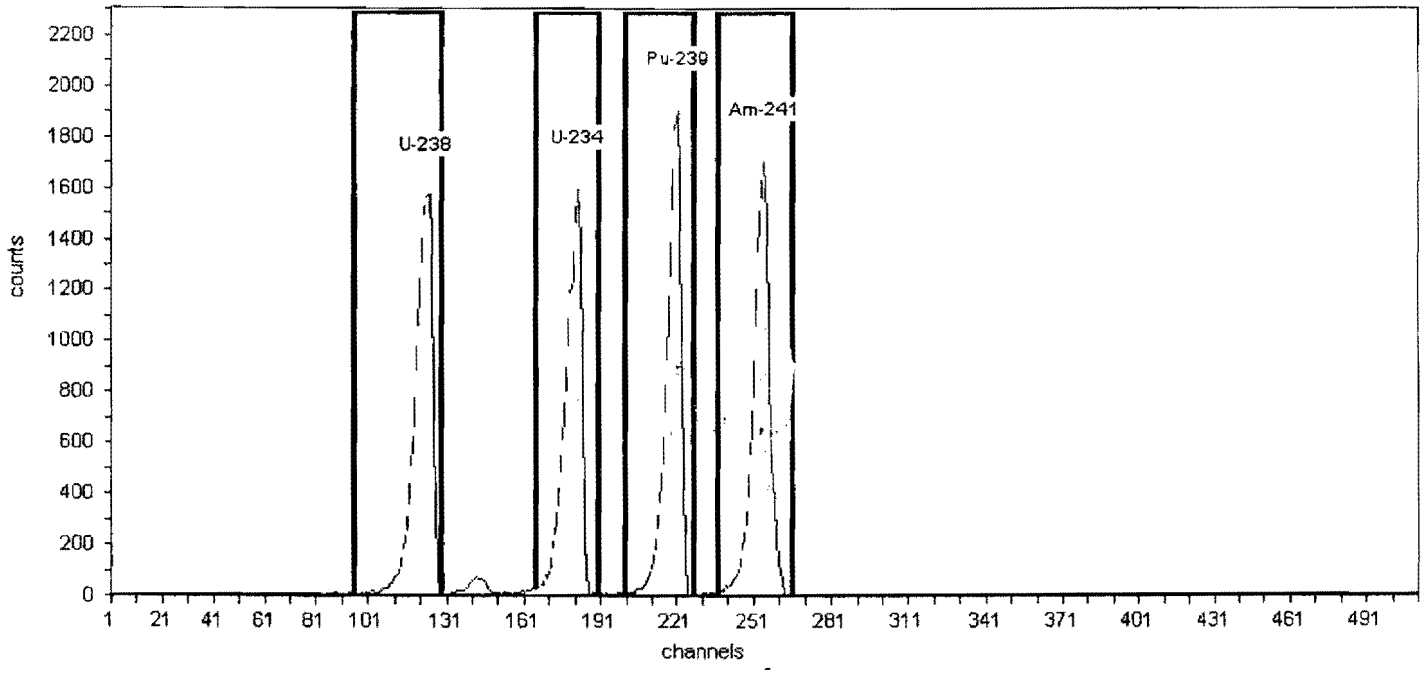
Detector: 262 - B5 , SN: 72020
Acquisition Start Date: 04/24/09 10:36:11

Live Time: 420.00 min.
Real Time: 420.02 min.

Efficiency Calibration Name: B5 Calib 4-24-09

Energy Calibration Equation:
Gain = 9.7709 keV / Ch
Offset = 2,995.45 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.61% +/- 1.09% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,502.00 | 29.77 |
| U-234 | 182 | 4.78 | 165 | 190 | 12,048.00 | 28.69 |
| Pu-239 | 221 | 5.16 | 200 | 227 | 12,539.00 | 29.85 |
| Am-241 | 255 | 5.49 | 237 | 266 | 12,147.00 | 28.92 |

**AlphaVision v5.3**

# Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B6

09:05:37 05/25/10

## Calibration

Energy Calibration: B6 Calib 4-28-09
Description:

Analysis Date: 04/28/09 16:42:13
Calibration Type: Energy

## Source Info

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

## Acquisition

Detector: 262 - B6 , SN: 59508
Acquisition Start Date: 04/28/09 09:22:57

Live Time: 420.00 min.
Real Time: 420.08 min.

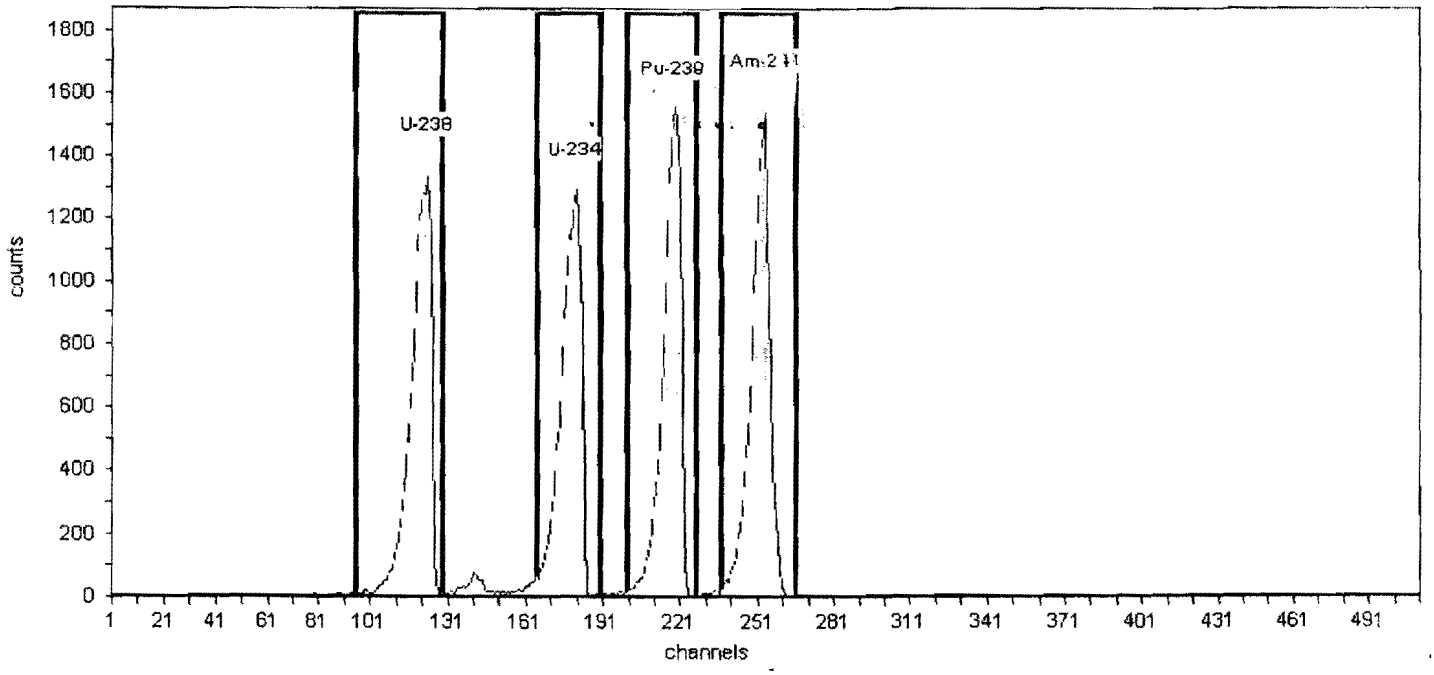
Efficiency Calibration Name: B6 Calib 4-28-09

Energy Calibration Equation:
Gain = 9.8800 keV / Ch

Offset = 2,988.98 keV

Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 23.42% +/- 0.78% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,277.00 | 29.23 |
| U-234 | 180 | 4.78 | 165 | 190 | 11,973.00 | 28.51 |
| Pu-239 | 218 | 5.16 | 200 | 227 | 12,584.00 | 29.96 |
| Am-241 | 254 | 5.49 | 237 | 266 | 12,400.00 | 29.52 |

**AlphaVision v5.3** **Alpha-Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B7
09:05:43 05/25/10

### Calibration

Energy Calibration: B7 Calib 4-28-09
Description:

Analysis Date: 04/29/09 09:01:54
Calibration Type: Efficiency

### Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

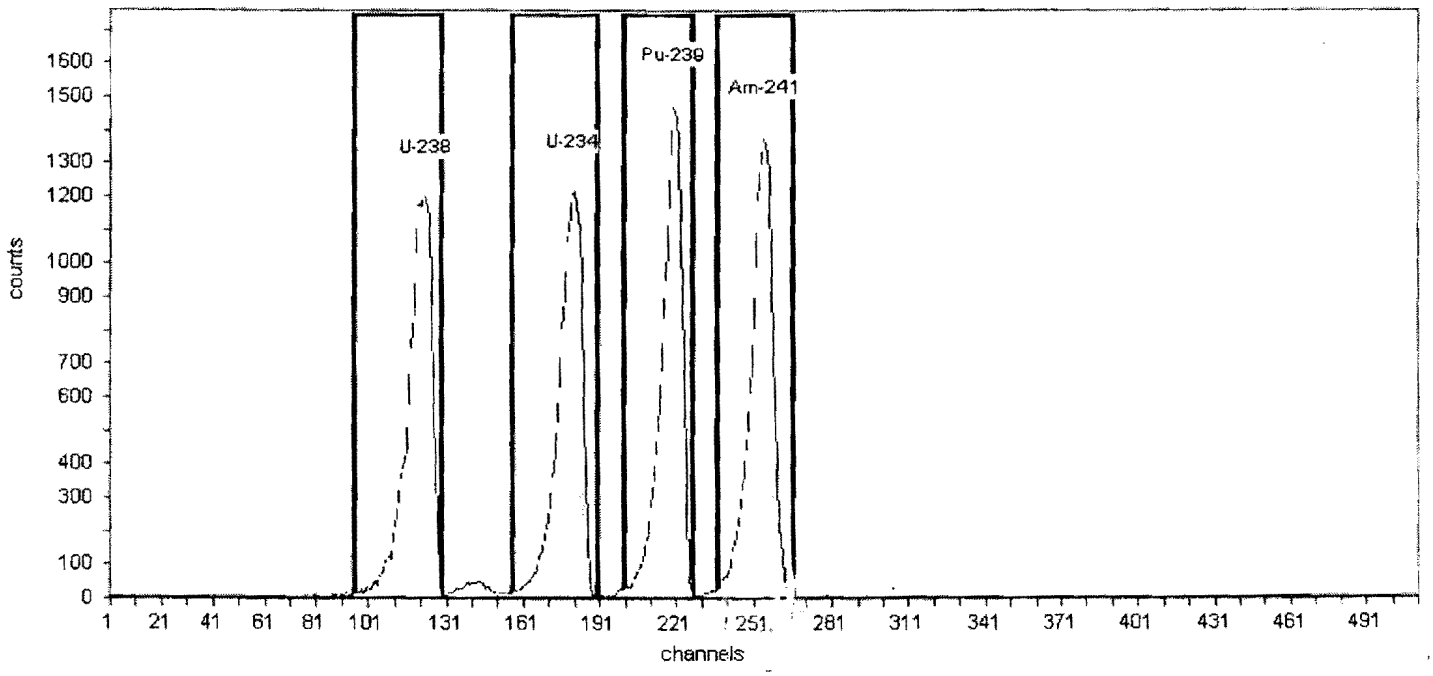
Detector: 262 - B7 , SN: 38-131EE2
Acquisition Start Date: 04/28/09 09:24:06

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: B7 Calib 4-28-09

Energy Calibration Equation:
Gain = 9.7669 keV / Ch
Offset = 3,003.56 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.79% +/- 0.85% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,378.00 | 31.85 |
| U-234 | 180 | 4.78 | 156 | 190 | 13,288.00 | 31.64 |
| Pu-239 | 220 | 5.16 | 200 | 227 | 13,861.00 | 33.00 |
| Am-241 | 255 | 5.49 | 237 | 266 | 13,605.00 | 32.39 |

**AlphaVision v5.3** **Alpha-Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 262 - B8
09:05:49 05/25/10

### Calibration

Energy Calibration: B8 Calib 4-28-09
Description:

Analysis Date: 04/29/09 09:02:36
Calibration Type: Energy

### Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

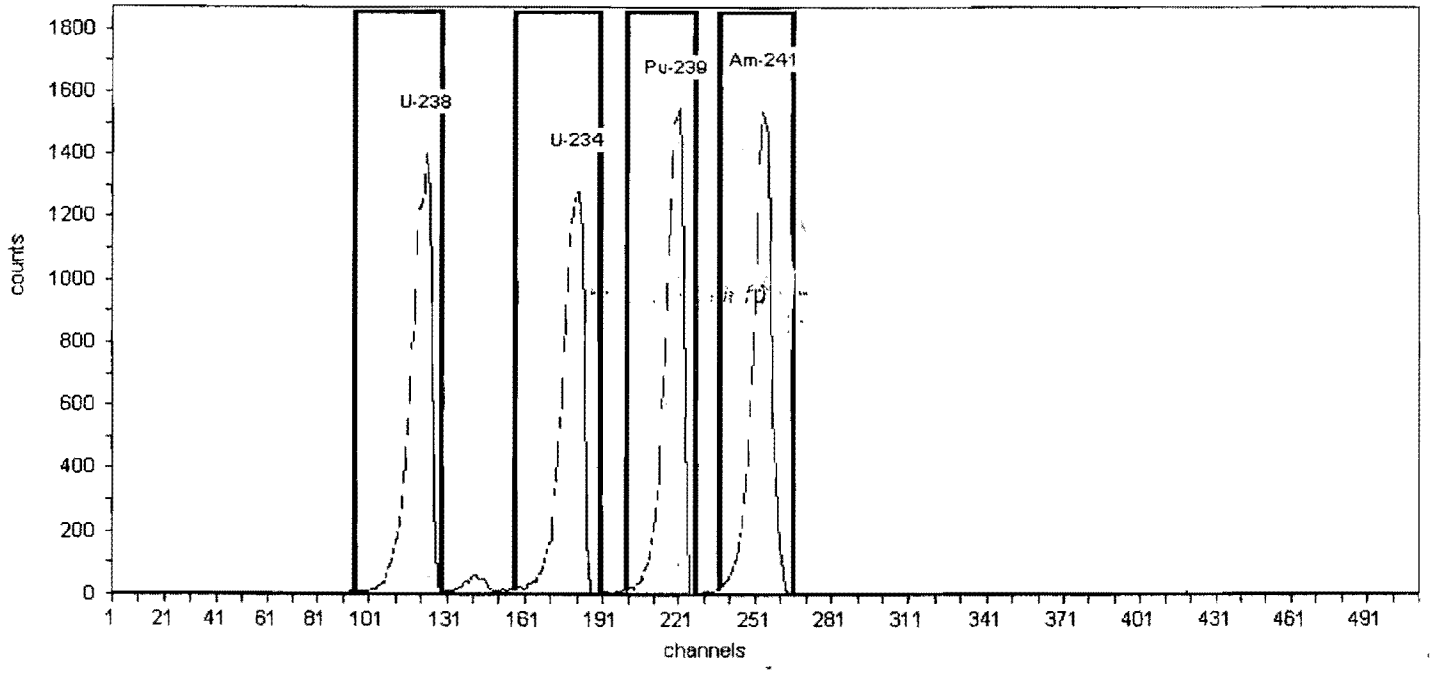
Detector: 262 - B8 , SN: 72011
Acquisition Start Date: 04/28/09 09:24:34

Live Time: 420.00 min.
Real Time: 420.07 min.

Efficiency Calibration Name: B8 Calib 4-28-09

Energy Calibration Equation:
Gain = 9.8444 keV / Ch
Offset = 2,988.48 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.74% +/- 0.82% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,050.00 | 31.07 |
| U-234 | 181 | 4.78 | 157 | 190 | 12,511.00 | 29.79 |
| Pu-239 | 220 | 5.16 | 200 | 227 | 13,252.00 | 31 55 |
| Am-241 | 254 | 5.49 | 237 | 266 | 13,140.00 | 31 29 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C1
09:05:56 05/25/10

### Calibration

Energy Calibration: C1 Calib 8-25-09
Description:

Analysis Date: 08/26/09 10:45:34
Calibration Type: Energy

### Source Info

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

### Acquisition

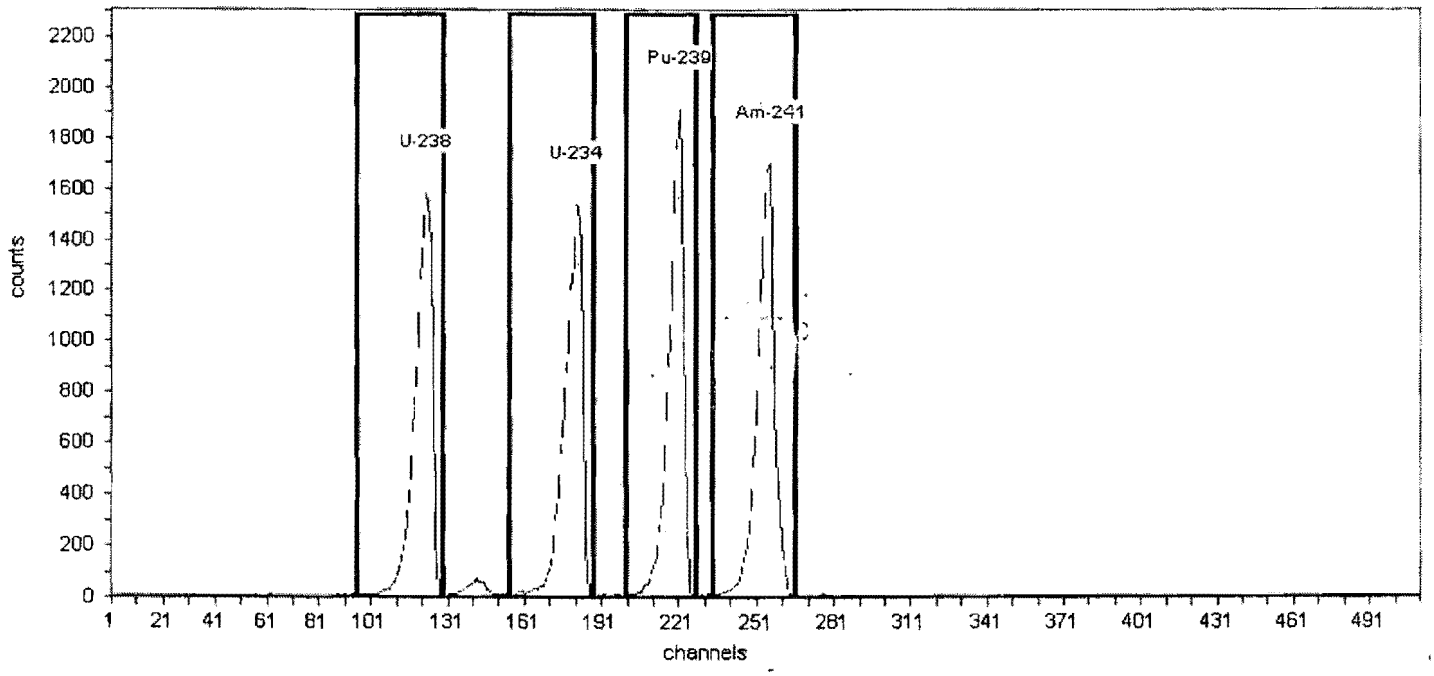
Detector: 263 - C1 , SN: 59504
Acquisition Start Date: 08/25/09 10:44:06

Live Time: 420.00 min.
Real Time: 420.08 min.

Efficiency Calibration Name: C1 Calib 8-25-09

Energy Calibration Equation:
Gain = 9.6250 keV / Ch
Offset = 3,026.36 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.04% +/- 1.11% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 122 | 4.20 | 95 | 129 | 12,494.00 | 29.75 |
| U-234 | 181 | 4.78 | 155 | 188 | 12,307.00 | 29.30 |
| Pu-239 | 221 | 5.16 | 200 | 227 | 12,591.00 | 29.98 |
| Am-241 | 256 | 5.49 | 234 | 266 | 12,569.00 | 29.93 |

**AlphaVision v5.3**

# Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C2

09:06:01 05/25/10

## Calibration

Energy Calibration: C2 Calib 8-26-09
Description:

Analysis Date: 08/27/09 14:02:25
Calibration Type: Energy

## Source Info

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

## Acquisition

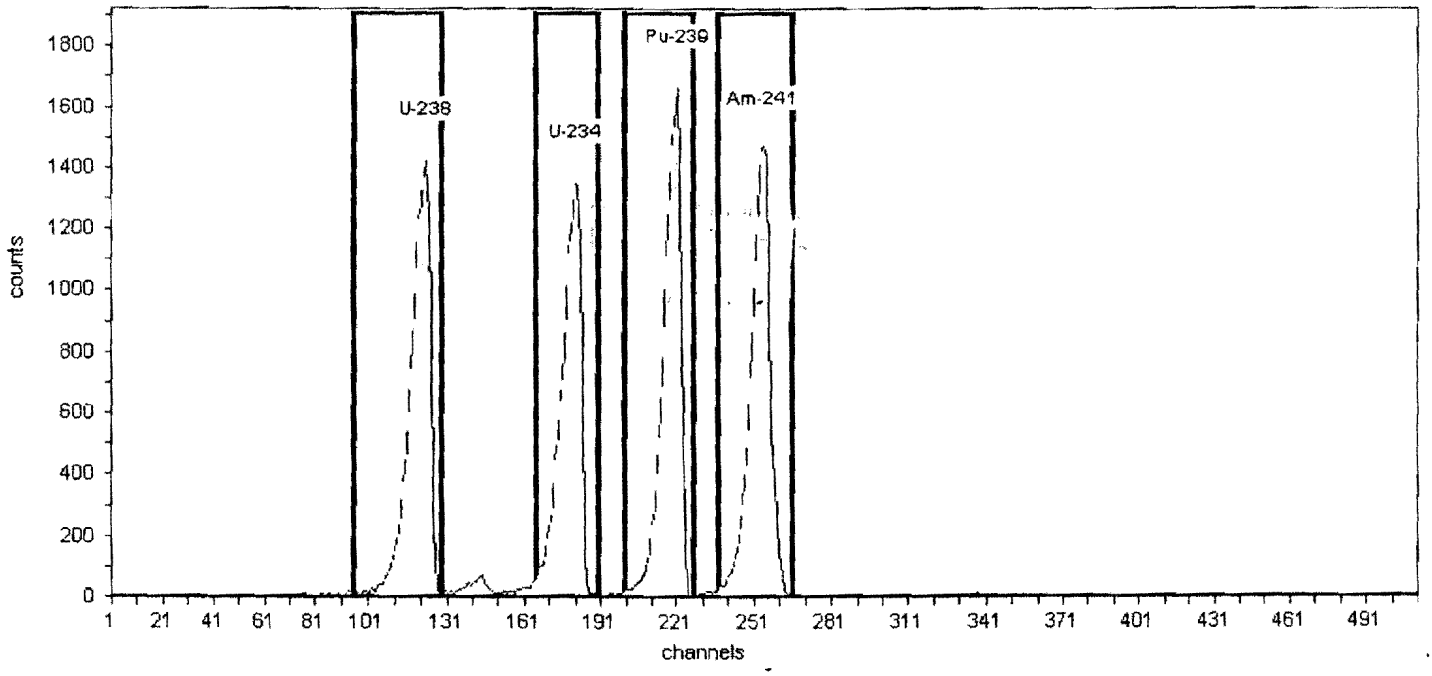
Detector: 263 - C2 , SN: 43351
Acquisition Start Date: 08/26/09 17:48:06

Live Time: 420.00 min.
Real Time: 420.02 min.

Efficiency Calibration Name: C2 Calib 8-26-09

Energy Calibration Equation:
Gain = 9.8175 keV / Ch
Offset = 2,991.27 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.61% +/- 0.82% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 13,022.00 | 31.00 |
| U-234 | 181 | 4.78 | 165 | 190 | 12,619.00 | 30.05 |
| Pu-239 | 221 | 5.16 | 200 | 227 | 13,156.00 | 31.32 |
| Am-241 | 254 | 5.49 | 237 | 266 | 12,938.00 | 30.80 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C3
09:06:07 05/25/10

### Calibration

Energy Calibration: C3 Calib 8-25-09
Description:

Analysis Date: 08/26/09 10:49:59
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

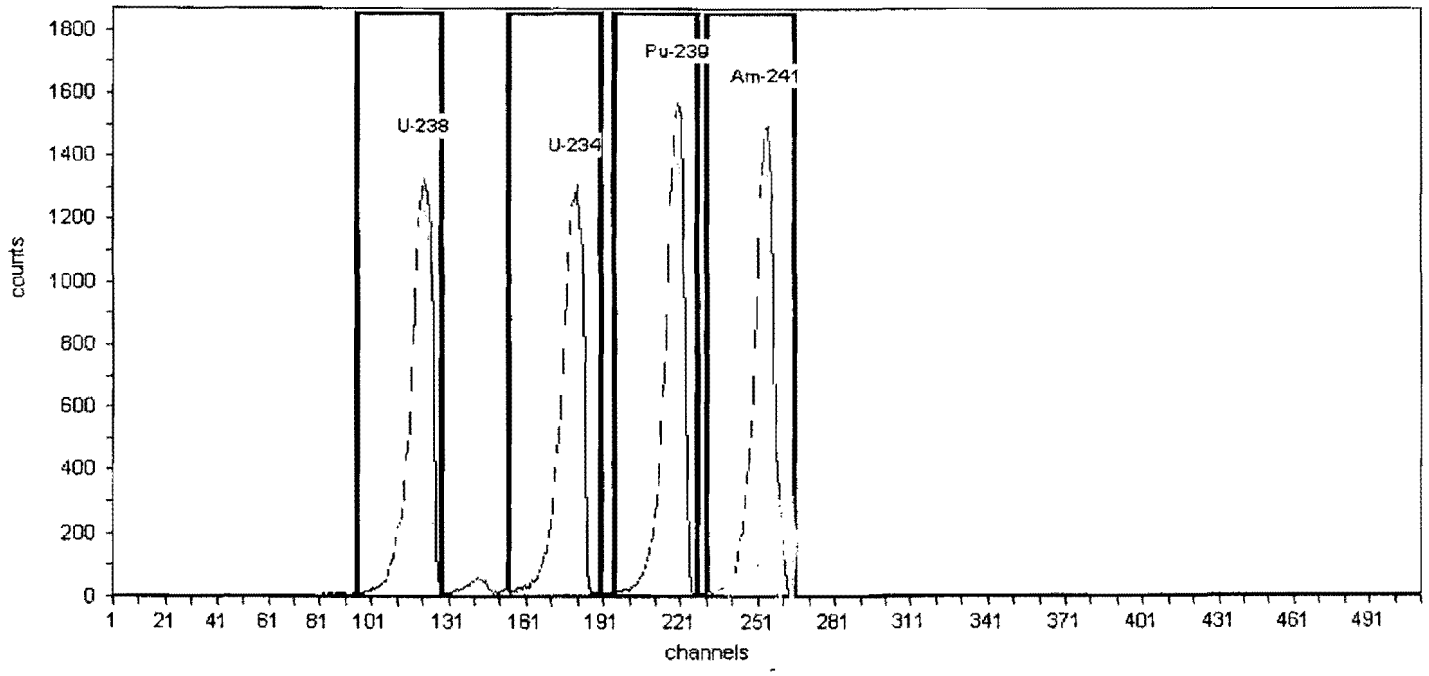
Detector: 263 - C3 , SN: 43349
Acquisition Start Date: 08/25/09 10:44:38

Live Time: 420.00 min.
Real Time: 420.08 min.

Efficiency Calibration Name: C3 Calib 8-25-09

Energy Calibration Equation:
Gain = 9.6846 keV / Ch
Offset = 3,026.83 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.32% +/- 0.83% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 121 | 4.20 | 95 | 128 | 13,244.00 | 31.53 |
| U-234 | 180 | 4.78 | 154 | 190 | 12,852.00 | 30.60 |
| Pu-239 | 220 | 5.16 | 195 | 227 | 13,642.00 | 32.48 |
| Am-241 | 254 | 5.49 | 231 | 265 | 13,317.00 | 31.71 |

**AlphaVision v5.3**

# Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C4
09:06:13 05/25/10

## Calibration

Energy Calibration: C4 Calib 8-25-09
Description:

Analysis Date: 08/26/09 10:51:48
Calibration Type: Energy

## Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

## Acquisition

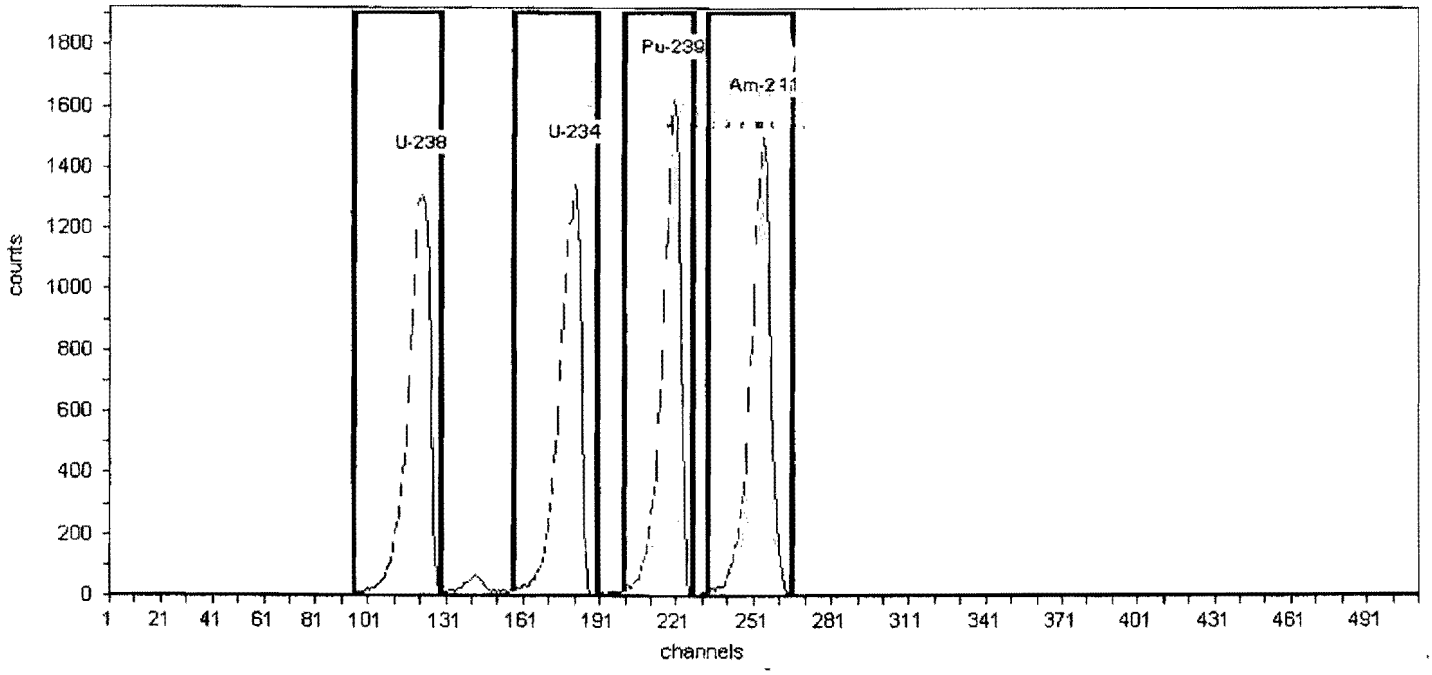
Detector: 263 - C4 , SN: 40-018HH5
Acquisition Start Date: 08/25/09 10:44:52

Live Time: 420.00 min.
Real Time: 420.09 min.

Efficiency Calibration Name: C4 Calib 8-25-09

Energy Calibration Equation:
Gain = 9.6386 keV / Ch
Offset = 3.030.93 keV
Quadratic = 0.0000 keV / Ch²

Efficiency: 25.23% +/- 0.83% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 121 | 4.20 | 95 | 129 | 13,061.00 | 31.10 |
| U-234 | 181 | 4.78 | 157 | 190 | 13,064.00 | 31.10 |
| Pu-239 | 220 | 5.16 | 200 | 227 | 13,554.00 | 32.27 |
| Am-241 | 255 | 5.49 | 233 | 266 | 13,236.00 | 31.51 |

**AlphaVision v5.3**

# Alpha-Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C5
09:06:19 05/25/10

## Calibration

Energy Calibration: C5 Calib 8-26-09
Description:

Analysis Date: 08/26/09 17:41:10
Calibration Type: Energy And Efficiency

## Source Info

Certificate ID: 62919A-526
Prepared by: Analytics
Description:

Certification Date: 01/18/02 11:00:28

## Acquisition

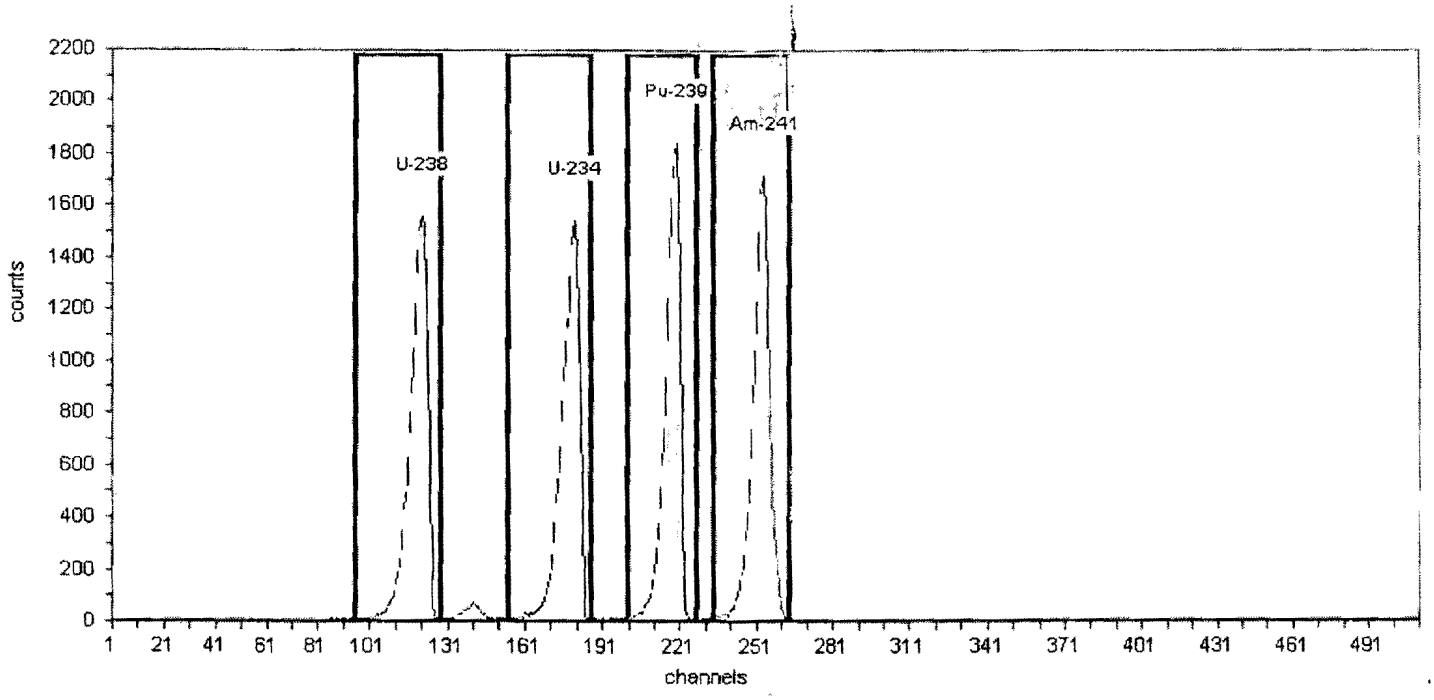
Detector: 263 - C5 , SN: 43348
Acquisition Start Date: 08/26/09 10:38:56

Live Time: 420.00 min.
Real Time: 420.08 min.

Efficiency Calibration Name: C5 Calib 8-26-09

Energy Calibration Equation:
Gain = 9.6846 keV / Ch
Offset = 3,026.83 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.97% +/- 1.11% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

## Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 121 | 4.20 | 95 | 128 | 12,657.00 | 30.14 |
| U-234 | 180 | 4.78 | 154 | 186 | 12,084.00 | 28.77 |
| Pu-239 | 220 | 5.16 | 200 | 227 | 12,532.00 | 29.84 |
| Am-241 | 254 | 5.49 | 234 | 264 | 12,510.00 | 29.79 |

# AlphaVision v5.3

## Alpha Spectroscopy Calibration Report

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C6

09:06:32 05/25/10

### Calibration

Energy Calibration: C6 Calib 8-26-09
Description:

Analysis Date: 08/26/09 17:42:15
Calibration Type: Energy

### Source Info

Certificate ID: 70719-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

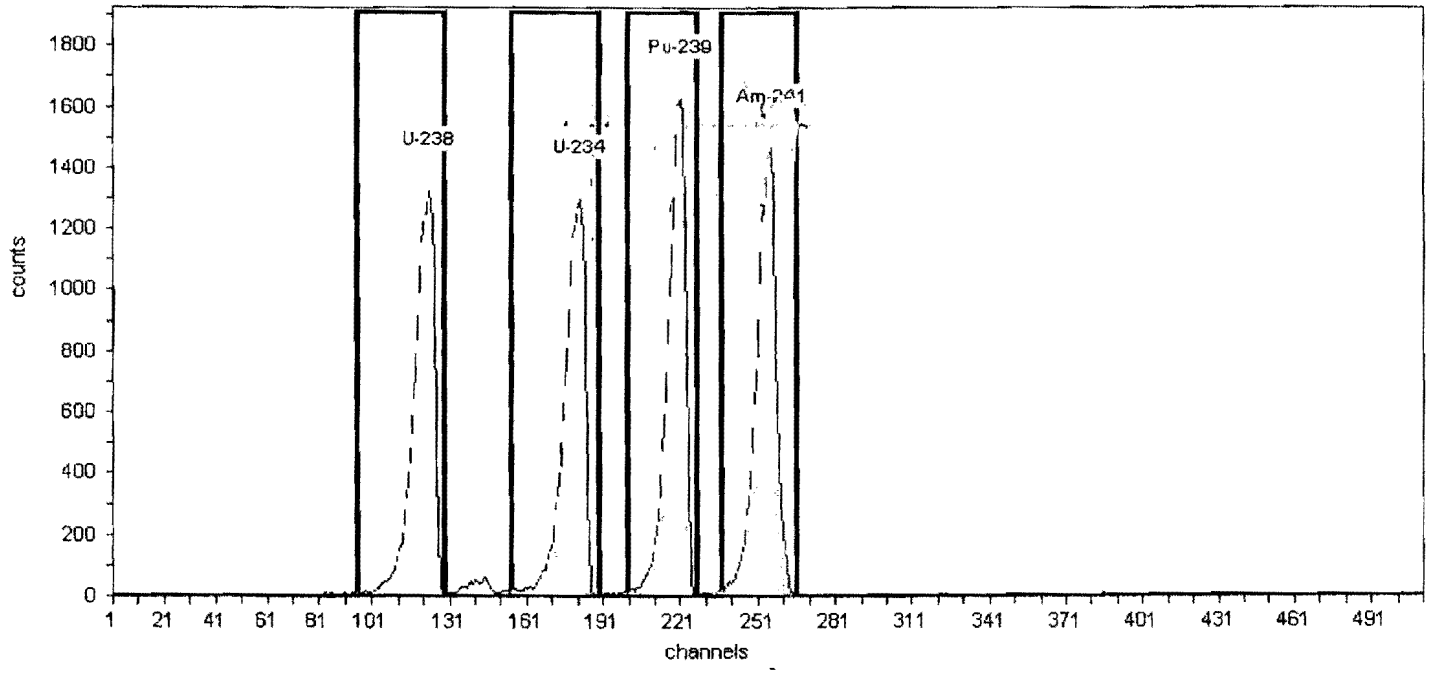
Detector: 263 - C6 , SN: 43352
Acquisition Start Date: 08/26/09 10:39:10

Live Time: 420.00 min.
Real Time: 420.08 min.

Efficiency Calibration Name: C6 Calib 8-26-09

Energy Calibration Equation:
Gain = 9.7102 keV / Ch
Offset = 3,004.89 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 24.36% +/- 0.81% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 123 | 4.20 | 95 | 129 | 12,556.00 | 29.90 |
| U-234 | 182 | 4.78 | 155 | 189 | 12,408.00 | 29.54 |
| Pu-239 | 221 | 5.16 | 200 | 227 | 13,232.00 | 31.50 |
| Am-241 | 256 | 5.49 | 237 | 266 | 12,849.00 | 30.59 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C7
09:06:38 05/25/10

### Calibration

Energy Calibration: C7 Calib 08-26-09
Description:

Analysis Date: 08/27/09 14:03:10
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 70720-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

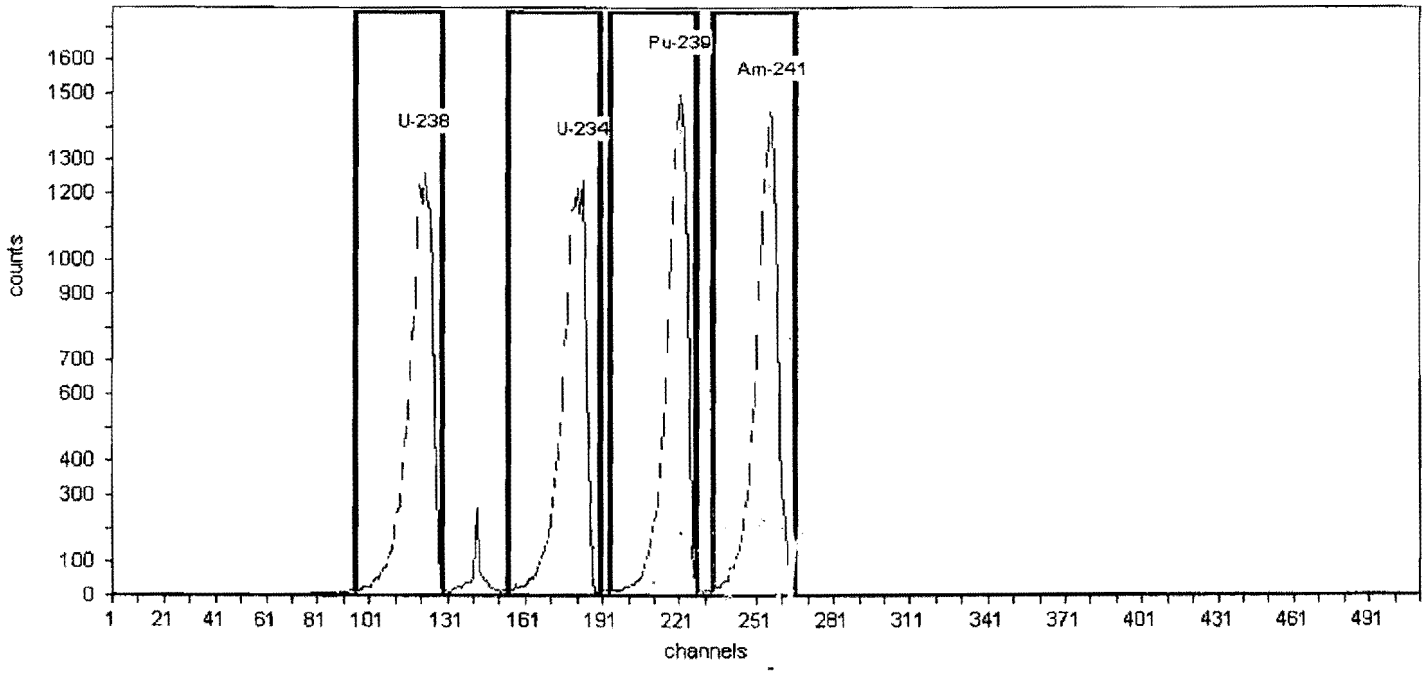
Detector: 263 - C7 , SN: 38-131EE5
Acquisition Start Date: 08/26/09 17:47:54

Live Time: 420.00 min.
Real Time: 420.04 min.

Efficiency Calibration Name: C7 Calib 08-26-09

Energy Calibration Equation:
Gain = 9.5915 keV / Ch
Offset = 3,025.68 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 26.11% +/- 0.86% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 122 | 4.20 | 95 | 129 | 13,659.00 | 32.52 |
| U-234 | 183 | 4.78 | 154 | 190 | 13,168.00 | 31.35 |
| Pu-239 | 221 | 5.16 | 194 | 227 | 14,078.00 | 33.52 |
| Am-241 | 257 | 5.49 | 234 | 266 | 13,782.00 | 32.81 |

**AlphaVision v5.3** **Alpha Spectroscopy Calibration Report**

ORTEC
801 S. Illinois Ave.
Oak Ridge, TN 37830

Analyst: jarmstrong
Detector: 263 - C8
09:06:46 05/25/10

### Calibration

Energy Calibration: C8 Calib 8-26-09
Description:

Analysis Date: 08/26/09 17:44:25
Calibration Type: Energy And Efficiency

### Source Info

Certificate ID: 70721-526
Prepared by: Analytics
Description:

Certification Date: 05/10/05 11:00:00

### Acquisition

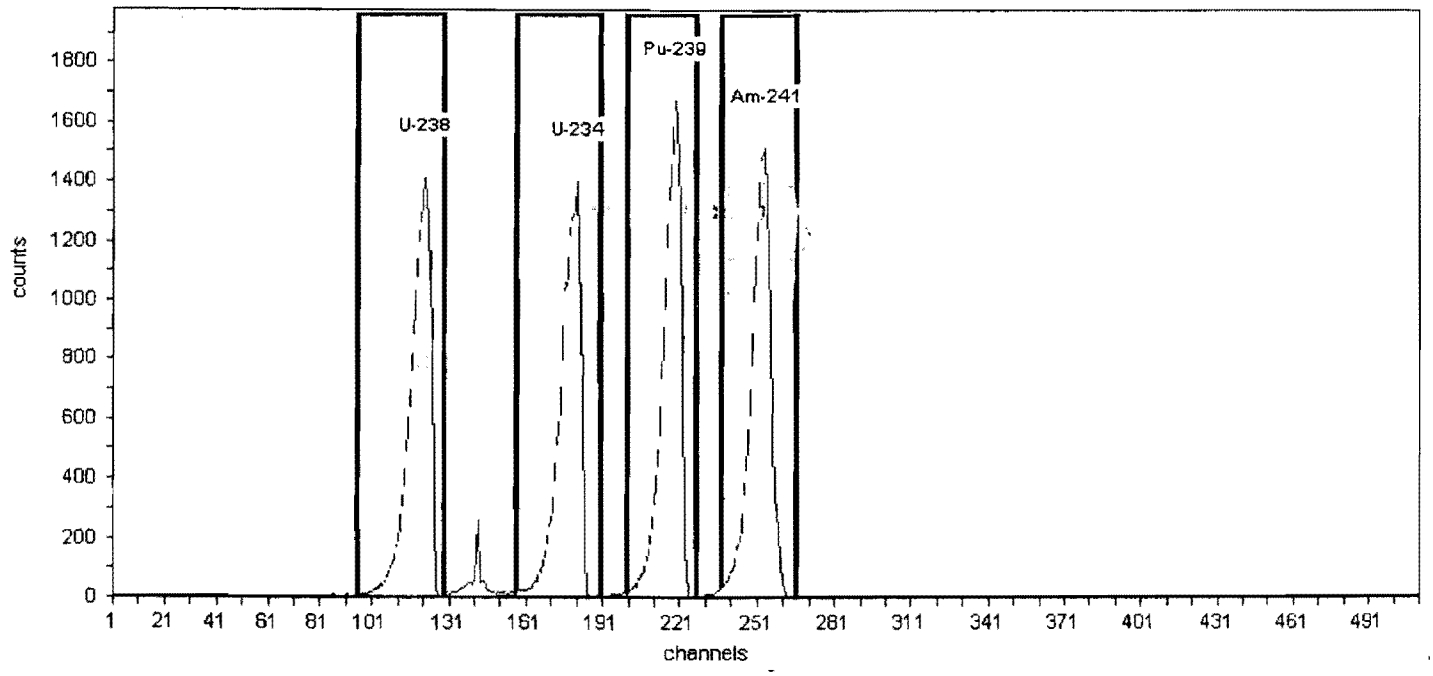
Detector: 263 - C8 , SN: 59506
Acquisition Start Date: 08/26/09 10:42:36

Live Time: 420.00 min.
Real Time: 420.08 min.

Efficiency Calibration Name: C8 Calib 8-26-09

Energy Calibration Equation:
Gain = 9.7233 keV / Ch
Offset = 3,019.34 keV
Quadratic = 0.0000 keV / Ch$^2$

Efficiency: 25.04% +/- 0.83% TPU(2 sigma)




Method: Interactive ROI
Algorithm: Linear

Initial Calibration: Yes
Shelf: 1

### Nuclide Activity Summary

| Nuclide | Peak Channel | Peak Energy MeV | ROI Start Channel | ROI End Channel | Gross Counts | Net Count Rate (cpm) |
|---|---|---|---|---|---|---|
| U-238 | 121 | 4.20 | 95 | 129 | 13,133.00 | 31.27 |
| U-234 | 181 | 4.78 | 157 | 190 | 12,768.00 | 30.40 |
| Pu-239 | 219 | 5.16 | 200 | 227 | 13,467.00 | 32.06 |
| Am-241 | 254 | 5.49 | 237 | 266 | 13,176.00 | 31.37 |

Alpha Calibration Report 2/24/2011 11:37:29

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008038.cn
Detector Name: A_1_1A
Chamber Serial Number: 10043743A
Detector Serial Number: 57895
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:25 by Countroom
Shape Calibration: 4/9/2010 20:07:25 by Countroom
Efficiency Calibration: 4/9/2010 20:56:03 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.994 MeV + 4.8826E-003*ch
FWHM = 5.7654E-002 MeV
Low Tail = 1.6117E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 247.40 | 0.1602 | 12.16 | 0.4148 | 3.34 | 0.3168 |
| 4.775 | 364.50 | 0.1651 | 11.24 | 0.4134 | 2.51 | 0.2370 |
| 5.157 | 442.28 | 0.0962 | 10.40 | 0.2462 | 2.72 | 0.1765 |
| 5.486 | 510.34 | 0.0604 | 12.45 | 0.1619 | 4.66 | 0.2048 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2125
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1281E-001 | 8.76E-003 |
| 4.775 | 2.0826E-001 | 8.58E-003 |
| 5.157 | 2.1141E-001 | 8.70E-003 |
| 5.486 | 2.1776E-001 | 8.96E-003 |

Alpha Calibration Report 2/24/2011 11:37:39

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008039.cn
Detector Name: A_1_1B
Chamber Serial Number: 10043743B
Detector Serial Number: 57896
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:23 by Countroom
Shape Calibration: 4/9/2010 20:07:23 by Countroom
Efficiency Calibration: 4/9/2010 20:56:53 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8833E-003*ch
FWHM = 6.0195E-002 MeV
Low Tail = 1.4244E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.48 | 0.2084 | 14.04 | 0.5381 | 3.84 | 0.4115 |
| 4.775 | 365.76 | 0.2480 | 12.68 | 0.6162 | 2.72 | 0.3372 |
| 5.157 | 443.89 | 0.1604 | 10.72 | 0.3957 | 2.27 | 0.2129 |
| 5.486 | 511.75 | 0.1078 | 12.59 | 0.2771 | 3.35 | 0.2043 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.1922
Uncertainty: +/- 0.0040

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 1.9170E-001 | 7.90E-003 |
| 4.775 | 1.9452E-001 | 8.02E-003 |
| 5.157 | 1.9294E-001 | 7.95E-003 |
| 5.486 | 1.8977E-001 | 7.82E-003 |

Alpha Calibration Report 2/24/2011 11:37:45

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008040.cn
Detector Name: A_1_2A
Chamber Serial Number: 10043744A
Detector Serial Number: 57897
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:21 by Countroom
Shape Calibration: 4/9/2010 20:07:21 by Countroom
Efficiency Calibration: 4/9/2010 20:57:28 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

---

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.977 MeV + 4.9125E-003*ch
FWHM = 5.6717E-002 MeV
Low Tail = 1.1572E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.85 | 0.2425 | 12.69 | 0.6064 | 2.82 | 0.3470 |
| 4.775 | 366.26 | 0.2711 | 10.35 | 0.6342 | 1.63 | 0.2370 |
| 5.157 | 443.16 | 0.1640 | 10.35 | 0.4064 | 2.17 | 0.2143 |
| 5.486 | 510.85 | 0.1463 | 12.55 | 0.3761 | 3.37 | 0.2785 |

---

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2164
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1893E-001 | 8.99E-003 |
| 4.775 | 2.1235E-001 | 8.73E-003 |
| 5.157 | 2.1768E-001 | 8.94E-003 |
| 5.486 | 2.1681E-001 | 8.91E-003 |

Alpha Calibration Report 2/24/2011 11:37:52

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008041.cn
Detector Name: A_1_2B
Chamber Serial Number: 10043744B
Detector Serial Number: 57898
Geometry Description: Shelf 2

Energy Calibration: 4/9/2010 20:07:19 by Countroom
Shape Calibration: 4/9/2010 20:07:19 by Countroom
Efficiency Calibration: 4/9/2010 20:58:18 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

---

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8889E-003*ch
FWHM = 5.9682E-002 MeV
Low Tail = 1.3980E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.38 | 0.2286 | 12.68 | 0.5722 | 2.91 | 0.3425 |
| 4.775 | 365.30 | 0.2707 | 12.25 | 0.6691 | 2.61 | 0.3646 |
| 5.157 | 443.34 | 0.1612 | 10.52 | 0.4021 | 2.30 | 0.2238 |
| 5.486 | 511.25 | 0.1282 | 13.21 | 0.3346 | 3.90 | 0.2863 |

---

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2196
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2324E-001 | 9.16E-003 |
| 4.775 | 2.1019E-001 | 8.64E-003 |
| 5.157 | 2.2270E-001 | 9.14E-003 |
| 5.486 | 2.2328E-001 | 9.17E-003 |

Alpha Calibration Report 2/24/2011 11:37:58

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008046.cn
Detector Name: A_1_3A
Chamber Serial Number: 10043745A
Detector Serial Number: 57907
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:21 by Countroom
Shape Calibration: 4/10/2010 04:25:21 by Countroom
Efficiency Calibration: 4/11/2010 09:13:21 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.9113E-003*ch
FWHM = 4.9657E-002 MeV
Low Tail = 1.0633E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.68 | 0.1668 | 9.38 | 0.4059 | 1.80 | 0.1915 |
| 4.775 | 365.32 | 0.2136 | 9.66 | 0.5138 | 1.80 | 0.2335 |
| 5.157 | 442.69 | 0.1250 | 9.10 | 0.3121 | 2.07 | 0.1844 |
| 5.486 | 510.49 | 0.1062 | 11.42 | 0.2816 | 3.77 | 0.2876 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2122
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1425E-001 | 8.81E-003 |
| 4.775 | 2.1233E-001 | 8.74E-003 |
| 5.157 | 2.0801E-001 | 8.57E-003 |
| 5.486 | 2.1434E-001 | 8.82E-003 |

Alpha Calibration Report 2/24/2011 11:38:04

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008047.cn
Detector Name: A_1_3B
Chamber Serial Number: 10043745B
Detector Serial Number: 57908
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:19 by Countroom
Shape Calibration: 4/10/2010 04:25:19 by Countroom
Efficiency Calibration: 4/11/2010 09:13:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9138E-003*ch
FWHM = 5.5624E-002 MeV
Low Tail = 1.1330E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.30 | 0.2335 | 10.97 | 0.5638 | 2.06 | 0.2590 |
| 4.775 | 365.46 | 0.2546 | 11.48 | 0.6198 | 2.25 | 0.3011 |
| 5.157 | 443.37 | 0.1808 | 9.78 | 0.4378 | 1.88 | 0.2079 |
| 5.486 | 510.82 | 0.1427 | 12.50 | 0.3680 | 3.42 | 0.2808 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2061
Uncertainty: +/- 0.0042

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.0722E-001 | 8.52E-003 |
| 4.775 | 2.0660E-001 | 8.50E-003 |
| 5.157 | 2.0655E-001 | 8.49E-003 |
| 5.486 | 2.0413E-001 | 8.40E-003 |

Alpha Calibration Report 2/24/2011 11:38:10

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008048.cn
Detector Name: A_1_4A
Chamber Serial Number: 10043746A
Detector Serial Number: 57909
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:18 by Countroom
Shape Calibration: 4/10/2010 04:25:18 by Countroom
Efficiency Calibration: 4/11/2010 09:14:49 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.978 MeV + 4.9105E-003*ch
FWHM = 6.1770E-002 MeV
Low Tail = 1.4252E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.64 | 0.2563 | 13.20 | 0.6451 | 3.14 | 0.4035 |
| 4.775 | 365.77 | 0.3055 | 11.78 | 0.7376 | 2.24 | 0.3424 |
| 5.157 | 443.45 | 0.1886 | 10.35 | 0.4610 | 2.09 | 0.2324 |
| 5.486 | 510.66 | 0.1040 | 13.37 | 0.2745 | 4.27 | 0.2665 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2259
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2669E-001 | 9.30E-003 |
| 4.775 | 2.2972E-001 | 9.43E-003 |
| 5.157 | 2.2620E-001 | 9.28E-003 |
| 5.486 | 2.2142E-001 | 9.09E-003 |

Alpha Calibration Report 2/24/2011 11:38:16

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008049.cn
Detector Name: A_1_4B
Chamber Serial Number: 10043746B
Detector Serial Number: 57910
Geometry Description: Shelf 2

Energy Calibration: 4/10/2010 04:25:17 by Countroom
Shape Calibration: 4/10/2010 04:25:17 by Countroom
Efficiency Calibration: 4/11/2010 09:15:19 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.983 MeV + 4.8903E-003*ch
FWHM = 6.1459E-002 MeV
Low Tail = 1.4881E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.90 | 0.2617 | 14.07 | 0.6789 | 3.91 | 0.5283 |
| 4.775 | 366.20 | 0.2507 | 12.28 | 0.6192 | 2.63 | 0.3381 |
| 5.157 | 444.23 | 0.1492 | 10.51 | 0.3722 | 2.31 | 0.2086 |
| 5.486 | 511.79 | 0.1047 | 13.52 | 0.2778 | 4.49 | 0.2876 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2164
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1779E-001 | 8.95E-003 |
| 4.775 | 2.1023E-001 | 8.64E-003 |
| 5.157 | 2.1880E-001 | 8.98E-003 |
| 5.486 | 2.1948E-001 | 9.02E-003 |

Alpha Calibration Report 2/24/2011 11:38:22

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008054.cn
Detector Name: A_1_5A
Chamber Serial Number: 10043747A
Detector Serial Number: 57911
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:41 by Countroom
Shape Calibration: 4/11/2010 17:28:41 by Countroom
Efficiency Calibration: 4/11/2010 18:32:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.984 MeV + 4.8897E-003*ch
FWHM = 5.1623E-002 MeV
Low Tail = 1.1344E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.03 | 0.1877 | 10.55 | 0.4664 | 2.32 | 0.2634 |
| 4.775 | 366.42 | 0.1888 | 9.07 | 0.4492 | 1.54 | 0.1819 |
| 5.157 | 443.58 | 0.1267 | 9.77 | 0.3224 | 2.42 | 0.2140 |
| 5.486 | 511.89 | 0.0975 | 11.56 | 0.2593 | 3.85 | 0.2678 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2092
Uncertainty: +/- 0.0043

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.0798E-001 | 8.56E-003 |
| 4.775 | 2.0844E-001 | 8.59E-003 |
| 5.157 | 2.1016E-001 | 8.65E-003 |
| 5.486 | 2.1030E-001 | 8.66E-003 |

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008055.cn
Detector Name: A_1_5B
Chamber Serial Number: 10043747B
Detector Serial Number: 57912
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:40 by Countroom
Shape Calibration: 4/11/2010 17:28:40 by Countroom
Efficiency Calibration: 4/11/2010 18:33:27 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.983 MeV + 4.9065E-003*ch
FWHM = 5.5961E-002 MeV
Low Tail = 1.1378E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.00 | 0.2314 | 12.16 | 0.5731 | 2.64 | 0.3181 |
| 4.775 | 365.10 | 0.2336 | 10.43 | 0.5549 | 1.79 | 0.2285 |
| 5.157 | 442.90 | 0.1554 | 9.44 | 0.3765 | 1.77 | 0.1730 |
| 5.486 | 510.17 | 0.1051 | 12.51 | 0.2737 | 3.62 | 0.2274 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2047
Uncertainty: +/- 0.0042

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.0623E-001 | 8.48E-003 |
| 4.775 | 2.0457E-001 | 8.42E-003 |
| 5.157 | 2.0543E-001 | 8.45E-003 |
| 5.486 | 2.0278E-001 | 8.34E-003 |

Alpha Calibration Report 2/24/2011 11:38:34

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008056.cn
Detector Name: A_1_6A
Chamber Serial Number: 10043748A
Detector Serial Number: 57913
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:38 by Countroom
Shape Calibration: 4/11/2010 17:28:38 by Countroom
Efficiency Calibration: 4/11/2010 18:33:56 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.984 MeV + 4.8861E-003*ch
FWHM = 6.0193E-002 MeV
Low Tail = 1.5559E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.33 | 0.2342 | 13.18 | 0.5906 | 3.12 | 0.3682 |
| 4.775 | 365.93 | 0.2966 | 12.72 | 0.7289 | 2.64 | 0.3815 |
| 5.157 | 443.99 | 0.1659 | 10.60 | 0.4080 | 2.18 | 0.2105 |
| 5.486 | 511.96 | 0.0547 | 12.36 | 0.0752 | 3.28 | 0.0580 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2250
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2625E-001 | 9.28E-003 |
| 4.775 | 2.2317E-001 | 9.17E-003 |
| 5.157 | 2.2747E-001 | 9.33E-003 |
| 5.486 | 2.2324E-001 | 9.16E-003 |

Alpha Calibration Report 2/24/2011 11:38:41

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008057.cn
Detector Name: A_1_6B
Chamber Serial Number: 10043748B
Detector Serial Number: 57914
Geometry Description: Shelf 2

Energy Calibration: 4/11/2010 17:28:37 by Countroom
Shape Calibration: 4/11/2010 17:28:37 by Countroom
Efficiency Calibration: 4/11/2010 18:34:27 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.8993E-003*ch
FWHM = 5.9778E-002 MeV
Low Tail = 1.3391E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.58 | 0.2586 | 11.58 | 0.6258 | 2.21 | 0.2944 |
| 4.775 | 365.94 | 0.2326 | 11.57 | 0.5651 | 2.25 | 0.2726 |
| 5.157 | 443.70 | 0.1830 | 10.72 | 0.4510 | 2.27 | 0.2424 |
| 5.486 | 511.53 | 0.1042 | 13.00 | 0.2724 | 3.85 | 0.2333 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2243
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2589E-001 | 9.27E-003 |
| 4.775 | 2.2008E-001 | 9.04E-003 |
| 5.157 | 2.2431E-001 | 9.20E-003 |
| 5.486 | 2.2718E-001 | 9.32E-003 |

Alpha Calibration Report 2/24/2011 11:38:46

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008062.cn
Detector Name: A_2_1A
Chamber Serial Number: 12044979A
Detector Serial Number: 55794
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 01:36:29 by Countroom
Shape Calibration: 4/12/2010 01:36:29 by Countroom
Efficiency Calibration: 4/12/2010 10:36:04 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9081E-003*ch
FWHM = 4.9742E-002 MeV
Low Tail = 1.1055E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.76 | 0.1868 | 10.25 | 0.4602 | 2.16 | 0.2460 |
| 4.775 | 366.46 | 0.1968 | 9.22 | 0.4711 | 1.63 | 0.2009 |
| 5.157 | 443.65 | 0.1188 | 8.63 | 0.2934 | 1.80 | 0.1541 |
| 5.486 | 511.43 | 0.0731 | 10.91 | 0.1914 | 3.25 | 0.1667 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2205
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2008E-001 | 9.05E-003 |
| 4.775 | 2.1744E-001 | 8.95E-003 |
| 5.157 | 2.2335E-001 | 9.18E-003 |
| 5.486 | 2.2138E-001 | 9.10E-003 |

Alpha Calibration Report 2/24/2011 11:38:53

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008081.cn
Detector Name: A_2_1B
Chamber Serial Number: 12044979B
Detector Serial Number: 55795
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 02:51:58 by Countroom
Shape Calibration: 4/13/2010 02:51:58 by Countroom
Efficiency Calibration: 4/13/2010 09:49:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.990 MeV + 4.8791E-003*ch
FWHM = 5.7970E-002 MeV
Low Tail = 1.2280E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.13 | 0.2401 | 11.49 | 0.5867 | 2.28 | 0.2902 |
| 4.775 | 365.58 | 0.2491 | 10.98 | 0.5966 | 1.98 | 0.2617 |
| 5.157 | 443.76 | 0.1754 | 10.10 | 0.4278 | 1.99 | 0.2095 |
| 5.486 | 511.60 | 0.1069 | 12.93 | 0.2797 | 3.84 | 0.2418 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2148
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1391E-001 | 8.79E-003 |
| 4.775 | 2.1624E-001 | 8.89E-003 |
| 5.157 | 2.1645E-001 | 8.89E-003 |
| 5.486 | 2.1258E-001 | 8.74E-003 |

Alpha Calibration Report 2/24/2011 11:38:59

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008064.cn
Detector Name: A_2_2A
Chamber Serial Number: 12044980A
Detector Serial Number: 55796
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 02:27:31 by Countroom
Shape Calibration: 4/12/2010 02:27:31 by Countroom
Efficiency Calibration: 4/12/2010 10:37:23 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

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----- ENERGY / SHAPE CALIBRATION -----

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Version: Alpha Encal v1.1
Energy = 2.980 MeV + 4.9030E-003*ch
FWHM = 6.3766E-002 MeV
Low Tail = 1.5838E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.81 | 0.2348 | 14.09 | 0.6039 | 3.74 | 0.4427 |
| 4.775 | 365.84 | 0.2834 | 12.45 | 0.6928 | 2.54 | 0.3502 |
| 5.157 | 443.48 | 0.1886 | 11.05 | 0.4709 | 2.43 | 0.2654 |
| 5.486 | 511.07 | 0.1062 | 13.55 | 0.2794 | 4.12 | 0.2494 |

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----- EFFICIENCY CALIBRATION -----

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Version: Alpha Efcal v1.0
Avg Efficiency: 0.2232
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2518E-001 | 9.24E-003 |
| 4.775 | 2.2476E-001 | 9.23E-003 |
| 5.157 | 2.2219E-001 | 9.12E-003 |
| 5.486 | 2.2075E-001 | 9.06E-003 |

Alpha Calibration Report 2/24/2011 11:39:06

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008065.cn
Detector Name: A_2_2B
Chamber Serial Number: 12044980B
Detector Serial Number: 55797
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 02:27:35 by Countroom
Shape Calibration: 4/12/2010 02:27:35 by Countroom
Efficiency Calibration: 4/12/2010 10:38:36 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 3.011 MeV + 4.8460E-003*ch
FWHM = 5.9319E-002 MeV
Low Tail = 1.3484E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 245.56 | 0.2490 | 12.77 | 0.6251 | 2.97 | 0.3816 |
| 4.775 | 363.41 | 0.2480 | 12.22 | 0.6095 | 2.48 | 0.3112 |
| 5.157 | 442.44 | 0.1779 | 10.28 | 0.4331 | 2.05 | 0.2150 |
| 5.486 | 510.65 | 0.1089 | 12.98 | 0.2848 | 3.83 | 0.2444 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2199
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2099E-001 | 9.07E-003 |
| 4.775 | 2.1343E-001 | 8.77E-003 |
| 5.157 | 2.2116E-001 | 9.08E-003 |
| 5.486 | 2.2441E-001 | 9.21E-003 |

Alpha Calibration Report 2/24/2011 11:39:12

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008513.cn
Detector Name: A_2_3A
Chamber Serial Number: 12044981A
Detector Serial Number: 55798
Geometry Description: Shelf 2

Energy Calibration: 5/21/2010 18:14:32 by test
Shape Calibration: 5/21/2010 18:14:32 by test
Efficiency Calibration: 5/24/2010 08:34:35 by test
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 3.000 MeV + 4.9151E-003*ch
FWHM = 5.0565E-002 MeV
Low Tail = 1.1431E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 244.76 | 0.1645 | 10.27 | 0.4056 | 2.18 | 0.2184 |
| 4.775 | 360.70 | 0.1879 | 10.29 | 0.4605 | 2.12 | 0.2386 |
| 5.157 | 438.31 | 0.1171 | 8.95 | 0.2888 | 1.92 | 0.1570 |
| 5.486 | 506.04 | 0.0918 | 11.22 | 0.2412 | 3.48 | 0.2225 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2188
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2301E-001 | 9.16E-003 |
| 4.775 | 2.1742E-001 | 8.95E-003 |
| 5.157 | 2.1724E-001 | 8.93E-003 |
| 5.486 | 2.1778E-001 | 8.96E-003 |

Alpha Calibration Report 2/24/2011 11:39:18

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008514.cn
Detector Name: A_2_3B
Chamber Serial Number: 12044981B
Detector Serial Number: 55799
Geometry Description: Shelf 2

Energy Calibration: 5/21/2010 18:14:43 by test
Shape Calibration: 5/21/2010 18:14:43 by test
Efficiency Calibration: 5/24/2010 08:35:23 by test
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.996 MeV + 4.9199E-003*ch
FWHM = 6.0350E-002 MeV
Low Tail = 1.3732E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 244.47 | 0.2346 | 12.48 | 0.5854 | 2.81 | 0.3415 |
| 4.775 | 361.87 | 0.2679 | 10.34 | 0.6327 | 1.68 | 0.2451 |
| 5.157 | 438.44 | 0.2013 | 10.93 | 0.5045 | 2.44 | 0.2902 |
| 5.486 | 506.05 | 0.0939 | 12.84 | 0.2457 | 3.82 | 0.2132 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2134
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1364E-001 | 8.78E-003 |
| 4.775 | 2.1437E-001 | 8.82E-003 |
| 5.157 | 2.1494E-001 | 8.83E-003 |
| 5.486 | 2.1081E-001 | 8.67E-003 |

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008082.cn
Detector Name: A_2_4A
Chamber Serial Number: 12044982A
Detector Serial Number: 55800
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 17:41:27 by Countroom
Shape Calibration: 4/12/2010 17:41:27 by Countroom
Efficiency Calibration: 4/13/2010 09:49:41 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.986 MeV + 4.8860E-003*ch
FWHM = 5.8711E-002 MeV
Low Tail = 1.3220E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.15 | 0.2425 | 13.53 | 0.6145 | 3.28 | 0.3958 |
| 4.775 | 365.66 | 0.2464 | 12.84 | 0.6125 | 2.81 | 0.3416 |
| 5.157 | 443.85 | 0.1716 | 10.82 | 0.4211 | 2.23 | 0.2182 |
| 5.486 | 511.92 | 0.1374 | 12.09 | 0.3502 | 3.00 | 0.2332 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2250
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2869E-001 | 9.38E-003 |
| 4.775 | 2.2368E-001 | 9.19E-003 |
| 5.157 | 2.2797E-001 | 9.35E-003 |
| 5.486 | 2.1992E-001 | 9.03E-003 |

Alpha Calibration Report 2/24/2011 11:39:31

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008083.cn
Detector Name: A_2_4B
Chamber Serial Number: 12044982B
Detector Serial Number: 55801
Geometry Description: Shelf 2

Energy Calibration: 4/12/2010 18:36:12 by Countroom
Shape Calibration: 4/12/2010 18:36:12 by Countroom
Efficiency Calibration: 4/13/2010 09:50:10 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.981 MeV + 4.9105E-003*ch
FWHM = 5.8244E-002 MeV
Low Tail = 1.2717E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.52 | 0.2488 | 11.80 | 0.6090 | 2.37 | 0.3057 |
| 4.775 | 364.69 | 0.2607 | 11.99 | 0.6416 | 2.50 | 0.3371 |
| 5.157 | 442.73 | 0.1745 | 9.87 | 0.4254 | 1.94 | 0.2077 |
| 5.486 | 510.10 | 0.1153 | 12.83 | 0.2994 | 3.67 | 0.2441 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2158
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1617E-001 | 8.88E-003 |
| 4.775 | 2.1332E-001 | 8.77E-003 |
| 5.157 | 2.1771E-001 | 8.94E-003 |
| 5.486 | 2.1616E-001 | 8.88E-003 |

Alpha Calibration Report 2/24/2011 11:39:38

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008088.cn
Detector Name: A_2_5A
Chamber Serial Number: 12044983A
Detector Serial Number: 55802
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:15 by Countroom
Shape Calibration: 4/13/2010 16:52:15 by Countroom
Efficiency Calibration: 4/13/2010 20:11:11 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8898E-003*ch
FWHM = 5.1736E-002 MeV
Low Tail = 1.2152E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.63 | 0.1859 | 10.71 | 0.4630 | 2.38 | 0.2641 |
| 4.775 | 365.38 | 0.2055 | 10.17 | 0.4991 | 1.99 | 0.2421 |
| 5.157 | 443.10 | 0.1211 | 9.07 | 0.3014 | 1.98 | 0.1674 |
| 5.486 | 511.16 | 0.0784 | 11.34 | 0.2072 | 3.69 | 0.2066 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1858E-001 | 8.99E-003 |
| 4.775 | 2.1889E-001 | 9.01E-003 |
| 5.157 | 2.1963E-001 | 9.03E-003 |
| 5.486 | 2.1880E-001 | 9.00E-003 |

Alpha Calibration Report 2/24/2011 11:39:44

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008089.cn
Detector Name: A_2_5B
Chamber Serial Number: 12044983B
Detector Serial Number: 55803
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:14 by Countroom
Shape Calibration: 4/13/2010 16:52:14 by Countroom
Efficiency Calibration: 4/13/2010 20:11:42 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9039E-003*ch
FWHM = 5.8829E-002 MeV
Low Tail = 1.3010E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.40 | 0.2267 | 12.61 | 0.5701 | 2.97 | 0.3535 |
| 4.775 | 367.36 | 0.2642 | 10.23 | 0.6193 | 1.63 | 0.2332 |
| 5.157 | 444.10 | 0.1664 | 10.91 | 0.4173 | 2.54 | 0.2540 |
| 5.486 | 511.90 | 0.1109 | 12.75 | 0.2902 | 3.77 | 0.2487 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2130
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1648E-001 | 8.89E-003 |
| 4.775 | 2.1009E-001 | 8.64E-003 |
| 5.157 | 2.1299E-001 | 8.75E-003 |
| 5.486 | 2.1281E-001 | 8.75E-003 |

Alpha Calibration Report 2/24/2011 11:39:51

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008090.cn
Detector Name: A_2_6A
Chamber Serial Number: 12044984A
Detector Serial Number: 55804
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:12 by Countroom
Shape Calibration: 4/13/2010 16:52:12 by Countroom
Efficiency Calibration: 4/13/2010 20:12:14 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8867E-003*ch
FWHM = 5.9367E-002 MeV
Low Tail = 1.3752E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.66 | 0.2446 | 13.42 | 0.6146 | 3.15 | 0.3794 |
| 4.775 | 366.64 | 0.2589 | 12.30 | 0.6338 | 2.46 | 0.3176 |
| 5.157 | 444.54 | 0.1646 | 10.92 | 0.4079 | 2.35 | 0.2232 |
| 5.486 | 512.52 | 0.1137 | 12.46 | 0.2921 | 3.28 | 0.2115 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2248
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2815E-001 | 9.36E-003 |
| 4.775 | 2.2302E-001 | 9.16E-003 |
| 5.157 | 2.2375E-001 | 9.18E-003 |
| 5.486 | 2.2430E-001 | 9.21E-003 |

Alpha Calibration Report 2/24/2011 11:39:57

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008091.cn
Detector Name: A_2_6B
Chamber Serial Number: 12044984B
Detector Serial Number: 55805
Geometry Description: Shelf 2

Energy Calibration: 4/13/2010 16:52:11 by Countroom
Shape Calibration: 4/13/2010 16:52:11 by Countroom
Efficiency Calibration: 4/13/2010 20:12:47 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.978 MeV + 4.9004E-003*ch
FWHM = 5.9702E-002 MeV
Low Tail = 1.3766E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.50 | 0.2280 | 12.37 | 0.5676 | 2.74 | 0.3234 |
| 4.775 | 366.12 | 0.2513 | 12.00 | 0.6168 | 2.48 | 0.3224 |
| 5.157 | 444.25 | 0.1908 | 10.31 | 0.4656 | 2.04 | 0.2291 |
| 5.486 | 511.77 | 0.1173 | 12.83 | 0.2756 | 3.82 | 0.2345 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1924E-001 | 9.00E-003 |
| 4.775 | 2.1227E-001 | 8.73E-003 |
| 5.157 | 2.2292E-001 | 9.15E-003 |
| 5.486 | 2.2201E-001 | 9.12E-003 |

Alpha Calibration Report 2/24/2011 11:40:03

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008606.cn
Detector Name: A_3_1A
Chamber Serial Number: 12044985A
Detector Serial Number: 55806
Geometry Description: Shelf 2

Energy Calibration: 5/27/2010 20:44:58 by Countroom
Shape Calibration: 5/27/2010 20:44:58 by Countroom
Efficiency Calibration: 5/28/2010 09:42:00 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.986 MeV + 4.8963E-003*ch
FWHM = 5.1530E-002 MeV
Low Tail = 1.1820E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.64 | 0.1886 | 10.14 | 0.4606 | 2.04 | 0.2318 |
| 4.775 | 364.96 | 0.1742 | 10.03 | 0.4269 | 1.96 | 0.2064 |
| 5.157 | 442.69 | 0.1168 | 9.14 | 0.2914 | 2.07 | 0.1714 |
| 5.486 | 510.66 | 0.0817 | 11.49 | 0.2153 | 3.55 | 0.1979 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2230
Uncertainty: +/- 0.0046

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2559E-001 | 9.27E-003 |
| 4.775 | 2.2125E-001 | 9.10E-003 |
| 5.157 | 2.2375E-001 | 9.20E-003 |
| 5.486 | 2.2163E-001 | 9.11E-003 |

Alpha Calibration Report 2/24/2011 11:40:09

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008118.cn
Detector Name: A_3_1B
Chamber Serial Number: 12044985B
Detector Serial Number: 55807
Geometry Description: Shelf 2

Energy Calibration: 4/17/2010 21:22:33 by Countroom
Shape Calibration: 4/17/2010 21:22:33 by Countroom
Efficiency Calibration: 4/18/2010 15:12:35 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

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## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8949E-003*ch
FWHM = 5.7620E-002 MeV
Low Tail = 1.3849E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.74 | 0.2496 | 11.82 | 0.6117 | 2.41 | 0.3138 |
| 4.775 | 365.89 | 0.2311 | 12.04 | 0.5674 | 2.49 | 0.2956 |
| 5.157 | 443.62 | 0.1523 | 10.86 | 0.3836 | 2.52 | 0.2320 |
| 5.486 | 511.66 | 0.0972 | 12.10 | 0.2516 | 3.37 | 0.1967 |

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## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2098
Uncertainty: +/- 0.0043

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.0756E-001 | 8.54E-003 |
| 4.775 | 2.1337E-001 | 8.78E-003 |
| 5.157 | 2.1269E-001 | 8.74E-003 |
| 5.486 | 2.0603E-001 | 8.47E-003 |

Alpha Calibration Report 2/24/2011 11:40:15

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008604.cn
Detector Name: A_3_2A
Chamber Serial Number: 12045128A
Detector Serial Number: 55808
Geometry Description: Shelf 2

Energy Calibration: 1/18/2010 20:52:22 by jarmstrong
Shape Calibration: 1/18/2010 20:52:22 by jarmstrong
Efficiency Calibration: 1/19/2010 08:12:58 by jarmstrong
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

---

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 3000.0 MeV + 1.0000E+000*ch
FWHM = 2.5000E+001 MeV
Low Tail = <none>

No Calibration Peaks Available

---

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4198.000 | 2.2118E-001 | 9.08E-003 |
| 4774.600 | 2.1766E-001 | 8.94E-003 |
| 5156.590 | 2.1978E-001 | 9.02E-003 |
| 5485.560 | 2.1738E-001 | 8.93E-003 |

Alpha Calibration Report 2/24/2011 11:40:21

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008119.cn
Detector Name: A_3_2B
Chamber Serial Number: 12045128B
Detector Serial Number: 55809
Geometry Description: Shelf 2

Energy Calibration: 4/17/2010 21:22:30 by Countroom
Shape Calibration: 4/17/2010 21:22:30 by Countroom
Efficiency Calibration: 4/18/2010 15:13:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.991 MeV + 4.8904E-003*ch
FWHM = 6.0011E-002 MeV
Low Tail = 1.4919E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 247.97 | 0.2466 | 12.24 | 0.6094 | 2.62 | 0.3322 |
| 4.775 | 364.48 | 0.2355 | 12.21 | 0.5822 | 2.56 | 0.3092 |
| 5.157 | 442.22 | 0.1694 | 11.22 | 0.4266 | 2.66 | 0.2669 |
| 5.486 | 510.31 | 0.0963 | 12.65 | 0.2515 | 3.72 | 0.2148 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2206
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2004E-001 | 9.04E-003 |
| 4.775 | 2.1576E-001 | 8.87E-003 |
| 5.157 | 2.2461E-001 | 9.22E-003 |
| 5.486 | 2.2225E-001 | 9.13E-003 |

Alpha Calibration Report 2/24/2011 11:40:27

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008120.cn
Detector Name: A_3_3A
Chamber Serial Number: 12045129A
Detector Serial Number: 55810
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:02 by Countroom
Shape Calibration: 4/14/2010 05:15:02 by Countroom
Efficiency Calibration: 4/18/2010 15:15:02 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.977 MeV + 4.9062E-003*ch
FWHM = 4.7685E-002 MeV
Low Tail = 9.7367E-003 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 250.04 | 0.1885 | 9.26 | 0.4499 | 1.65 | 0.1940 |
| 4.775 | 366.49 | 0.1784 | 8.93 | 0.4236 | 1.47 | 0.1648 |
| 5.157 | 443.27 | 0.1141 | 9.36 | 0.2888 | 2.20 | 0.1780 |
| 5.486 | 511.73 | 0.1045 | 10.52 | 0.2699 | 2.82 | 0.1986 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2191
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2191E-001 | 9.12E-003 |
| 4.775 | 2.1993E-001 | 9.05E-003 |
| 5.157 | 2.1684E-001 | 8.92E-003 |
| 5.486 | 2.1781E-001 | 8.96E-003 |

Alpha Calibration Report 2/24/2011 11:40:33

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008121.cn
Detector Name: A_3_3B
Chamber Serial Number: 12045129B
Detector Serial Number: 55811
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:00 by Countroom
Shape Calibration: 4/14/2010 05:15:00 by Countroom
Efficiency Calibration: 4/18/2010 15:15:32 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.976 MeV + 4.9096E-003*ch
FWHM = 6.0051E-002 MeV
Low Tail = 1.3852E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.47 | 0.2276 | 12.49 | 0.5651 | 2.72 | 0.3155 |
| 4.775 | 366.25 | 0.2738 | 11.44 | 0.6610 | 2.12 | 0.2993 |
| 5.157 | 443.67 | 0.1748 | 10.87 | 0.4363 | 2.44 | 0.2529 |
| 5.486 | 511.33 | 0.1177 | 13.00 | 0.3078 | 3.89 | 0.2685 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2124
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.0994E-001 | 8.63E-003 |
| 4.775 | 2.1591E-001 | 8.88E-003 |
| 5.157 | 2.1585E-001 | 8.87E-003 |
| 5.486 | 2.0831E-001 | 8.57E-003 |

Alpha Calibration Report 2/24/2011 11:40:39

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008122.cn
Detector Name: A_3_4A
Chamber Serial Number: 12045130A
Detector Serial Number: 55812
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:06 by Countroom
Shape Calibration: 4/14/2010 05:15:06 by Countroom
Efficiency Calibration: 4/18/2010 15:16:03 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.981 MeV + 4.8980E-003*ch
FWHM = 6.0307E-002 MeV
Low Tail = 1.4323E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.33 | 0.2520 | 13.47 | 0.6414 | 3.30 | 0.4209 |
| 4.775 | 365.80 | 0.2208 | 12.61 | 0.5526 | 2.81 | 0.3165 |
| 5.157 | 443.80 | 0.1783 | 10.83 | 0.4416 | 2.36 | 0.2462 |
| 5.486 | 511.51 | 0.1340 | 12.77 | 0.3474 | 3.51 | 0.2656 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2175
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.2013E-001 | 9.04E-003 |
| 4.775 | 2.1787E-001 | 8.95E-003 |
| 5.157 | 2.1707E-001 | 8.91E-003 |
| 5.486 | 2.1512E-001 | 8.84E-003 |

Alpha Calibration Report 2/24/2011 11:40:45

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008123.cn
Detector Name: A_3_4B
Chamber Serial Number: 12045130B
Detector Serial Number: 55813
Geometry Description: Shelf 2

Energy Calibration: 4/14/2010 05:15:04 by Countroom
Shape Calibration: 4/14/2010 05:15:04 by Countroom
Efficiency Calibration: 4/18/2010 15:16:34 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.987 MeV + 4.8996E-003*ch
FWHM = 5.6621E-002 MeV
Low Tail = 1.1136E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 247.86 | 0.2586 | 11.05 | 0.6231 | 2.02 | 0.2804 |
| 4.775 | 364.84 | 0.2305 | 10.28 | 0.5453 | 1.69 | 0.2133 |
| 5.157 | 441.99 | 0.1954 | 10.82 | 0.4837 | 2.34 | 0.2666 |
| 5.486 | 510.19 | 0.1447 | 12.78 | 0.3748 | 3.58 | 0.2953 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2157
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1478E-001 | 8.83E-003 |
| 4.775 | 2.1077E-001 | 8.67E-003 |
| 5.157 | 2.1735E-001 | 8.93E-003 |
| 5.486 | 2.2054E-001 | 9.06E-003 |

Alpha Calibration Report 2/24/2011 11:40:51

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008128.cn
Detector Name: A_3_5A
Chamber Serial Number: 12045131A
Detector Serial Number: 55814
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:20 by Countroom
Shape Calibration: 4/18/2010 21:27:20 by Countroom
Efficiency Calibration: 4/19/2010 14:24:55 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\62919A-526

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.988 MeV + 4.8982E-003*ch
FWHM = 4.9981E-002 MeV
Low Tail = 1.1096E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 248.09 | 0.1948 | 9.77 | 0.4737 | 1.89 | 0.2270 |
| 4.775 | 364.86 | 0.2099 | 9.21 | 0.4985 | 1.58 | 0.2054 |
| 5.157 | 441.94 | 0.1346 | 9.21 | 0.3388 | 2.15 | 0.2077 |
| 5.486 | 510.20 | 0.0864 | 10.96 | 0.2270 | 3.27 | 0.1967 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2132
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1535E-001 | 8.86E-003 |
| 4.775 | 2.0935E-001 | 8.62E-003 |
| 5.157 | 2.1408E-001 | 8.81E-003 |
| 5.486 | 2.1435E-001 | 8.82E-003 |

Alpha Calibration Report 2/24/2011 11:40:57

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008129.cn
Detector Name: A_3_5B
Chamber Serial Number: 12045131B
Detector Serial Number: 55815
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:25 by Countroom
Shape Calibration: 4/18/2010 21:27:25 by Countroom
Efficiency Calibration: 4/19/2010 14:25:36 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70719-526.

---

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.982 MeV + 4.8985E-003*ch
FWHM = 5.8445E-002 MeV
Low Tail = 1.3560E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.00 | 0.2268 | 12.27 | 0.5634 | 2.69 | 0.3172 |
| 4.775 | 365.90 | 0.2588 | 11.35 | 0.6258 | 2.14 | 0.2903 |
| 5.157 | 443.33 | 0.1537 | 10.86 | 0.3853 | 2.47 | 0.2265 |
| 5.486 | 511.30 | 0.1131 | 12.59 | 0.2935 | 3.54 | 0.2339 |

---

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2140
Uncertainty: +/- 0.0044

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1312E-001 | 8.76E-003 |
| 4.775 | 2.1696E-001 | 8.92E-003 |
| 5.157 | 2.1443E-001 | 8.81E-003 |
| 5.486 | 2.1155E-001 | 8.69E-003 |

Alpha Calibration Report 2/24/2011 11:41:03

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008130.cn
Detector Name: A_3_6A
Chamber Serial Number: 12045132A
Detector Serial Number: 55816
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:23 by Countroom
Shape Calibration: 4/18/2010 21:27:23 by Countroom
Efficiency Calibration: 4/19/2010 14:26:08 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70720-526.

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.979 MeV + 4.8995E-003*ch
FWHM = 6.2078E-002 MeV
Low Tail = 1.4874E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.35 | 0.2328 | 13.64 | 0.5925 | 3.36 | 0.3892 |
| 4.775 | 366.38 | 0.2533 | 12.14 | 0.6200 | 2.40 | 0.3050 |
| 5.157 | 444.09 | 0.1968 | 11.15 | 0.4862 | 2.36 | 0.2620 |
| 5.486 | 511.76 | 0.1039 | 13.04 | 0.2715 | 3.77 | 0.2251 |

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2190
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1813E-001 | 8.96E-003 |
| 4.775 | 2.1835E-001 | 8.97E-003 |
| 5.157 | 2.2364E-001 | 9.18E-003 |
| 5.486 | 2.1629E-001 | 8.88E-003 |

Alpha Calibration Report 2/24/2011 11:41:09

Apex-Alpha™

Sample Description:
Spectrum File: C:\Canberra\ApexAlpha\Root\Data\0000008131.cn
Detector Name: A_3_6B
Chamber Serial Number: 12045132B
Detector Serial Number: 55817
Geometry Description: Shelf 2

Energy Calibration: 4/18/2010 21:27:22 by Countroom
Shape Calibration: 4/18/2010 21:27:22 by Countroom
Efficiency Calibration: 4/19/2010 14:26:42 by Countroom
Certificate: C:\Canberra\ApexAlpha\Root\Certificates\70721-526.

---

## ENERGY / SHAPE CALIBRATION

Version: Alpha Encal v1.1
Energy = 2.979 MeV + 4.8985E-003*ch
FWHM = 6.0932E-002 MeV
Low Tail = 1.3842E-002 MeV

| Energy (MeV) | Centroid Channel | Centroid error | FWHM (ch) | FWHM error | TAIL (ch) | TAIL error |
|---|---|---|---|---|---|---|
| 4.198 | 249.20 | 0.1818 | 12.79 | 0.4608 | 3.09 | 0.2952 |
| 4.775 | 366.43 | 0.2257 | 11.55 | 0.5494 | 2.25 | 0.2646 |
| 5.157 | 444.34 | 0.1747 | 10.42 | 0.4286 | 2.12 | 0.2186 |
| 5.486 | 511.85 | 0.1064 | 13.40 | 0.2798 | 4.12 | 0.2551 |

---

## EFFICIENCY CALIBRATION

Version: Alpha Efcal v1.0
Avg Efficiency: 0.2172
Uncertainty: +/- 0.0045

| Energy (MeV) | Efficiency | Error |
|---|---|---|
| 4.198 | 2.1581E-001 | 8.87E-003 |
| 4.775 | 2.1427E-001 | 8.81E-003 |
| 5.157 | 2.2020E-001 | 9.04E-003 |
| 5.486 | 2.1881E-001 | 8.99E-003 |

AMERICAN RADIATION SERVICES, INC.

2609 North River Road • Port Allen, Louisiana 70767

1 (800) 401-4277 • Fax (225) 381-2996

# American Radiation Services Analytical Reports

for

# Summit Environmental Technologies

# Folder Duplicate

ARS INTERNATIONAL

# Report Compilation Checklist

**ARS SDG:** 11-00897 **Client Name:** Summit Environ. **Sample Matrix:** AQ

| LEVEL 1 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 1) Cover Page Complete and Accurate (see ARS-059)? | Yes No N/A | |
| 2) Technical Review Checklist(s) Complete and Accurate? | Yes No N/A | |
| 3) Case Narrative Complete and Accurate (see ARS-059)? | Yes No N/A | |
| 4) Form 1s Present for all Samples and Tests? | Yes No N/A | |
| 5) Client Specific Components are Present and Complete? | Yes No N/A | |

| LEVEL 2 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 6) Batch Quality Control Report is Present and Accurate? | Yes No N/A | |
| 7) DQO Report is Present and Accurate? | Yes No N/A | |
| 8) Client Specific Batch QC Components are Present and Complete? | Yes No N/A | |

| LEVEL 3 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 9) Efficiencies are Present? | Yes No N/A | |
| 10) Calibrations are Present? | Yes No N/A | |
| 11) Backgrounds are Present? | Yes No N/A | |
| 12) Spectrum Analysis is Present? | Yes No N/A | |
| 13) Spectral Plots are Present? | Yes No N/A | |
| 14) Plateaus are Present? | Yes No N/A | |
| 15) Control Charts are Present? | Yes No N/A | |
| 16) Other: | Yes No N/A | |

| LEVEL 4 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 17) Preparation Raw Data Present, Signed and Complete? | Yes No N/A | |
| 18) Instrument Raw Data Present and Complete? | Yes No N/A | |
| 19) Calibration Certificates Present? | Yes No N/A | |
| 20) Copies of Log Book Pages Present? | Yes No N/A | |
| 21) Sample Receiving Documentation Present? | Yes No N/A | |
| 22) LIMS Reports Present? | Yes No N/A | |
| 23) Applicable Correspondence Present? | Yes No N/A | |
| 24) Other: | Yes No N/A | |

[signature] 6-2-11
Report Generator Signature Date

[signature] 6-2-11
Management Review Signature Date

ARS-059
07/03/2009

350001446

# Alpha Spec
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup

**ARS Prep. Batch ID(s):** **Batch A:** B11-01984 **Batch B:** NA **Batch C:** NA

**Test(s):** ASP-A-024 NA NA

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | Lab Supervisor |
|---|---|---|
| 1) 100% of Manual Transcriptions Verified? | Yes No N/A | Yes No N/A |
| 2) 100% of Manual Calculations Verified? | Yes No N/A | Yes No N/A |
| 3) Tracers Added Before Muffling, Digestion, or Chem. Sep.? | Yes No N/A | Yes No N/A |
| 4) QC and Samples are Aliquoted / Traced? | Yes No N/A | Yes No N/A |
| 5) Deviations from procedure are documented and verified? | Yes No N/A | Yes No N/A |

6) Sample Prep Anomaly? ☐ No ☐ Yes (See Tech Notes) NCR # (If initiated): _____

Tamara Brown 5-27-11
Chemist Signature Date

[signature] 5-27-11
Verifier Signature Date

## B. ANALYSIS REVIEW

| | Analyst Review | QA Officer Review |
|---|---|---|
| 1) Calibrations/Backgrounds Valid and Current? | Yes No N/A | Yes No N/A |
| 2) Source Checks Completed and Acceptable? | Yes No N/A | Yes No N/A |
| 3) Background Checks Complete and Acceptable? | Yes No N/A | Yes No N/A |

VHM 6-2-11
Quality Assurance Officer Signature Date

| | Analyst Review | Lab Supervisor |
|---|---|---|
| 4) 100% of Manually entered Parameters Verified Accurate? | Yes No N/A | Yes No N/A |
| 5) Appropriate QC samples initiated at required frequency? | Yes No N/A | Yes No N/A |
| 6) Test/Sample Specific Parameters (See ARS-059 for details) | | |
| a) All Centroids +/- 50 keV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| b) FWHM <100 kEV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| c) All specific peaks are with in the regions of interest (ROI's) ? | Yes No N/A | Yes No N/A |
| d) Spectrum shows no visual indication of interferences? | Yes No N/A | Yes No N/A |

7) Analysis Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

[signature] 6-2-11
Analyst Signature Date

[signature] 6-2-11
Laboratory Supervisor Signature Date



350001447

ARS INTERNATIONAL

Batch A: B11-01984

# Alpha Spec
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | QA Officer Review |
|---|---|---|
| 1) RDL Criteria are Met? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes ~~No~~ N/A | Yes ~~No~~ N/A |
| 3) Method Blank Criteria Met? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |
| 4) LCS/LCD Criteria Met? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |
| 5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |
| 6) Tracer yield results meet acceptance criteria? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |

7) Batch QC Anomaly? ☒ No ☐ Yes (See Comments) NCR # (If initiated): _____

| | | | |
|---|---|---|---|
| N/A | | VHM | 6-2-11 |
| Project Manager Signature | Date | Quality Assurance Officer Signature | Date |

## GENERAL COMMENTS

REFER TO BATCH TECHNICAL NOTES. @ 6-2-11

ARS INTERNATIONAL

# Alpha Spec
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup

| | | | |
|---|---|---|---|
| **ARS Prep. Batch ID(s):** | **Batch A:** B11-01660 | **Batch B:** NA | **Batch C:** NA |
| **Test(s):** | ASP-A-008 | NA | NA |

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | Lab Supervisor |
|---|---|---|
| **1) 100% of Manual Transcriptions Verified?** | Yes No N/A | Yes No N/A |
| **2) 100% of Manual Calculations Verified?** | Yes No N/A | Yes No N/A |
| **3) Tracers Added Before Muffling, Digestion, or Chem. Sep.?** | Yes No N/A | Yes No N/A |
| **4) QC and Samples are Aliquoted / Traced?** | Yes No N/A | Yes No N/A |
| **5) Deviations from procedure are documented and verified?** | Yes No N/A | Yes No N/A |

**6) Sample Prep Anomaly?** ☐ **No** ☑ **Yes** (See Tech Notes) **NCR #** (If initiated): _____

Chemist Signature: [signature] Date: 5-4-11 Verifier Signature: [signature] Date: 5-4-11

## B. ANALYSIS REVIEW

| | Analyst Review | QA Officer Review |
|---|---|---|
| **1) Calibrations/Backgrounds Valid and Current?** | Yes No N/A | Yes No N/A |
| **2) Source Checks Completed and Acceptable?** | Yes No N/A | Yes No N/A |
| **3) Background Checks Complete and Acceptable?** | Yes No N/A | Yes No N/A |

Quality Assurance Officer Signature: [signature] Date: 6-2-11

| | Analyst Review | Lab Supervisor |
|---|---|---|
| **4) 100% of Manually entered Parameters Verified Accurate?** | Yes No N/A | Yes No N/A |
| **5) Appropriate QC samples initiated at required frequency?** | Yes No N/A | Yes No N/A |
| **6) Test/Sample Specific Parameters** (See ARS-059 for details) | | |
| a) All Centroids +/- 50 keV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| b) FWHM <100 kEV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| c) All specific peaks are with in the regions of interest (ROI's) ? | Yes No N/A | Yes No N/A |
| d) Spectrum shows no visual indication of interferences? | Yes No N/A | Yes No N/A |

**7) Analysis Anomaly?** ☑ **No** ☐ **Yes** (See Comments) **NCR #** (If initiated): _____

Analyst Signature: [signature] Date: 5-10-11 Laboratory Supervisor Signature: [signature] Date: 5-10-11

ARS INTERNATIONAL

Batch A: B11-01660

# Alpha Spec
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | QA Officer Review |
|---|---|---|
| 1) RDL Criteria are Met? | Yes No (N/A) | Yes No ~~N/A~~ |
| 2) Activity + 3xCSU a Negative Number? | Yes (No) N/A | Yes ~~No~~ N/A |
| 3) Method Blank Criteria Met? | Yes (No) N/A | Yes ~~No~~ N/A |
| 4) LCS/LCD Criteria Met? | ~~Yes~~ No N/A | ~~Yes~~ No N/A |
| 5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | (Yes) No N/A | ~~Yes~~ No N/A |
| 6) Tracer yield results meet acceptance criteria? | Yes (No) N/A | Yes ~~No~~ N/A |

7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

Project Manager Signature: Nanette Wright Date: 5-10-11

Quality Assurance Officer Signature: [signature] Date: 6-2-11

## GENERAL COMMENTS

ARS INTERNATIONAL

# Alpha Spec
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup

| | | | | | | |
|---|---|---|---|---|---|---|
| **ARS Prep. Batch ID(s):** | **Batch A:** | B11-01985 | **Batch B:** | NA | **Batch C:** | NA |
| **Test(s):** | | ASP-A-008 | | NA | | NA |

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | | | Lab Supervisor | | |
|---|---|---|---|---|---|---|
| **1) 100% of Manual Transcriptions Verified?** | Yes | No | N/A | Yes | No | N/A |
| **2) 100% of Manual Calculations Verified?** | Yes | No | N/A | Yes | No | N/A |
| **3) Tracers Added Before Muffling, Digestion, or Chem. Sep.?** | Yes | No | N/A | Yes | No | N/A |
| **4) QC and Samples are Aliquoted / Traced?** | Yes | No | N/A | Yes | No | N/A |
| **5) Deviations from procedure are documented and verified?** | Yes | No | N/A | Yes | No | N/A |

**6) Sample Prep Anomaly?** ☑ **No** ☐ **Yes** (See Tech Notes) **NCR #** (If initiated): _____

Jamaal Brown 5-26-11 — **Chemist Signature** **Date**

[signature] 5-26-11 — **Verifier Signature** **Date**

## B. ANALYSIS REVIEW

| | Analyst Review | | | QA Officer Review | | |
|---|---|---|---|---|---|---|
| **1) Calibrations/Backgrounds Valid and Current?** | Yes | No | N/A | Yes | No | N/A |
| **2) Source Checks Completed and Acceptable?** | Yes | No | N/A | Yes | No | N/A |
| **3) Background Checks Complete and Acceptable?** | Yes | No | N/A | Yes | No | N/A |

_____ **Quality Assurance Officer Signature** **Date**

| | Analyst Review | | | Lab Supervisor | | |
|---|---|---|---|---|---|---|
| **4) 100% of Manually entered Parameters Verified Accurate?** | Yes | No | N/A | Yes | No | N/A |
| **5) Appropriate QC samples initiated at required frequency?** | Yes | No | N/A | Yes | No | N/A |
| **6) Test/Sample Specific Parameters** (See ARS-059 for details) | | | | | | |
| a) All Centroids +/- 50 keV for each sample and QC sample? | Yes | No | N/A | Yes | No | N/A |
| b) FWHM <100 kEV for each sample and QC sample? | Yes | No | N/A | Yes | No | N/A |
| c) All specific peaks are with in the regions of interest (ROI's) ? | Yes | No | N/A | Yes | No | N/A |
| d) Spectrum shows no visual indication of interferences? | Yes | No | N/A | Yes | No | N/A |

**7) Analysis Anomaly?** ☑ **No** ☐ **Yes** (See Comments) **NCR #** (If initiated): _____

[signature] 6-2-11 — **Analyst Signature** **Date**

[signature] 6-2-11 — **Laboratory Supervisor Signature** **Date**

Batch A: B11-01985

# Alpha Spec
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | QA Officer Review |
|---|---|---|
| 1) RDL Criteria are Met? | Yes No N/A | Yes No N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes No N/A | Yes No N/A |
| 3) Method Blank Criteria Met? | Yes No N/A | Yes No N/A |
| 4) LCS/LCD Criteria Met? | Yes No N/A | Yes No N/A |
| 5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | Yes No N/A | Yes No N/A |
| 6) Tracer yield results meet acceptance criteria? | Yes No N/A | Yes No N/A |

7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

Heather Wright 6-2-11

Project Manager Signature Date

Quality Assurance Officer Signature Date

## GENERAL COMMENTS

ARS INTERNATIONAL

# Alpha Spec
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup

| | | | | | | |
|---|---|---|---|---|---|---|
| **ARS Prep. Batch ID(s):** | **Batch A:** | B11-01664 | **Batch B:** | NA | **Batch C:** | NA |
| **Test(s):** | | ASP-A-024 | | NA | | NA |

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | Lab Supervisor |
|---|---|---|
| 1) 100% of Manual Transcriptions Verified? | Yes No N/A | Yes No N/A |
| 2) 100% of Manual Calculations Verified? | Yes No N/A | Yes No N/A |
| 3) Tracers Added Before Muffling, Digestion, or Chem. Sep.? | Yes No N/A | Yes No N/A |
| 4) QC and Samples are Aliquoted / Traced? | Yes No N/A | Yes No N/A |
| 5) Deviations from procedure are documented and verified? | Yes No N/A | Yes No N/A |

6) Sample Prep Anomaly? ☐ No ☑ Yes (See Tech Notes) NCR # (If initiated): _____

Chemist Signature [signature] Date 5-3-11 Verifier Signature [signature] Date 5-3-2011

## B. ANALYSIS REVIEW

| | Analyst Review | QA Officer Review |
|---|---|---|
| 1) Calibrations/Backgrounds Valid and Current? | Yes No N/A | Yes No N/A |
| 2) Source Checks Completed and Acceptable? | Yes No N/A | Yes No N/A |
| 3) Background Checks Complete and Acceptable? | Yes No N/A | Yes No N/A |

Quality Assurance Officer Signature _____ Date

| | Analyst Review | Lab Supervisor |
|---|---|---|
| 4) 100% of Manually entered Parameters Verified Accurate? | Yes No N/A | Yes No N/A |
| 5) Appropriate QC samples initiated at required frequency? | Yes No N/A | Yes No N/A |
| 6) Test/Sample Specific Parameters (See ARS-059 for details) | | |
| a) All Centroids +/- 50 keV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| b) FWHM <100 kEV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| c) All specific peaks are with in the regions of interest (ROI's) ? | Yes No N/A | Yes No N/A |
| d) Spectrum shows no visual indication of interferences? | Yes No N/A | Yes No N/A |

7) Analysis Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

Analyst Signature [signature] Date 5-11-11 Laboratory Supervisor Signature [signature] Date 5-11-11

ARS INTERNATIONAL

Batch A: B11-01664

# Alpha Spec
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | | | QA Officer Review | | |
|---|---|---|---|---|---|---|
| 1) RDL Criteria are Met? | Yes | No | (N/A) | Yes | No | N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes | (No) | N/A | Yes | No | N/A |
| 3) Method Blank Criteria Met? | Yes | (No) | N/A | Yes | No | N/A |
| 4) LCS/LCD Criteria Met? | (Yes) | No | N/A | Yes | No | N/A |
| 5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | (Yes) | No | N/A | Yes | No | N/A |
| 6) Tracer yield results meet acceptance criteria? | Yes | (No) | N/A | Yes | No | N/A |

7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): _____

Jennifer Wright 6-2-11
Project Manager Signature Date

_____
Quality Assurance Officer Signature Date

## GENERAL COMMENTS

REFER TO BATCH TECHNICAL NOTES. @B 5-11-11

Sample ARS1-11-00897-24 FWHM for U-235, 238 is > 100 Kev. mjc 5-11-11

# Alpha Spec
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup

| | | | |
|---|---|---|---|
| **ARS Prep. Batch ID(s):** | **Batch A:** B11-01657 | **Batch B:** NA | **Batch C:** NA |
| **Test(s):** | ASP-A-008 | NA | NA |

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | Lab Supervisor |
|---|---|---|
| **1) 100% of Manual Transcriptions Verified?** | Yes No N/A | Yes No N/A |
| **2) 100% of Manual Calculations Verified?** | Yes No N/A | Yes No N/A |
| **3) Tracers Added Before Muffling, Digestion, or Chem. Sep.?** | Yes No N/A | Yes No N/A |
| **4) QC and Samples are Aliquoted / Traced?** | Yes No N/A | Yes No N/A |
| **5) Deviations from procedure are documented and verified?** | Yes No N/A | Yes No N/A |
| **6) Sample Prep Anomaly?** ☐ **No** ☑ **Yes** (See Tech Notes) **NCR #** (If initiated): _____ | | |

Tamara L Brown 5-4-11
**Chemist Signature** **Date**

Gwen Jones 5-4-11
**Verifier Signature** **Date**

## B. ANALYSIS REVIEW

| | Analyst Review | QA Officer Review |
|---|---|---|
| **1) Calibrations/Backgrounds Valid and Current?** | Yes No N/A | Yes No N/A |
| **2) Source Checks Completed and Acceptable?** | Yes No N/A | Yes No N/A |
| **3) Background Checks Complete and Acceptable?** | Yes No N/A | Yes No N/A |

MHM 5-10-11
**Quality Assurance Officer Signature** **Date**

| | Analyst Review | Lab Supervisor |
|---|---|---|
| **4) 100% of Manually entered Parameters Verified Accurate?** | Yes No N/A | Yes No N/A |
| **5) Appropriate QC samples initiated at required frequency?** | Yes No N/A | Yes No N/A |
| **6) Test/Sample Specific Parameters** (See ARS-059 for details) | | |
| a) All Centroids +/- 50 keV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| b) FWHM <100 kEV for each sample and QC sample? | Yes No N/A | Yes No N/A |
| c) All specific peaks are with in the regions of interest (ROI's) ? | Yes No N/A | Yes No N/A |
| d) Spectrum shows no visual indication of interferences? | Yes No N/A | Yes No N/A |
| **7) Analysis Anomaly?** ☐ **No** ☑ **Yes** (See Comments) **NCR #** (If initiated): _____ | | |

Alyssa C. Bailey 5-6-11
**Analyst Signature** **Date**

[signature] 5-6-11
**Laboratory Supervisor Signature** **Date**



350001455

ARS INTERNATIONAL

Batch A: B11-01657

# Alpha Spec
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | QA Officer Review |
|---|---|---|
| 1) RDL Criteria are Met? | (Yes) No N/A | (Yes) No N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes (No) N/A | Yes (No) N/A |
| 3) Method Blank Criteria Met? | Yes (No) N/A | Yes (No) N/A |
| 4) LCS/LCD Criteria Met? | (Yes) No N/A | (Yes) No N/A |
| 5) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | (Yes) No N/A | (Yes) No N/A |
| 6) Tracer yield results meet acceptance criteria? | (Yes) No N/A | (Yes) No N/A |
| 7) Batch QC Anomaly? ☐ No ☑ Yes (See Comments) NCR # (If initiated): | | |
| Project Manager Signature Date | Quality Assurance Officer Signature Date | |

## GENERAL COMMENTS

REFER TO BATCH TECHNICAL NOTES. 5-6-11

# GPC
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup MS MSD

**ARS Prep. Batch ID(s):** **Batch A:** ARS1-B11-01631 **Batch B:** NA **Batch C:** NA

**Test(s):** GPC-A-001 NA NA

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | Verifier Review |
|---|---|---|
| 1) 100% of Manual Transcriptions Verified? | Yes No N/A | Yes No N/A |
| 2) 100% of Manual Calculations Verified? | Yes No N/A | Yes No N/A |
| 3) QC and Samples are Aliquoted / Traced? | Yes No N/A | Yes No N/A |
| 4) Carriers/Tracers Added Before Muffling, Digestion, or Chem. Sep.? | Yes No N/A | Yes No N/A |
| 5) Residue Mass is within Acceptance Limits? | Yes No N/A | Yes No N/A |
| 6) Gravimetric Yield is within Acceptance Limits? | Yes No N/A | Yes No N/A |
| 7) Deviations from procedure have been documented and verified? | Yes No N/A | Yes No N/A |

8) Sample Prep Anomaly? ☒ No ☐ Yes (See Tech Notes) **NCR #** (If initiated): _____

Chemist Signature 4-28-11 Date

Verifier Signature 4-28-11 Date

## B. ANALYSIS REVIEW

| | Analyst Review | QA Officer Review |
|---|---|---|
| 1) Calibrations/Backgrounds Valid and Current? | Yes No N/A | Yes No N/A |
| 2) Source Checks Completed and Acceptable? | Yes No N/A | Yes No N/A |
| 3) Background Checks Complete and Acceptable? | Yes No N/A | Yes No N/A |

Quality Assurance Officer Signature Date

| | Analyst Review | Lab Supervisor |
|---|---|---|
| 4) 100% of Manually entered Parameters Verified Accurate? | Yes No N/A | Yes No N/A |
| 5) Appropriate QC samples initiated at required frequency? | Yes No N/A | Yes No N/A |
| 6) Test/Sample Specific Parameters (See ARS-059 for details) | | |
| a) Physical Configuration of Sample equivalent to Calibration? | Yes No N/A | Yes No N/A |
| b) Ref. Nuclide for GAB Appropriate Requirements? | Yes No N/A | Yes No N/A |

7) Analysis Anomaly? ☒ No ☐ Yes (See Comments) **NCR #** (If initiated): _____

Analyst Signature 6-2-11 Date

Laboratory Supervisor Signature Date



350001457

Batch A: ARS1-B11-01631

# GPC
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | | | QA Officer Review | | |
|---|---|---|---|---|---|---|
| 1) RDL Criteria are Met? | Yes | No | N/A | Yes | No | N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes | No | N/A | Yes | No | N/A |
| 3) Residue Mass for Gross A/B and Gross B Meet Acceptance Criteria? | Yes | No | N/A | Yes | No | N/A |
| 4) Method Blank Criterion Met? | Yes | No | N/A | Yes | No | N/A |
| 5) LCS/LCD Criteria Met? | Yes | No | N/A | Yes | No | N/A |
| 6) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | Yes | No | N/A | Yes | No | N/A |
| 7) MS/MSD Criteria Met? | Yes | No | N/A | Yes | No | N/A |
| 8) Carrier Chemical Yield within Accepance Limits? | Yes | No | N/A | | | |
| 9) Batch QC Anomaly? ☑ No ☐ Yes (See Tech Notes) NCR # (If initiated): _____ | | | | | | |

Project Mgr. Signature — Date: 6-2-11

Quality Assurance Officer — Date

## GENERAL COMMENTS

# GPC
# Technical Review Checklist

**ARS SDG** ARS1-11-00897

**Sample Matrix:** AQ **Aliquot** (Circle One) : Dry As Received Filtered Other: _____

**Required QC Samples** (Circle all that apply): Blank LCS LCSD Sample Dup MS MSD

**ARS Prep. Batch ID(s):** **Batch A:** ARS1-B11-01621 **Batch B:** NA **Batch C:** NA

**Test(s):** GPC-A-001 NA NA

## A. RADIOCHEMICAL PREPARATION REVIEW

| | Chemist Review | | | Verifier Review | | |
|---|---|---|---|---|---|---|
| 1) 100% of Manual Transcriptions Verified? | ~~Yes~~ | No | N/A | ~~Yes~~ | No | N/A |
| 2) 100% of Manual Calculations Verified? | Yes | No | ~~N/A~~ | Yes | No | ~~N/A~~ |
| 3) QC and Samples are Aliquoted / Traced? | ~~Yes~~ | No | N/A | ~~Yes~~ | No | N/A |
| 4) Carriers/Tracers Added Before Muffling, Digestion, or Chem. Sep.? | Yes | No | ~~N/A~~ | Yes | No | ~~N/A~~ |
| 5) Residue Mass is within Acceptance Limits? | ~~Yes~~ | No | N/A | ~~Yes~~ | No | N/A |
| 6) Gravimetric Yield is within Acceptance Limits? | Yes | No | ~~N/A~~ | Yes | No | ~~N/A~~ |
| 7) Deviations from procedure have been documented and verified? | Yes | No | ~~N/A~~ | Yes | No | ~~N/A~~ |

8) Sample Prep Anomaly? ☒ No ☐ Yes (See Tech Notes) NCR # (If initiated): _____

4-28-11 / 4-28-11

Chemist Signature Date Verifier Signature Date

## B. ANALYSIS REVIEW

| | Analyst Review | | | QA Officer Review | | |
|---|---|---|---|---|---|---|
| 1) Calibrations/Backgrounds Valid and Current? | ~~Yes~~ | No | N/A | Yes | No | N/A |
| 2) Source Checks Completed and Acceptable? | ~~Yes~~ | No | N/A | Yes | No | N/A |
| 3) Background Checks Complete and Acceptable? | ~~Yes~~ | No | N/A | Yes | No | N/A |

Quality Assurance Officer Signature Date

| | Analyst Review | | | Lab Supervisor | | |
|---|---|---|---|---|---|---|
| 4) 100% of Manually entered Parameters Verified Accurate? | ~~Yes~~ | No | N/A | Yes | No | N/A |
| 5) Appropriate QC samples initiated at required frequency? | ~~Yes~~ | No | N/A | Yes | No | N/A |
| 6) Test/Sample Specific Parameters (See ARS-059 for details) | | | | | | |
| a) Physical Configuration of Sample equivalent to Calibration? | ~~Yes~~ | No | N/A | Yes | No | N/A |
| b) Ref. Nuclude for GAB Appropriate Requirements? | ~~Yes~~ | No | N/A | Yes | No | N/A |

7) Analysis Anomaly? ☒ No ☐ Yes (See Comments) NCR # (If initiated): _____

6-2-11

Analyst Signature Date Laboratory Supervisor Signature Date

Batch A: ARS1-B11-01621

# GPC
# Technical Review Checklist

## C. BATCH QC VALIDATION

| | Proj. Mgr. Review | QA Officer Review |
|---|---|---|
| 1) RDL Criteria are Met? | Yes No ~~N/A~~ | Yes No N/A |
| 2) Activity + 3xCSU a Negative Number? | Yes No ~~N/A~~ | Yes No N/A |
| 3) Residue Mass for Gross A/B and Gross B Meet Acceptance Criteria? | Yes No ~~N/A~~ | Yes No N/A |
| 4) Method Blank Criterion Met? | Yes No ~~N/A~~ | Yes No N/A |
| 5) LCS/LCD Criteria Met? | Yes No ~~N/A~~ | Yes No N/A |
| 6) Duplicate (Sample Duplicate, LCSD, MSD) Criteria Met? | Yes No ~~N/A~~ | Yes No N/A |
| 7) MS/MSD Criteria Met? | Yes No ~~N/A~~ | Yes No N/A |
| 8) Carrier Chemical Yield within Accepance Limits? | Yes No ~~N/A~~ | |
| 9) Batch QC Anomaly? ☑ No ☐ Yes (See Tech Notes) NCR # (If initiated): _____ | | |

Project Mgr. Signature Heather Wright Date 6-7-11

Quality Assurance Officer Date

## GENERAL COMMENTS



350001460

# SDG Technical Notes

SDG **ARS1-11-00897**

| # | Analysis Code | Batch/SDG | Date | Technician | Batch Technical Notes | Dept |
|---|---|---|---|---|---|---|
| 1 | ASP-A-008 | ARS1-B11-01657 | 05/04/11 11:10 | JBROWN | B11-01657-03,13,14,15 did not seem to plate well. There is a cloudy film that plated onto the disk. Tracer recovery/activity could be affected. | CHEMISTRY |
| 2 | ASP-A-008 | ARS1-B11-01660 | 05/04/11 12:39 | JBROWN | B11-01660-04,05 did not seem to plate well, there is a whitish film covering the disk. Tracer recovery/activity could be affected. | CHEMISTRY |
| 3 | ASP-A-008 | ARS1-B11-01657 | 05/06/11 14:52 | ABAILEY | The following spectral anomalies were identified in the counting results for this batch: Heavy peak trailing was encountered on the Th-229 peak for B11-01657-07 thru -09 & -11 thru -16. This causes blending of the Th-229 & Th-230 peaks and likely caused false detection of Th-230 counts in each of the samples in question. Also, Th-232 was not identified in B11-01657-02. A small of amount of unidentified isotope was used in place for calculation purposes, but the centroid energy would be low out of acceptable range. | COUNTROOM |
| 4 | ASP-A-008 | ARS1-B11-01657 | 05/06/11 16:36 | VMULLIGAN | The method blank for Th-230 failed evaluation criteria for samples ARS1-11-00897-002 and 003. However, review of the data shows that both samples have activities that are less than the MDC and are less than the value of the blank. The results can be reported. | MGMT |
| 5 | ASP-A-008 | ARS1-B11-01660 | 05/10/11 12:22 | JARMSTRONG | ARS1-B11-01660-04 (ARS1-11-00897-014) fell outside the tracer acceptance range biased low at 25.7813107%. ARS1-B11-01660-05 (ARS1-11-00897-015) fell outside the tracer acceptance range biased low at 25.8777444%. ARS1-B11-01660-06 (ARS1-11-00897-016) fell outside the tracer acceptance range biased low at 17.6493122%. ARS1-B11-01660-03 (MBL) Th-230/232 failed method blank requirements according to ARS-014 rev4 sections 6.1.2.3.2.2. and 6.1.2.3.2.3. | COUNTROOM |
| 6 | ASP-A-008 | ARS1-B11-01985 | 06/02/11 15:54 | HWRIGHT | The tracer recovery for ARS1-B11-01985-04, and 05 are biased low; however, after management review the data is being released as valid. | REPORTING |
| 7 | ASP-A-008 | ARS1-B11-01985 | 06/02/11 15:59 | HWRIGHT | The method blank is biased high; however, method blank evaluation was performed per procedure and results are being released as valid. | REPORTING |
| 8 | ASP-A-024 | ARS1-B11-01664 | 05/03/11 16:56 | JBROWN | B11-01664-14 had a black film that plated onto the disk, I am unsure what this can be attributed to. As a result tracer recovery/activity could be affected. | CHEMISTRY |
| 9 | ASP-A-024 | ARS1-B11-01663 | 05/03/11 16:58 | JBROWN | B11-01663-01,02,07,16 all seem to have a film covering the plate. I am unsure what this can be attributed to. As a result tracer recovery/activity could be affected. | CHEMISTRY |

350001461

ARS INTERNATIONAL

SDG **ARS1-11-00897**

| # | Analysis Code | Batch/SDG | Date | Technician | Batch Technical Notes | Dept |
|---|---|---|---|---|---|---|
| 10 | ASP-A-024 | ARS1-B11-01663 | 05/10/11 12:08 | JARMSTRONG | ARS1-B11-01663-02 (LCSD) U-238 and U-234 not identified as peaks are extremely wide and experience a large amount of tailing. FWHM for U-232/234/238 100keV. ARS1-B11-01663-07 (ARS1-11-00897-004) U-234/238 FWHM > 100keV. U-234 peak centroid lies outside +/- 50keV acceptance range due to excessive peak tailing. All peaks overlap due to excessive tailing. This will affect activity calculations as peaks cannot be differentiated. ARS1-B11-01663-16 (ARS1-11-00897-013) U-234/235 FWHM > 100keV due to excessive peak tailing and overlap. All peaks overlap due to excessive tailing. This will affect activity calculations as peaks cannot be differentiated. | COUNTROOM |
| 11 | ASP-A-024 | ARS1-B11-01664 | 05/11/11 16:39 | ABAILEY | The following spectral anomalies were identified in the counting results for this batch: The identified U-235 centroid energy for B11-01664-06 (ARS1-11-00897-016) is high out of acceptable range. Also, B11-01664-14 (ARS1-11-00897-024) sample spectrum shows gross peak trailing and attenuation, so much so that individual analytes cannot be readily or confidently identified. A check recount of the sample was conducted on another detector verified to be accurate. The results confirm the original count. ARS laboratory supervision is informed and the sample must be rerun. | COUNTROOM |
| 12 | ASP-A-024 | ARS1-B11-01664 | 05/11/11 17:03 | HWRIGHT | The Method Blank for U-234 and U-238 is elevated; however, method blank evaluation was performed per procedure and the QC is being released as valid. | MGMT |
| 13 | ASP-A-024 | ARS1-B11-01984 | 05/27/11 12:27 | JBROWN | B11-01984-07,16,17 did not plate well, there is a black film covering the entire plate. Tracer recovery/activity could be affected as a result. | CHEMISTRY |
| 14 | ASP-A-024 | ARS1-B11-01664 | 06/02/11 16:08 | HWRIGHT | Tracer recovery for ARS1-B11-01664-14 is biased low; however, after management review the results are being released as valid. | REPORTING |

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# DQO Report for SDG

ARS1-11-00897



| Analysis Code | Group | Isotope | Activity Units | Aliquot Units | ProcedureNo | RDL | LCS_LL | LCS_UL | MS_LL | MS_UL | RadY_LL | RadY_UL | GravY_LL | GravY_LL | RER | RPD | DiltionReq | RoughPrepReq | BlankCorrectionMDA | BlankCorrectionAll | CountTimeReq | AliquotRequired |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ASP-A-008 | STD | TH-228 | pCi | L | ARS-031 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| ASP-A-008 | STD | TH-230 | pCi | L | ARS-031 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| ASP-A-008 | STD | TH-232 | pCi | L | ARS-031 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| ASP-A-024 | STD | U-234 | pCi | L | ARS-026 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| ASP-A-024 | STD | U-235 | pCi | L | ARS-026 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| ASP-A-024 | STD | U-238 | pCi | L | ARS-026 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| GPC-A-001 | STD | GROSS ALPHA | pCi | L | ARS-002 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |
| GPC-A-001 | STD | GROSS BETA | pCi | L | ARS-002 | 0.00E+00 | 75 | 125 | 60 | 140 | 30 | 110 | 40 | 110 | 1.00 | 25 | FALSE | FALSE | FALSE | FALSE | | |

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# SDG Report - Samples and Containers

## SDG Specific Data

| | | | | | |
|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 Rpt Level 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | |

## Samples and Containers (→) Checked In Thus Far

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | MW-1-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85410 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85411 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85412 | 3 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85413 | 4 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85414 | 5 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85415 | 6 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 002 | MW-2-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85416 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85417 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 003 | MW-2-2-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85418 | 1 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| | 85419 | 2 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| 004 | JPOP41S-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85420 | 1 | 1000.00 | | 5 | 0 | 30 | 16 | | N | N/A | | | | |
| | 85421 | 2 | 1000.00 | | 5 | 0 | 30 | 16 | | N | N/A | | | | |
| 005 | MD-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85422 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85423 | 2 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| 006 | MW-3-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85424 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85425 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 007 | MW-4-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85426 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85427 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | MW-6-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85428 | 1 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| | 85429 | 2 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | MW-7-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |

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# SDG Report - Samples and Containers

**SDG Specific Data**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 | Rpt Level 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | | |

**Samples and Containers (→) Checked In Thus Far**

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85430 | 1 | 1000.00 | | 5 | 0 | 20 | 14 | | N | N/A | | | | |
| | 85431 | 2 | 1000.00 | | 5 | 0 | 20 | 14 | | N | N/A | | | | |
| 010 | MW-8-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85432 | 1 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| | 85433 | 2 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| 011 | MW-MD-02-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85434 | 1 | 1000.00 | | 5 | 0 | 20 | 13 | | N | N/A | | | | |
| | 85435 | 2 | 1000.00 | | 5 | 0 | 20 | 13 | | N | N/A | | | | |
| 012 | MW-MD-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85436 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85437 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 013 | NPOP20E-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85438 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85439 | 2 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| 014 | PR-SW-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85440 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85441 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 015 | RB-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85442 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85443 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 016 | RB-02-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85444 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85445 | 2 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| 017 | RM-JM-SW-02-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85446 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85447 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 018 | RM-JM-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |

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# SDG Report - Samples and Containers

## SDG Specific Data

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | | | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 | Rpt Level | 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | | | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | | | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | | | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | | | |

## Samples and Containers (→) Checked In Thus Far

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 85448 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85449 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 019 | RM-SW-BG-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85450 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85451 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 020 | RP-JM-SW-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85452 | 1 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| | 85453 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 021 | RP-JM-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85454 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85455 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 022 | RP-SW-01-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85456 | 1 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| | 85457 | 2 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| 023 | RP-SW-BG-041911 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85458 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85459 | 2 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| 024 | SPOP35-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85460 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85461 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 025 | MW-RM-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85462 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85463 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |

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# SDG Report - Analysis Assignments

| | | | |
|---|---|---|---|
| **Temp SDG** | **ARS1-11-00897** | **Sample Count** | **25** |
| **Client** | **Summit Environmental Technologies** | **Analysis Count** | **3-75** |

**Samples Count Totals per Analysis**

| Analysis Code | Analysis Description | Samples Count |
|---|---|---|
| ASP-A-008 | Thorium in (Water [Aqueous, AQ]) | 25 |
| ASP-A-024 | Uranium (233, 234U, 235U, 238U) in (Water [Aqueous, AQ]) | 25 |
| GPC-A-001 | Gross Alpha/Beta in (Water [Aqueous, AQ]) | 25 |

**Analyses Assigned Per Fraction**

| Fraction | Analysis Code | X = Assigned |
|---|---|---|
| 001 | ASP-A-008 | X |
| 001 | ASP-A-024 | X |
| 001 | GPC-A-001 | X |
| 002 | ASP-A-008 | X |
| 002 | ASP-A-024 | X |
| 002 | GPC-A-001 | X |
| 003 | ASP-A-008 | X |
| 003 | ASP-A-024 | X |
| 003 | GPC-A-001 | X |
| 004 | ASP-A-008 | X |
| 004 | ASP-A-024 | X |
| 004 | GPC-A-001 | X |
| 005 | ASP-A-008 | X |
| 005 | ASP-A-024 | X |
| 005 | GPC-A-001 | X |
| 006 | ASP-A-008 | X |
| 006 | ASP-A-024 | X |
| 006 | GPC-A-001 | X |
| 007 | ASP-A-008 | X |
| 007 | ASP-A-024 | X |
| 007 | GPC-A-001 | X |
| 008 | ASP-A-008 | X |
| 008 | ASP-A-024 | X |
| 008 | GPC-A-001 | X |
| 009 | ASP-A-008 | X |
| 009 | ASP-A-024 | X |
| 009 | GPC-A-001 | X |
| 010 | ASP-A-008 | X |
| 010 | ASP-A-024 | X |
| 010 | GPC-A-001 | X |
| 011 | ASP-A-008 | X |
| 011 | ASP-A-024 | X |
| 011 | GPC-A-001 | X |
| 012 | ASP-A-008 | X |
| 012 | ASP-A-024 | X |
| 012 | GPC-A-001 | X |
| 013 | ASP-A-008 | X |
| 013 | ASP-A-024 | X |
| 013 | GPC-A-001 | X |
| 014 | ASP-A-008 | X |
| 014 | ASP-A-024 | X |
| 014 | GPC-A-001 | X |
| 015 | ASP-A-008 | X |
| 015 | ASP-A-024 | X |
| 015 | GPC-A-001 | X |
| 016 | ASP-A-008 | X |
| 016 | ASP-A-024 | X |
| 016 | GPC-A-001 | X |
| 017 | ASP-A-008 | X |
| 017 | ASP-A-024 | X |
| 017 | GPC-A-001 | X |
| 018 | ASP-A-008 | X |
| 018 | ASP-A-024 | X |
| 018 | GPC-A-001 | X |
| 019 | ASP-A-008 | X |
| 019 | ASP-A-024 | X |

# SDG Report - Analysis Assignments

| | | | |
|---|---|---|---|
| Temp SDG | ARS1-11-00897 | Sample Count | 25 |
| Client | Summit Environmental Technologies | Analysis Count | 3-75 |

**Samples Count Totals per Analysis**

| Analysis Code | Analysis Description | Samples Count |
|---|---|---|

**Analyses Assigned Per Fraction**

| Fraction | Analysis Code | X = Assigned |
|---|---|---|
| 019 | GPC-A-001 | X |
| 020 | ASP-A-008 | X |
| 020 | ASP-A-024 | X |
| 020 | GPC-A-001 | X |
| 021 | ASP-A-008 | X |
| 021 | ASP-A-024 | X |
| 021 | GPC-A-001 | X |
| 022 | ASP-A-008 | X |
| 022 | ASP-A-024 | X |
| 022 | GPC-A-001 | X |
| 023 | ASP-A-008 | X |
| 023 | ASP-A-024 | X |
| 023 | GPC-A-001 | X |
| 024 | ASP-A-008 | X |
| 024 | ASP-A-024 | X |
| 024 | GPC-A-001 | X |
| 025 | ASP-A-008 | X |
| 025 | ASP-A-024 | X |
| 025 | GPC-A-001 | X |

# SDG Report - Samples and Containers

## SDG Specific Data

| | | | | | |
|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 Rpt Level 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | |

## Samples and Containers (→) Checked In Thus Far

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | MW-1-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85410 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85411 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85412 | 3 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85413 | 4 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85414 | 5 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85415 | 6 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 002 | MW-2-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85416 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85417 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 003 | MW-2-2-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85418 | 1 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| | 85419 | 2 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| 004 | JPOP41S-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85420 | 1 | 1000.00 | | 5 | 0 | 30 | 16 | | N | N/A | | | | |
| | 85421 | 2 | 1000.00 | | 5 | 0 | 30 | 16 | | N | N/A | | | | |
| 005 | MD-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85422 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85423 | 2 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| 006 | MW-3-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85424 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85425 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 007 | MW-4-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85426 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85427 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 8 | MW-6-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85428 | 1 | 1000.00 | | 5 | 0 | 35 | 15 | | N | N/A | | | | |
| | 85429 | 2 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| 9 | MW-7-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |

3500001469

# SDG Report - Samples and Containers

**SDG Specific Data**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 | Rpt Level 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | | |

**Samples and Containers (→) Checked In Thus Far**

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85430 | 1 | 1000.00 | | 5 | 0 | 20 | 14 | | N | N/A | | | | |
| | 85431 | 2 | 1000.00 | | 5 | 0 | 20 | 14 | | N | N/A | | | | |
| 010 | MW-8-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85432 | 1 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| | 85433 | 2 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| 011 | MW-MD-02-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85434 | 1 | 1000.00 | | 5 | 0 | 20 | 13 | | N | N/A | | | | |
| | 85435 | 2 | 1000.00 | | 5 | 0 | 20 | 13 | | N | N/A | | | | |
| 012 | MW-MD-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85436 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85437 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 013 | NPOP20E-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85438 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85439 | 2 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| 014 | PR-SW-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85440 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85441 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 015 | RB-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85442 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85443 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 016 | RB-02-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85444 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85445 | 2 | 1000.00 | | 5 | 0 | 25 | 13 | | N | N/A | | | | |
| 7 | RM-JM-SW-02-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85446 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85447 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 8 | RM-JM-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |

350001470

# SDG Report - Samples and Containers

**SDG Specific Data**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SDG | ARS1-11-00897 | | | TAT Days | 7 | Project Type | Environmental |
| Sample Count | 25 | Rpt Level | 2 | Date Received | 4/27/2011 | COC Number | 6-042211-001353-0001 |
| Client | Summit Environmental Technologies | | | Client Deadline | 5/6/2011 | PO Number | |
| Client Code | 493 | | | Internal Deadline | 5/5/2011 | Job Number | |
| Profile Number | PN-00556 | | | Lab Deadline | 5/3/2011 | Job Location | SITE 0603 |
| Comments | LEVEL IV DELIVERABLE | | | | | | |

**Samples and Containers (→) Checked In Thus Far**

| FR | ClientID | Matrix | SampleStartDate | SampleEndDate | Disp | Hold | Arch | Storage | X | Units | Y | Units | Z | Units | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 85448 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85449 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 019 | RM-SW-BG-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85450 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85451 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 020 | RP-JM-SW-01-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85452 | 1 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| | 85453 | 2 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| 021 | RP-JM-SW-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85454 | 1 | 1000.00 | | 5 | 0 | 30 | 14 | | N | N/A | | | | |
| | 85455 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 022 | RP-SW-01-110419 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85456 | 1 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| | 85457 | 2 | 1000.00 | | 5 | 0 | 35 | 13 | | N | N/A | | | | |
| 023 | RP-SW-BG-041911 | AQ | 04/19/11 12:00 PM | 04/19/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85458 | 1 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| | 85459 | 2 | 1000.00 | | 5 | 0 | 35 | 14 | | N | N/A | | | | |
| 024 | SPOP35-110421 | AQ | 04/21/11 12:00 PM | 04/21/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85460 | 1 | 1000.00 | | 5 | 0 | 30 | 15 | | N | N/A | | | | |
| | 85461 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| 025 | MW-RM-110420 | AQ | 04/20/11 12:00 PM | 04/20/11 12:00 PM | H | 30 | 5 | C1 | | | | | | | |
| → | IC_ID | Cnt | Volume_mL | Wt_g | pH_Orig | pH_Final | CPM | uR_Hr | Storage | VOA | Head Sp | AF Units | AF Rate | AF Mins | AF Total Vol |
| | 85462 | 1 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |
| | 85463 | 2 | 1000.00 | | 5 | 0 | 30 | 13 | | N | N/A | | | | |

350001471

# SDG Report - Analysis Assignments

| | | | |
|---|---|---|---|
| Temp SDG | ARS1-11-00897 | Sample Count | 25 |
| Client | Summit Environmental Technologies | Analysis Count | 2-50 |

**Samples Count Totals per Analysis**

| Analysis Code | Analysis Description | Samples Count |
|---|---|---|
| ASP-A-008 | Thorium in (Water [Aqueous, AQ]) | 25 |
| ASP-A-024 | Uranium (233, 234U, 235U, 238U) in (Water [Aqueous, AQ]) | 25 |

**Analyses Assigned Per Fraction**

| Fraction | Analysis Code | X = Assigned |
|---|---|---|
| 001 | ASP-A-008 | X |
| 001 | ASP-A-024 | X |
| 002 | ASP-A-008 | X |
| 002 | ASP-A-024 | X |
| 003 | ASP-A-008 | X |
| 003 | ASP-A-024 | X |
| 004 | ASP-A-008 | X |
| 004 | ASP-A-024 | X |
| 005 | ASP-A-008 | X |
| 005 | ASP-A-024 | X |
| 006 | ASP-A-008 | X |
| 006 | ASP-A-024 | X |
| 007 | ASP-A-008 | X |
| 007 | ASP-A-024 | X |
| 008 | ASP-A-008 | X |
| 008 | ASP-A-024 | X |
| 009 | ASP-A-008 | X |
| 009 | ASP-A-024 | X |
| 010 | ASP-A-008 | X |
| 010 | ASP-A-024 | X |
| 011 | ASP-A-008 | X |
| 011 | ASP-A-024 | X |
| 012 | ASP-A-008 | X |
| 012 | ASP-A-024 | X |
| 013 | ASP-A-008 | X |
| 013 | ASP-A-024 | X |
| 014 | ASP-A-008 | X |
| 014 | ASP-A-024 | X |
| 015 | ASP-A-008 | X |
| 015 | ASP-A-024 | X |
| 016 | ASP-A-008 | X |
| 016 | ASP-A-024 | X |
| 017 | ASP-A-008 | X |
| 017 | ASP-A-024 | X |
| 018 | ASP-A-008 | X |
| 018 | ASP-A-024 | X |
| 019 | ASP-A-008 | X |
| 019 | ASP-A-024 | X |
| 020 | ASP-A-008 | X |
| 020 | ASP-A-024 | X |
| 021 | ASP-A-008 | X |
| 021 | ASP-A-024 | X |
| 022 | ASP-A-008 | X |
| 022 | ASP-A-024 | X |
| 023 | ASP-A-008 | X |
| 023 | ASP-A-024 | X |
| 024 | ASP-A-008 | X |
| 024 | ASP-A-024 | X |
| 025 | ASP-A-008 | X |
| 025 | ASP-A-024 | X |

# ARS FILE TRACKING SHEET

SDG: ARS1-11-00897

| Task | Date / Time | Initials |
|---|---|---|
| Date & Time Samples Received | 04-27-11/12:30 | CWD |
| ICOC Initiated / Storage Location: C1 | 04-28-11/09:55 | CWD |
| Technical Checks Performed | See batch | |
| Report Written / EDD Generated: 6-7-11 / Final (Date/Time) prelim (Initials) | 6-7-11 / 5-6-11/1629 | AW AW |
| Quality Assurance Checks Performed on Report | Prelim 5-6-11 1635 | Prelim AW |
| Management Check Performed on Report | | |
| *Preliminary Report Sent* | 5-6-11/1649 | AW |
| Report E-mailed | | |
| Report Faxed | | |
| Report Reviewed | | |
| Report Mailed | | |
| Invoice Completed Invoice #: | | |
| Report Imaged | | |

***SPECIAL REQUIREMENTS***

| Requirement | Yes | No |
|---|---|---|
| 3 Hour Rush | | ✓ |
| 24 Hour Rush | | ✓ |
| 48 Hour Rush | | ✓ |
| Special Invoicing *see notes* Mgmt. Approval: | | ✓ |

**NOTES:** A second preliminary put together including Uranium data 5-12-11/1513 AW Prelim. II sent 5-12-11/1618 AW

ARS-062
04/23/2010

COMPANY NAME: Summit

SDG: ARSH1100897

**SHIPPING CONTAINER**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Radioactive | ☐ Yes | ☑ No |
| UN2910 | ☐ Yes | ☑ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seals Intact | ☐ Yes ☐ No | ☑ N/A |
| Air Bill | ☐ Yes | ☑ No |

**COC PRESENT WITH SAMPLES**

| | | |
|---|---|---|
| COC | ☑ Yes | ☐ No |

**SAMPLE CONTAINER(S)**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seal Intact | ☐ Yes ☐ No | ☑ N/A |
| Marked Radioactive | ☐ Yes | ☑ No |

# Samples Rcv: 25

Matrix: [ AF , (AQ) , BI , FE , LT , SI , SO , UR , VG ]

**External and Internal Surveys**

| | | | | |
|---|---|---|---|---|
| Exposure Rate Meter: | M3 242801 | Serial No.: | MU4-2 PR1042206 | Calibration Due Date: 4-20-11 |
| Count Rate Meter: | M2 154859 | Serial No.: | MU4-9 PR184559 | Calibration Due Date: 4-20-11 |

| | | | |
|---|---|---|---|
| Background Exposure Rate (µR/hr) | 22 | Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd) | 13 µR/hr |
| Background Count Rate (cpm) | 70 | Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd) | 20 cpm |
| | | Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd) | 20 cpm |

| Sample Label/Comments/Notes | pH Orig | pH Final | Mark if Preserve | Acid Lot # | Weight(g) / Volume(mL) | Acceptance Limits <500 µR/hr µR/hr | Acceptance Limits <100 cpm/cm² cpm |
|---|---|---|---|---|---|---|---|
| | pH ≤ 2 is Acceptable | | | | | | |
| MW-1-110419 1of6 | 5 | 0 | ✓ | 2040067B | 1000 mL | 13 | 30 |
| ↓ 2of6 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ 3of6 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ 4of6 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ 5of6 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ 6of6 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| MW-2-110421 | 5 | 0 | ✓ | ↓ | ↓ | 15 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| MW-2-2-110421 | 5 | 0 | ✓ | ↓ | ↓ | 15 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 15 | 35 |
| JPOP415-110421 | 5 | 0 | ✓ | ↓ | ↓ | 16 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 16 | 30 |
| MD-SW-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 35 |
| MW-3-110420 (MW-4-2811) | 5 | 0 | ✓ | ↓ | ↓ | 15 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| MW-4-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| MW-6-110420 | 5 | 0 | ✓ | ↓ | ↓ | 15 | 35 |

Surveyors' Name: [signature]

Date/Time Surveyed: 4-28-11 / 07:30

**COMPANY NAME:** Summit **SDG:** ARS/1/00897

**SHIPPING CONTAINER**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Radioactive | ☐ Yes | ☑ No |
| UN2910 | ☐ Yes | ☑ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seals Intact | ☐ Yes ☐ No | ☑ N/A |
| Air Bill | ☐ Yes | ☑ No |

**COC PRESENT WITH SAMPLES**

| | | |
|---|---|---|
| COC | ☑ Yes | ☐ No |

**SAMPLE CONTAINER(S)**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seal Intact | ☐ Yes ☐ No | ☑ N/A |
| Marked Radioactive | ☐ Yes | ☑ No |

# Samples Rcv 25

Matrix [ AF , AQ , BI , FE , LT , SI , SO , UR , VG ]

**External and Internal Surveys**

| | | | | | |
|---|---|---|---|---|---|
| Exposure Rate Meter: | M3 242861 | Serial No.: | M44-2 PR204266 | Calibration Due Date: | 4-20-12 |
| Count Rate Meter: | M2 154859 | Serial No.: | M44-9 PR184559 | Calibration Due Date: | 4-20-12 |

| | | | | |
|---|---|---|---|---|
| Background Exposure Rate (µR/hr) | 22 | Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd) | 13 | µR/hr |
| Background Count Rate (cpm) | 70 | Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd) | 20 | cpm |
| | | Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd) | 20 | cpm |

| Sample Label/Comments/Notes | pH Orig (pH ≤ 2 is Acceptable) | pH Final | Mark if Preserve | Acid Lot # | Weight(g) / Volume(ml) | µR/hr (Acceptance Limits <500 µR/hr) | cpm (Acceptance Limits <100 cpm/cm²) |
|---|---|---|---|---|---|---|---|
| MW-6-110420 | 5 | 0 | ✓ | R04006B | 1000mL | 15 | 30 |
| MW-7-110419 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 20 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 20 |
| MW-8-110419 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 25 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 25 |
| MW-MD-02-110420 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 20 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 20 |
| MW-MD-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| NPOP20E-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 15 | 30 |
| PR-SW-01-110420 | 5 | 0 | ✓ | ↓ | ↓ | 15 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| RB-01-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| RB-02-110421 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 25 |
| RM-JM-SW-02-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |

Surveyors Name: [signature] Date/Time Surveyed: 4-28-11 / 07:30

**COMPANY NAME:** Summit **SDG:** ARS171-00897

**SHIPPING CONTAINER**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Radioactive | ☐ Yes | ☑ No |
| UN2910 | ☐ Yes | ☑ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seals Intact | ☐ Yes ☐ No | ☑ N/A |
| Air Bill | ☐ Yes | ☑ No |

**COC PRESENT WITH SAMPLES**

| | | |
|---|---|---|
| COC | ☑ Yes | ☐ No |

**SAMPLE CONTAINER(S)**

| | | |
|---|---|---|
| Good Condition | ☑ Yes | ☐ No |
| Sec. Seals | ☐ Yes | ☑ No |
| Seal Intact | ☐ Yes ☐ No | ☑ N/A |
| Marked Radioactive | ☐ Yes | ☑ No |

# Samples Rcv 25

Matrix [ AF , AQ , BI , FE , LT , SI , SO , UR , VG ]

**External and Internal Surveys**

| | | | | | |
|---|---|---|---|---|---|
| Exposure Rate Meter: | M3 242861 | Serial No.: | M44-2 PR2104266 | Calibration Due Date: | 4-20-12 |
| Count Rate Meter: | M2 154859 | Serial No.: | M44-4 PR184559 | Calibration Due Date: | 4-20-12 |

Background Exposure Rate (µR/hr) 22 — Max. Exposure Rate on Shipping Containers Externals (Plus Bkgd) 13 µR/hr

Background Count Rate (cpm) 70 — Max. Removable Count Rate on Shipping Containers Externals (Plus Bkgd) 20 cpm

Max. Removable Count Rate on Shipping Containers Internals (Plus Bkgd) 20 cpm

| Sample Label/Comments/Notes | pH Orig (pH ≤ 2 is Acceptable) | pH Final | Mark if Preserve | Acid Lot # | Weight(g) / Volume(mL) | Acceptance Limits <500 µR/hr µR/hr | Acceptance Limits <100 cpm/cm² cpm |
|---|---|---|---|---|---|---|---|
| RM-JM-SW-110420 | 5 | 0 | ✓ | RUG00675 | 1000 mL | 13 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| RM-SW-BG-110419 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| RP-JM-SW-01-110420 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| RP-JM-SW-110420 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| RP-SW01-110419 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 35 |
| RP-SW-BG-041911 | 5 | 0 | ✓ | ↓ | ↓ | 14 | 35 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 14 | 35 |
| SPOP35-110421 | 5 | 0 | ✓ | ↓ | ↓ | 15 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| MW-RM-110420 | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| ↓ | 5 | 0 | ✓ | ↓ | ↓ | 13 | 30 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Surveyors' Name: [signature] Date/Time Surveyed: 4-28-11/07:30

# DISCREPANT SAMPLE RECEIPT REPORT

**For Sample Receiving Use**

**SDG:** _____ **Receipt Date/Time:** 4/27/11 / 16:24 **Matrix:** AQ

**Client Name:** SUMMIT

**Problem Description:**

Client has Sample ID-MW-RM ~~11020~~ 110420 (04-20-11 @09:34) present but its not listed on COC. CWB 4-27-11

**For Project Manager Use**

**Client Notified (Y | N):** Y **Date/Time Client Notified:** 4-27-11 / 1600

**Client/PM Resolution:**

Email sent to Client regarding discrepancy. Isotopic thorium should be done on these samples not Gamma Spec. The extra sample not listed on the chain should be added per Elvin Chavez. 4-28-11/0845 dlw

**Client Notified that TAT Starts from Resolution of DSRR (Y | N):** ~~Y~~ NJ 4-28-11 dlw

**Date/Time DSRR Resolved:** 4-28-11 / 0845 **PM Initials:** dlw

**For Sample Receiving Use**

**Action Taken:**

Heather Added sample to COC and check-in as marked.

**Signature:** _____ **Date/Time:** 4-28-11 09:03

**Sample Custodian**

## Heather Wright

**From:** Heather Wright
**Sent:** Wednesday, May 11, 2011 5:15 PM
**To:** Jamaal Brown
**Cc:** Project Managers
**Subject:** SLDA water samples(ARS1-11-00897)
**Signed By:** HWright@amrad.com

I've initiated reruns for the following Summit samples:
ARS1-B11-01664-14 (low tracer recovery)
ARS1-B11-01663-01 through -16 (LCS/LCSD failed extremely high at 908%, RER, DER, RPD failed)
ARS1-B11-01660-01 through -15 (tracer recovery low, method blank failed)

Sincerely,

**Heather Wright**
Project Manager
hwright@amrad.com
ProjectManagers@amrad.com

ARS INTERNATIONAL

☎ 225.381.2991 Office
225.381.2996 FAX

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# Preliminary

## American Radiation Services, Inc.

### Laboratory Analysis Report

### ARS1-11-00897

*Prepared for:*

**Summit Environmental Technologies**

**Dara Gilger**
**3310 Win St**
**Cuyahoga Falls, OH 44223**

**dgilger@settek.com**
**echavez@summitlabs.com**

**Phone: 330-253-8211**
**Fax: 330-253-4489**

Project Manager Review

Management Review

Notes: American Radiation Services, Inc. assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

**Contact Person: Questions regarding this analytical report should be addressed to:**

**Project Manager**

**ProjectManagers@amrad.com**

**Phone: 225.381.2991**
**Fax: 225.381.2996**

**LELAP Cert# 01949** **NELAP Cert# E87558**

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**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-1-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-001
**Date Received:** 04/27/11
**Report Date:** 05/06/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.044 | 0.025 | 0.010 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
| TH-230 | 0.122 | 0.046 | 0.033 | 0.012 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
| TH-232 | 0.007 | 0.020 | 0.039 | 0.014 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
| | | | | | | | | | | |
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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-2-110421 | **ARS Sample ID:** | ARS1-11-00897-002 |
| **Sample Collection Date:** | 04/21/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.013 | 0.015 | 0.012 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |
| TH-230 | 0.004 | 0.027 | 0.055 | 0.022 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |
| TH-232 | -0.071 | 0.042 | 0.101 | 0.045 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |

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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-2-2-110421 | **ARS Sample ID:** | ARS1-11-00897-003 |
| **Sample Collection Date:** | 04/21/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.008 | 0.012 | 0.011 | 0.000 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
| TH-230 | 0.042 | 0.037 | 0.054 | 0.022 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
| TH-232 | -0.004 | 0.018 | 0.045 | 0.017 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | JPOP41S-110421 | **ARS Sample ID:** | ARS1-11-00897-004 |
| **Sample Collection Date:** | 04/21/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.247 | 0.150 | 0.164 | 0.058 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
| TH-230 | 1.492 | 0.373 | 0.187 | 0.070 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
| TH-232 | 0.087 | 0.090 | 0.127 | 0.040 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MD-SW-110420 | **ARS Sample ID:** | ARS1-11-00897-005 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.043 | 0.029 | 0.013 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |
| TH-230 | 0.419 | 0.105 | 0.053 | 0.020 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |
| TH-232 | 0.020 | 0.027 | 0.046 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |

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**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-3-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-006
**Date Received:** 04/27/11
**Report Date:** 05/06/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.008 | 0.022 | 0.043 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
| TH-230 | 0.645 | 0.127 | 0.042 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
| TH-232 | 0.031 | 0.027 | 0.036 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
| | | | | | | | | | | |
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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-4-110420 | **ARS Sample ID:** | ARS1-11-00897-007 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.000 | 0.016 | 0.038 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
| TH-230 | 0.129 | 0.054 | 0.057 | 0.023 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
| TH-232 | 0.008 | 0.016 | 0.030 | 0.009 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
| | | | | | | | | | | |
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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-6-110420 | **ARS Sample ID:** | ARS1-11-00897-008 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.026 | 0.029 | 0.045 | 0.018 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
| TH-230 | 0.674 | 0.129 | 0.044 | 0.017 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
| TH-232 | 0.041 | 0.030 | 0.040 | 0.015 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
| | | | | | | | | | | |
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**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-7-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-009
**Date Received:** 04/27/11
**Report Date:** 05/06/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.036 | 0.024 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |
| TH-230 | 0.485 | 0.104 | 0.036 | 0.013 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |
| TH-232 | 0.039 | 0.024 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |

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**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-8-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-010
**Date Received:** 04/27/11
**Report Date:** 05/06/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.004 | 0.018 | 0.037 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |
| TH-230 | 0.938 | 0.166 | 0.042 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |
| TH-232 | 0.012 | 0.020 | 0.037 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |

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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-MD-02-110420 | **ARS Sample ID:** | ARS1-11-00897-011 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | -0.004 | 0.018 | 0.044 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
| TH-230 | 0.693 | 0.133 | 0.029 | 0.009 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
| TH-232 | 0.024 | 0.022 | 0.029 | 0.009 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
| | | | | | | | | | | |
| | | | | | | | | | | |
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**NOTES:**

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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-MD-110420 | **ARS Sample ID:** | ARS1-11-00897-012 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.009 | 0.022 | 0.043 | 0.015 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |
| TH-230 | 0.859 | 0.160 | 0.052 | 0.020 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |
| TH-232 | 0.009 | 0.012 | 0.012 | 0.000 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |

**NOTES:**

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| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | NPOP20E-110420 | **ARS Sample ID:** | ARS1-11-00897-013 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/06/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.037 | 0.073 | 0.138 | 0.043 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
| TH-230 | 1.854 | 0.434 | 0.198 | 0.074 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
| TH-232 | 0.110 | 0.161 | 0.275 | 0.113 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
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# Report Compilation Checklist

**ARS SDG:** 11-00897 **Client Name:** Summit **Sample Matrix:** AQ

| LEVEL 1 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 1) Cover Page Complete and Accurate (see ARS-059)? | ~~Yes~~ No N/A | |
| 2) Technical Review Checklist(s) Complete and Accurate? | ~~Yes~~ No N/A | |
| 3) Case Narrative Complete and Accurate (see ARS-059)? | ~~Yes~~ No N/A | |
| 4) Form 1s Present for all Samples and Tests? | ~~Yes~~ No N/A | |
| 5) Client Specific Components are Present and Complete? | Yes No ~~N/A~~ | |

| LEVEL 2 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 6) Batch Quality Control Report is Present and Accurate? | ~~Yes~~ No N/A | |
| 7) DQO Report is Present and Accurate? | ~~Yes~~ No N/A | |
| 8) Client Specific Batch QC Components are Present and Complete? | Yes No ~~N/A~~ | |

| LEVEL 3 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 9) Efficiencies are Present? | Yes No N/A | |
| 10) Calibrations are Present? | Yes No N/A | |
| 11) Backgrounds are Present? | Yes No N/A | |
| 12) Spectrum Analysis is Present? | Yes No N/A | |
| 13) Spectral Plots are Present? | Yes No N/A | |
| 14) Plateaus are Present? | Yes No N/A | |
| 15) Control Charts are Present? | Yes No N/A | |
| 16) Other: | Yes No N/A | |

| LEVEL 4 COMPONENTS | 1st Reviewer | |
|---|---|---|
| 17) Preparation Raw Data Present, Signed and Complete? | Yes No N/A | |
| 18) Instrument Raw Data Present and Complete? | Yes No N/A | |
| 19) Calibration Certificates Present? | Yes No N/A | |
| 20) Copies of Log Book Pages Present? | Yes No N/A | |
| 21) Sample Receiving Documentation Present? | Yes No N/A | |
| 22) LIMS Reports Present? | Yes No N/A | |
| 23) Applicable Correspondence Present? | Yes No N/A | |
| 24) Other: | Yes No N/A | |

Heather Wright 5/6/11
Report Generator Signature Date

VJM 5-6-11
Management Review Signature Date

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(800) 401-4277 -- FAX (225) 381-2996

## Preliminary II

# American Radiation Services, Inc.

### Laboratory Analysis Report

### ARS1-11-00897

*Prepared for:*

**Summit Environmental Technologies**

**Dara Gilger**
**3310 Win St**
**Cuyahoga Falls, OH 44223**

**dgilger@settek.com**
**echavez@summitlabs.com**

**Phone: 330-253-8211**
**Fax: 330-253-4489**

Project Manager Review

Management Review for V. Mulligan

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**Contact Person: Questions regarding this analytical report should be addressed to:**

**Project Manager**

**ProjectManagers@amrad.com**

**Phone: 225.381.2991**
**Fax: 225.381.2996**

**LELAP Cert# 01949** **NELAP Cert# E87558**

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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-1-110419 | **ARS Sample ID:** | ARS1-11-00897-001 |
| **Sample Collection Date:** | 04/19/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.044 | 0.025 | 0.010 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
| TH-230 | 0.122 | 0.046 | 0.033 | 0.012 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
| TH-232 | 0.007 | 0.020 | 0.039 | 0.014 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 79% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-2-110421 | **ARS Sample ID:** | ARS1-11-00897-002 |
| **Sample Collection Date:** | 04/21/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.013 | 0.015 | 0.012 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |
| TH-230 | 0.004 | 0.027 | 0.055 | 0.022 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |
| TH-232 | -0.071 | 0.042 | 0.101 | 0.045 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 70% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-2-2-110421
**Sample Collection Date:** 04/21/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-003
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.008 | 0.012 | 0.011 | 0.000 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
| TH-230 | 0.042 | 0.037 | 0.054 | 0.022 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
| TH-232 | -0.004 | 0.018 | 0.045 | 0.017 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 73% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** JPOP41S-110421
**Sample Collection Date:** 04/21/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-004
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.247 | 0.150 | 0.164 | 0.058 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
| TH-230 | 1.492 | 0.373 | 0.187 | 0.070 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
| TH-232 | 0.087 | 0.090 | 0.127 | 0.040 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 80% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MD-SW-110420 | **ARS Sample ID:** | ARS1-11-00897-005 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.043 | 0.029 | 0.013 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |
| TH-230 | 0.419 | 0.105 | 0.053 | 0.020 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |
| TH-232 | 0.020 | 0.027 | 0.046 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 59% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-3-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-006
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.008 | 0.022 | 0.043 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
| TH-230 | 0.645 | 0.127 | 0.042 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
| TH-232 | 0.031 | 0.027 | 0.036 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 77% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-4-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-007
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.000 | 0.016 | 0.038 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
| TH-230 | 0.129 | 0.054 | 0.057 | 0.023 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
| TH-232 | 0.008 | 0.016 | 0.030 | 0.009 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 76% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-6-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-008
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.026 | 0.029 | 0.045 | 0.018 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
| TH-230 | 0.674 | 0.129 | 0.044 | 0.017 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
| TH-232 | 0.041 | 0.030 | 0.040 | 0.015 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 75% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-7-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-009
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.036 | 0.024 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |
| TH-230 | 0.485 | 0.104 | 0.036 | 0.013 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |
| TH-232 | 0.039 | 0.024 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:52 | JB | 72% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-8-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-010
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.004 | 0.018 | 0.037 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |
| TH-230 | 0.938 | 0.166 | 0.042 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |
| TH-232 | 0.012 | 0.020 | 0.037 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 72% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | MW-MD-02-110420 | **ARS Sample ID:** | ARS1-11-00897-011 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | -0.004 | 0.018 | 0.044 | 0.016 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
| TH-230 | 0.693 | 0.133 | 0.029 | 0.009 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
| TH-232 | 0.024 | 0.022 | 0.029 | 0.009 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 73% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-MD-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-012
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.009 | 0.022 | 0.043 | 0.015 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |
| TH-230 | 0.859 | 0.160 | 0.052 | 0.020 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |
| TH-232 | 0.009 | 0.012 | 0.012 | 0.000 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 64% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | NPOP20E-110420 | **ARS Sample ID:** | ARS1-11-00897-013 |
| **Sample Collection Date:** | 04/20/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.037 | 0.073 | 0.138 | 0.043 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
| TH-230 | 1.854 | 0.434 | 0.198 | 0.074 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
| TH-232 | 0.110 | 0.161 | 0.275 | 0.113 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/05/11 03:53 | JB | 80% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** PR-SW-01-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-014
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 17.445 | 2.253 | 0.141 | 0.058 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 30% |
| U-235 | 0.565 | 0.168 | 0.029 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 30% |
| U-238 | 14.624 | 1.911 | 0.101 | 0.038 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 30% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RB-01-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous

**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-015
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 0.124 | 0.058 | 0.060 | 0.023 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 59% |
| U-235 | 0.006 | 0.030 | 0.062 | 0.023 | U | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 59% |
| U-238 | 0.065 | 0.063 | 0.100 | 0.043 | U | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 59% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RB-02-110421
**Sample Collection Date:** 04/21/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-016
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 0.111 | 0.056 | 0.067 | 0.027 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
| U-235 | 0.010 | 0.014 | 0.014 | 0.000 | U | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
| U-238 | 0.138 | 0.051 | 0.012 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RM-JM-SW-02-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-017
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 28.334 | 3.489 | 0.038 | 0.014 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 67% |
| U-235 | 0.961 | 0.177 | 0.044 | 0.016 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 67% |
| U-238 | 23.591 | 2.916 | 0.011 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 67% |
| TH-228 | 0.027 | 0.026 | 0.036 | 0.013 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
| TH-230 | 0.871 | 0.156 | 0.041 | 0.015 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
| TH-232 | 0.111 | 0.044 | 0.028 | 0.009 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RM-JM-SW-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-018
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 37.997 | 4.652 | 0.053 | 0.022 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 76% |
| U-235 | 1.541 | 0.246 | 0.012 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 76% |
| U-238 | 33.431 | 4.100 | 0.045 | 0.018 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 76% |
| TH-228 | 0.036 | 0.024 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
| TH-230 | 0.545 | 0.114 | 0.043 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
| TH-232 | 0.139 | 0.051 | 0.037 | 0.013 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 73% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RM-SW-BG-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-019
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 4.119 | 0.588 | 0.066 | 0.025 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 49% |
| U-235 | 0.100 | 0.054 | 0.019 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 49% |
| U-238 | 2.230 | 0.355 | 0.066 | 0.025 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 49% |
| TH-228 | 0.071 | 0.042 | 0.048 | 0.018 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
| TH-230 | 0.727 | 0.143 | 0.047 | 0.018 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
| TH-232 | 0.126 | 0.051 | 0.040 | 0.014 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RP-JM-SW-01-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-020
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 32.398 | 3.979 | 0.070 | 0.029 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 77% |
| U-235 | 1.236 | 0.211 | 0.034 | 0.011 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 77% |
| U-238 | 29.257 | 3.599 | 0.052 | 0.021 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 77% |
| TH-228 | 0.026 | 0.027 | 0.040 | 0.014 | U | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 72% |
| TH-230 | 0.755 | 0.147 | 0.060 | 0.024 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 72% |
| TH-232 | 0.077 | 0.038 | 0.031 | 0.010 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 72% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RP-JM-SW-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-021
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 28.476 | 3.505 | 0.056 | 0.023 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 70% |
| U-235 | 1.071 | 0.190 | 0.043 | 0.015 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 70% |
| U-238 | 24.247 | 2.993 | 0.075 | 0.032 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 70% |
| TH-228 | 0.226 | 0.071 | 0.051 | 0.020 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 67% |
| TH-230 | 0.702 | 0.138 | 0.050 | 0.019 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 67% |
| TH-232 | 0.142 | 0.054 | 0.045 | 0.017 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 67% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** RP-SW-01-110419
**Sample Collection Date:** 04/19/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-022
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 85.099 | 10.338 | 0.031 | 0.011 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 83% |
| U-235 | 3.236 | 0.449 | 0.011 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 83% |
| U-238 | 78.787 | 9.575 | 0.025 | 0.008 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 83% |
| TH-228 | 0.104 | 0.043 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
| TH-230 | 1.073 | 0.184 | 0.038 | 0.013 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
| TH-232 | 0.110 | 0.044 | 0.011 | 0.000 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 69% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | RP-SW-BG-041911 | **ARS Sample ID:** | ARS1-11-00897-023 |
| **Sample Collection Date:** | 04/19/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 6.242 | 0.840 | 0.061 | 0.023 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 50% |
| U-235 | 0.216 | 0.078 | 0.018 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 50% |
| U-238 | 3.793 | 0.541 | 0.041 | 0.013 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 50% |
| TH-228 | 0.161 | 0.057 | 0.038 | 0.014 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 70% |
| TH-230 | 1.202 | 0.200 | 0.044 | 0.016 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 70% |
| TH-232 | 0.073 | 0.038 | 0.038 | 0.013 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 70% |
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# Preliminary II

| | | | |
|---|---|---|---|
| **ARS Sample Delivery Group:** | ARS1-11-00897 | **Request or PO Number:** | N/A |
| **Client Sample ID:** | SPOP35-110421 | **ARS Sample ID:** | ARS1-11-00897-024 |
| **Sample Collection Date:** | 04/21/11 | **Date Received:** | 04/27/11 |
| **Sample Matrix:** | Aqueous | **Report Date:** | 05/12/11 |

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| TH-228 | 0.075 | 0.039 | 0.041 | 0.015 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 79% |
| TH-230 | 0.592 | 0.117 | 0.027 | 0.009 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 79% |
| TH-232 | 0.100 | 0.041 | 0.027 | 0.009 | | pCi/L | ARS-031/Eichrom ACW-10 | 05/06/11 10:32 | JB | 70% |
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# Preliminary II

**ARS Sample Delivery Group:** ARS1-11-00897
**Client Sample ID:** MW-RM-110420
**Sample Collection Date:** 04/20/11
**Sample Matrix:** Aqueous
**Request or PO Number:** N/A
**ARS Sample ID:** ARS1-11-00897-025
**Date Received:** 04/27/11
**Report Date:** 05/12/11

| Analysis Description | Analysis Results | Analysis Error +/- 2 s | MDC | DLC | Qual | Analysis Units | Analysis Test Method | Analysis Date/Time | Analysis Technician | Tracer/Chem Recovery |
|---|---|---|---|---|---|---|---|---|---|---|
| U-234 | 11.645 | 1.471 | 0.011 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
| U-235 | 0.733 | 0.146 | 0.013 | 0.000 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
| U-238 | 30.024 | 3.693 | 0.049 | 0.019 | | pCi/L | ARS-026/Eichrom ACW-03 | 05/10/11 13:21 | JB | 68% |
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# Notes:

## Comments:

1.0) Soil and Sludge analysis are reported on a wet basis or an as received basis unless otherwise indicated.

2.0) Data in this report are within the limits of uncertainty specified in the reference method unless otherwise specified.

3.0) Modified analysis procedures are procedures that are modified to meet the certain specifications. An example may be the use of a water method to analyze a solid matrix due to the lack of an officially recognized procedure for the analysis of the solid matrix. Modified analyses are indicated by the subsequent addition of "m" to the procedure number (i.e. 900.0M).

4.0) Derived Air Concentrations and Effluent Release Concentrations are obtained from 10 CFR 20 Appendix B.

5.0) **Total activity** is actually total gamma activity and is determined utilizing the prominent gamma emitters from the naturally occurring radioactive decay chains and other prominent radioactive nuclides. Total activity may be lower than the actual total activity due to the extent of secular equilibrium achieved in the various decay chains at the time of analysis. The total activity is not representative of nuclides that emit solely alpha or beta particles.

6.0) Ra-228 is determined via secular equilibrium with its daughter, Actinium 228 (Gamma Spectroscopy only).

7.0) U-238 is determined via secular equilibrium with its daughter, Thorium 234 (Gamma Spectroscopy only).

8.0) All gamma spectroscopy was performed utilizing high purity germanium detectors (**HPGe**).

9.0) ARS makes every attempt to match sample density to calibrated density; however, in some cases, it is not practical or possible to do so and data results may be affected (Gamma Spectroscopy only).

10.0) Gamma spectroscopy results are calculated values based on the **ORTEC**® GammaVision ENV32 Analysis Engine.

## Method References:

1.0) **EPA 600/4-80-032**; Prescribed Procedures for the Measurements of Radioactivity in Drinking Water, August 1980.

2.0) Standard Methods for Examination of Water and Waste Water, 18th, 1992.

3.0) **EPA SW-846**; Test Methods for Evaluating Solid Waste, Third Edition, (9/86). (Updated through 1995).

4.0) **EPA 600/4/79-020**; Methods for Chemical Analysis of Water and Waste, March 1983.

**5.0) HASL 300**

6.0) **ARS-040**; An LCSD is not reported with this process. The criteria for the LCS/LCSD analysis for reproducibility have not been established for Low Level Tritium analysis. A prepared standard for Low Level Tritium has not been developed. As a result, the standard we use is based on the dilution of a verified conventional tritium standard. The volume required for Low Level Tritium analysis, in addition to the lack of an available Low Level Tritium standard, introduce variability into the LCS/LCSD analysis that does not represent the actual sample analysis. The preferred measure for reproducibility is to run a duplicate analysis of a sample.

## Definitions:

| | | |
|---|---|---|
| 1.0) | **ND** | Not detected above the detection limit (non-detect). |
| 2.0) | **MDC** | (Minimum Detectable Concentration) minimum concentration of the analyte that ARS can detect utilizing the specific analysis |
| 3.0) | **MBL** | Method Blank |
| 4.0) | **DO** | Duplicate Original |
| 5.0) | **DUP** | Method Duplicate |
| 6.0) | **MS/MSD** | Matrix Spike/Matrix Spike Duplicate |
| 7.0) | **S** | Spike |
| 8.0) | **RS** | Reference Spike |
| 9.0) | ***SC** | Subcontracted out to another qualified laboratory |
| 10.0) | **NR** | Not Referenced |
| 11.0) | **N/A** | Not Applicable |
| 12.0) | ** | False Positive due to interference from Bi-214 |
| 13.0) | **U** | Activity is below the MDC |
| 14.0) | **LCS/LCSD** | Laboratory Control Standard/Laboratory Control Standard Duplicate |
| 15.0) | **DLC** | Decision Level Concentration (ANSI N42.23) or critical level |

Notes: ARS International assumes no liability for the use or interpretation of any analytical results provided other than the cost of the analysis itself. Reproduction of this report in less than full requires the written consent of the client.

***LELAP Cert# 01949*** ***NELAP Cert# E87558***

# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01631**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **Method** | **ARS-002** | **Analysis** | **GPC-A-001** | | **Matrix** | **AQ** |
| | | | | **Description** | **Gross Alpha/Beta (Aqueous)** | | | | | |
| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
| ARS1-B11-01631-01 | LCS | | | | | | | | | |
| ARS1-B11-01631-02 | LCSD | | | | | | | | | |
| ARS1-B11-01631-03 | MBL | | | | | | | | | |
| ARS1-B11-01631-04 | TRG | | | | **ARS1-11-00897** | 021 | 1 | RP-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01631-05 | TRG | | | | **ARS1-11-00897** | 022 | 1 | RP-SW-01-110419 | STD | 05/03/11 |
| ARS1-B11-01631-06 | TRG | | | | **ARS1-11-00897** | 023 | 1 | RP-SW-BG-041911 | STD | 05/03/11 |
| ARS1-B11-01631-07 | TRG | | | | **ARS1-11-00897** | 024 | 1 | SPOP35-110421 | STD | 05/03/11 |
| ARS1-B11-01631-08 | TRG | | | | **ARS1-11-00897** | 025 | 1 | MW-RM-110420 | STD | 05/03/11 |

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GEN 140
C 11160
GAGB Screen
ACB

| Detector ID | Sample ID | Alpha | Beta | Count Time | Voltage | TOD |
|---|---|---|---|---|---|---|
| C4 | 11-01631-08 | 1 | 7 | 10 | 1380 | 4/28/11 17:59 |
| A1 | 11-01631-04 | 3 | 7 | 10 | 1380 | 4/28/11 17:59 |
| A2 | 11-01631-05 | 1 | 9 | 10 | 1380 | 4/28/11 17:59 |
| A3 | 11-01631-06 | 0 | 12 | 10 | 1380 | 4/28/11 17:59 |
| A4 | 11-01631-07 | 30 | 38 | 10 | 1380 | 4/28/11 17:59 |

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# Analysis Batch Report



**Analysis Batch ID** **ARS1-B11-01621**

| Method | ARS-002 | Analysis | GPC-A-001 | Matrix | AQ |
|---|---|---|---|---|---|
| **Description** | **Gross Alpha/Beta (Aqueous)** | | | | |

| ABatch Sample ID | Type | Blind Iso1 | Blind Iso2 | Blind Iso3 | SDG | FR | Run | Client ID | Isotope Group | Lab Deadline |
|---|---|---|---|---|---|---|---|---|---|---|
| ARS1-B11-01621-01 | LCS | | | | | | | | | |
| ARS1-B11-01621-02 | LCSD | | | | | | | | | |
| ARS1-B11-01621-03 | MBL | | | | | | | | | |
| ARS1-B11-01621-04 | TRG | | | | **ARS1-11-00897** | 001 | 1 | MW-1-110419 | STD | 05/03/11 |
| ARS1-B11-01621-05 | TRG | | | | **ARS1-11-00897** | 002 | 1 | MW-2-110421 | STD | 05/03/11 |
| ARS1-B11-01621-06 | TRG | | | | **ARS1-11-00897** | 003 | 1 | MW-2-2-110421 | STD | 05/03/11 |
| ARS1-B11-01621-07 | TRG | | | | **ARS1-11-00897** | 004 | 1 | JPOP41S-110421 | STD | 05/03/11 |
| ARS1-B11-01621-08 | TRG | | | | **ARS1-11-00897** | 005 | 1 | MD-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01621-09 | TRG | | | | **ARS1-11-00897** | 006 | 1 | MW-3-110420 | STD | 05/03/11 |
| ARS1-B11-01621-10 | TRG | | | | **ARS1-11-00897** | 007 | 1 | MW-4-110420 | STD | 05/03/11 |
| ARS1-B11-01621-11 | TRG | | | | **ARS1-11-00897** | 008 | 1 | MW-6-110420 | STD | 05/03/11 |
| ARS1-B11-01621-12 | TRG | | | | **ARS1-11-00897** | 009 | 1 | MW-7-110419 | STD | 05/03/11 |
| ARS1-B11-01621-13 | TRG | | | | **ARS1-11-00897** | 010 | 1 | MW-8-110419 | STD | 05/03/11 |
| ARS1-B11-01621-14 | TRG | | | | **ARS1-11-00897** | 011 | 1 | MW-MD-02-110420 | STD | 05/03/11 |
| ARS1-B11-01621-15 | TRG | | | | **ARS1-11-00897** | 012 | 1 | MW-MD-110420 | STD | 05/03/11 |
| ARS1-B11-01621-16 | TRG | | | | **ARS1-11-00897** | 013 | 1 | NPOP20E-110420 | STD | 05/03/11 |
| ARS1-B11-01621-17 | TRG | | | | **ARS1-11-00897** | 014 | 1 | PR-SW-01-110420 | STD | 05/03/11 |
| ARS1-B11-01621-18 | TRG | | | | **ARS1-11-00897** | 015 | 1 | RB-01-110420 | STD | 05/03/11 |
| ARS1-B11-01621-19 | TRG | | | | **ARS1-11-00897** | 016 | 1 | RB-02-110421 | STD | 05/03/11 |
| ARS1-B11-01621-20 | TRG | | | | **ARS1-11-00897** | 017 | 1 | RM-JM-SW-02-110420 | STD | 05/03/11 |
| ARS1-B11-01621-21 | TRG | | | | **ARS1-11-00897** | 018 | 1 | RM-JM-SW-110420 | STD | 05/03/11 |
| ARS1-B11-01621-22 | TRG | | | | **ARS1-11-00897** | 019 | 1 | RM-SW-BG-110419 | STD | 05/03/11 |
| ARS1-B11-01621-23 | TRG | | | | **ARS1-11-00897** | 020 | 1 | RP-JM-SW-01-110420 | STD | 05/03/11 |

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GEN 257
A 35723
GAGB Screen
ACB

| Detector ID | Sample ID | Alpha | Beta | Count Time | Voltage | TOD |
|---|---|---|---|---|---|---|
| A1 | 11-01621-04 | 1 | 13 | 10 | 1395 | 4/28/11 13:58 |
| A2 | 11-01621-05 | 2 | 20 | 10 | 1395 | 4/28/11 13:58 |
| C1 | 11-01621-11 | 1 | 17 | 10 | 1395 | 4/28/11 13:58 |
| A3 | 11-01621-06 | 2 | 9 | 10 | 1395 | 4/28/11 13:58 |
| C2 | 11-01621-12 | 1 | 12 | 10 | 1395 | 4/28/11 13:58 |
| A4 | 11-01621-07 | 2040 | 1907 | 10 | 1395 | 4/28/11 13:58 |
| C3 | 11-01621-13 | 1 | 12 | 10 | 1395 | 4/28/11 13:58 |
| B1 | 11-01621-08 | 1 | 9 | 10 | 1395 | 4/28/11 13:58 |
| C4 | 11-01621-14 | 1 | 7 | 10 | 1395 | 4/28/11 13:58 |
| B2 | 11-01621-09 | 1 | 18 | 10 | 1395 | 4/28/11 13:58 |
| D1 | 11-01621-15 | 0 | 5 | 10 | 1395 | 4/28/11 13:58 |
| B4 | 11-01621-10 | 2 | 20 | 10 | 1395 | 4/28/11 13:58 |
| D3 | 11-01621-16 | 546 | 353 | 10 | 1395 | 4/28/11 13:58 |
| D4 | 11-01621-17 | 1 | 14 | 10 | 1395 | 4/28/11 13:58 |

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GEN 139
C 11160
GAGB Screen
ACB

| Detector ID | Sample ID | Alpha | Beta | Count Time | Voltage | TOD |
|---|---|---|---|---|---|---|
| C1 | 11-01621-18 | 1 | 7 | 10 | 1380 | 4/28/11 13:59 |
| C2 | 11-01621-19 | 0 | 8 | 10 | 1380 | 4/28/11 13:59 |
| C3 | 11-01621-20 | 0 | 10 | 10 | 1380 | 4/28/11 13:59 |
| D1 | 11-01621-21 | 1 | 5 | 10 | 1380 | 4/28/11 13:59 |
| D2 | 11-01621-22 | 0 | 2 | 10 | 1380 | 4/28/11 13:59 |
| D3 | 11-01621-23 | 0 | 1 | 10 | 1380 | 4/28/11 13:59 |

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# APPENDIX E
# LABORATORY DATA VALIDATION PACKAGES

**DATA QUALITY ASSURANCE REVIEW**

| | | | |
|---|---|---|---|
| SITE NAME | Jackpile-Paguate Uranium Mine ESI | | |
| WORK ORDER NUMBER | 20406.012.019.0603.01 | TDD NUMBER | TO-0019-10-11-01 |
| PROJECT NUMBER | | SDG NUMBER | 1107985 |

Weston Solutions, Inc. (WESTON®) has completed a QA review for Work Order Number 20406.012.019.0603.01, SDG No. 1107985, Jackpile-Paguate Uranium Mine ESI. Thirty five samples were analyzed for metals by Summit Environmental Technologies, Inc. Sample numbers are listed below.

SAMPLE NUMBERS

| | | |
|---|---|---|
| JPOP41S-110421 | MD-SW-110420 | MW-1-110419 |
| MW-2-110421 | MW-2-2-110421 | MW-3-110420 |
| MW-4-110420 | MW-6-110420 | MW-7-110419 |
| MW-8-110419 | MW-MD-02-110420 | MW-MD-110420 |
| NPOP20E-110420 | PR-SED-01-110420 | PR-SW-01-110420 |
| RB-01-110420 | RB-02-110421 | RM-JM-SED-02-110420 |
| RM-JM-SED-110420 | RM-JM-SW-02-114020 | RM-JM-SW-110420 |
| RM-SED-BG-110419 | RM-SW-BG-110419 | RP-JM-SED-01-110420 |
| RP-JM-SED-110420 | RP-JM-SW-01-110420 | RP-JM-SW-110420 |
| RP-SED-01-110419 | RP-SED-02-114020 | RP-SED-03-110420 |
| RP-SED-BG-041911 | RP-SW-01-110419 | RP-SW-BG-041911 |
| SPOP35-110421 | MW-RM-110420 | |

This data package was validated to determine if Quality Control (QC) specifications were achieved, following *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October, 1999), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (July, 2002), *USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (August, 2002), *Quality Assurance/Quality Control Guidance for Removal Activities* (April, 1990), and the Regional Protocol for Holding Times, Blanks, and VOA Preservation (April 13, 1989). Specific data qualifications are listed in the following discussion.

| | | | |
|---|---|---|---|
| REVIEWER | Gloria J. Switalski | DATE | July 1, 2011 |

Data Qualifiers

Data Qualifier Definitions were supplied by the Office of Solid Waste and Emergency Response (September 1989) and are included in the Functional Guidelines. Data qualifiers may be combined (UJ, QJ) with the corresponding combination of meanings. Additional qualifier may be added to provide additional, more specific information (JL, UB, QJK), modifying the meaning of the primary qualifier. Addition qualifiers utilized by WESTON are H, L, K, B, Q, and D.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation or detection limit, which has been adjusted for sample weight/sample volume, extraction volume, percent solids, sample dilution or other analysis specific parameters.

An additional qualifier, "B", may be appended to indicate that while the analyte was detected in the sample, the presence of the analyte may be attributable to blank contamination and the analyte is therefore considered undetected with the sample detection or quantitation limit for the analyte being elevated.

J - The analyte was analyzed for, but the associated numerical value may not be consistent with the amount actually present in the environmental sample or may not be consistent with the sample detection or quantitation limit. The value is an estimated quantity. The data should be seriously considered for decision-making and are usable for many purposes.

An additional qualifier will be appended to the "J" qualifier that indicates the bias in the reported results:

L Low bias

H High bias

K Unknown bias

Q The reported concentration is less than the sample quantitation limit for the specific analyte in the sample.

The L and H qualifier will only be employed when a single qualification is required. When more than one quality control parameter affects the analytical result and a conflict results in assigning a bias, the result will be flagged JK.

R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

N - The analysis indicates the presence of analyte for which there is presumptive evidence to make a "tentative identification."

D - The concentration reported was determined in the re-analysis of the sample at a secondary dilution.

## METALS DATA EVALUATION

1. Analytical Method:

Samples were prepared and analyzed for ICP metals using the procedures specified in **SW-846 Method 6010B or EPA Method 200.7.** Samples were prepared and analyzed for mercury using the procedures specified in **SW-846 Methods 7470A or 7471A.**

2. Holding Times:

All samples met established holding time criteria of 180 days for ICP metals and 28 days for mercury. Samples were maintained at 4°C±2°C. No qualifications are placed on the data.

3. Initial Calibration:

ICP initial calibration included a blank and one standard and initial calibration verification results fell within the control limits of 90 to 110 percent of the true values. Mercury initial calibration included a blank and eight standards and the correlation coefficient was greater than 0.995. No qualifications are placed on the data.

4. Continuing Calibration:

All ICP results fell within the control limits of 90% to 110% of the true values. All mercury results fell within the control limits of 80% to 120% of the true values. No qualifications are placed on the data.

5. CRDL Standard:

No CRDL standards were analyzed by the laboratory. No qualifications are place on the data.

6. Blanks:

A. Laboratory Blanks:

Target analytes were detected in the following calibration and preparation blanks at concentrations that warrant blank action. Sample concentrations less than five times the highest analyte concentration reported in associated blanks are flagged UB (not detected, detection limit raised due to possible blank contamination). Details are noted below:

| INSTRUMENT ID DATE/TIME | ANALYTE/ BLANK ID | CONC. (units) | AFFECTED SAMPLES |
|---|---|---|---|
| ICP-2 TRACE 4/29/11 10:27 | Aluminum/ICB | 0.0964 mg/L | MD-SW-110420, MW-1-110419, MW-2-110421, MW-2-2-110421, MW-3-110420, MW-4-110420, MW-6-110420, MW-7-110419, MW-8-110419, SPOP35-110421 |

| INSTRUMENT ID DATE/TIME | ANALYTE/ BLANK ID | CONC. (units) | AFFECTED SAMPLES |
|---|---|---|---|
| ICP-2 TRACE 4/29/11 10:27 | Antimony/ICB | 0.0163 mg/L | MD-SW-110420, MW-1-110419, MW-2-110421, MW-2-2-110421, MW-3-110420, MW-4-110420, MW-6-110420, MW-7-110419, MW-8-110419, MW-MD-02-110420, MW-MD-110420, PR-SW-01-110420, RB-01-110420, RB-02-110421, RM-JM-SW-110420, RM-SW-BG-110419, RP-JM-SW-110420, RP-SW-01-110419 |
| ICP-2 TRACE 4/29/11 19:05 | Arsenic/CCB2 | 0.0022 mg/L | MD-SW-110420, MW-2-110421, MW-4-110420, MW-7-110419, MW-8-110419, MW-MD-02-110420, MW-MD-110420, PR-SW-01-110420, RB-01-110420, RB-02-110421 |
| ICP-2 TRACE 4/29/11 20:30 | Barium/CCB6 | 0.0017 mg/L | JPOP41S-110421, RB-01-110420, RB-02-110421, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 10:27 | Beryllium/ICB | 0.0012 mg/L | MD-SW-110420, MW-4-110420 |
| ICP-2 TRACE 4/29/11 10:27 | Cadmium/ ICB | 0.0012 mg/L | JPOP41S-110421 |
| ICP-2 TRACE 4/29/11 10:27 | Chromium/ICB | 0.0010 mg/L | MW-8-110419, MW-MD-02-110420 |
| ICP-2 TRACE 4/29/11 10:27 | Cobalt/ICB | 0.0019 mg/L | MD-SW-110420, MW-1-110419, MW-2-110421, MW-2-2-110421, MW-4-110420, MW-7-110419, MW-8-110419, MW-MD-02-110420, MW-MD-110420, PR-SW-01-110420, RB-01-110420, RP-SW-01-110419, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 20:30 | Iron/CCB6 | 0.283 mg/L | MW-2-110421, MW-2-2-110421, MW-6-110420, MW-7-110419, MW-8-110419, PR-SW-01-110420, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 19:47 | Lead/CCB4 | 0.0150 mg/L | MD-SW-110420, MW-2-110421, MW-4-110420, MW-7-110419, NPOP20E-110420, RB-01-110420, RM-JM-SW-110420, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 20:30 | Manganese/CCB6 | 0.0044 mg/L | MW-6-110420, RM-JM-SW-110420 |
| ICP-2 TRACE 4/29/11 19:47 | Nickel/CCB4 | 0.0200 mg/L | JPOP41S-110421, MD-SW-110420, MW-1-110419, MW-2-110421, MW-2-2-110421, MW-4-110420, MW-6-110420, MW-8-110419, MW-MD-02-110420, MW-MD-110420, NPOP20E-110420, PR-SW-01-110420, RB-01-110420, RP-JM-SW-110420, RP-SW-01-110419, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 20:30 | Selenium/CCB6 | 0.0334 mg/L | All Aqueous |
| ICP-2 TRACE 4/29/11 10:27 | Silver/CCB1 | 0.0017 mg/L | MD-SW-110420, MW-1-110419, MW-2-110421, MW-4-110420, MW-6-110420, MW-8-110419, RB-01-110420, RB-02-110421, RP-JM-SW-110420, SPOP35-110421 |
| ICP-2 TRACE 4/29/11 20:30 | Thallium/CCB6 | 0.0153 mg/L | MD-SW-110420, MW-1-110419, MW-2-110421, MW-2-2-110421, MW-4-110420, MW-6-110420, MW-7-110419, MW-MD-02-110420, PR-SW-01-110420, RB-02-110421, RM-JM-SW-02-110420, RM-JM-SW-110420, RM-SW-BG-110419, RP-JM-SW-01-110420, RP-SW-01-110419, RP-SW-BG-041911 |

| INSTRUMENT ID DATE/TIME | ANALYTE/ BLANK ID | CONC. (units) | AFFECTED SAMPLES |
|---|---|---|---|
| ICP-2 TRACE 4/29/11 18:02 | Zinc/CCB2 | 0.0061 mg/L | JPOP415-110421, MW-2-110421, MW-3-110420, MW-4-110420, MW-6-110420, MW-7-110419, NPOP20E-110420, RB-01-110420, RB-02-110421, RM-SW-BG-110419, RP-JM-SW-01-110420, RP-JM-SW-110420, RP-SW-BG-041911 |
| ICP-2 TRACE 5/11/11 10:13 | Antimony/ICB | 0.0075 mg/L | PR-SED-01-110420, RM-JM-SED-02-110420 |
| ICP-2 TRACE 5/11/11 13:17 | Beryllium/CCB2 | 0.0022 mg/L | All Sediments |
| ICP-2 TRACE 5/11/11 10:13 | Lead/ICB | 0.0072 mg/L | All Sediments except PR-SED-01-110420, RM-SED-BG-110419 |
| ICP-2 TRACE 5/11/11 13:17 | Selenium/CCB2 | 0.0368 mg/L | RP-SED-01-110419, RP-SED-02-110420 |
| ICP-2 TRACE 5/11/11 10:13 | Sodium/ICB | 2.00 mg/L | RB-01-110420, RB-02-110421 |
| ICP-2 TRACE 5/11/11 15:10 | Thallium/CCB4 | 0.0115 mg/L | RM-JM-SED-110420, RM-SED-BG-110419, RP-SED-01-110419 |
| ICP-2 TRACE 5/12/11 14:19 | Aluminum/CCB1 | 0.354 mg/L | MW-RM-110420 |
| ICP-2 TRACE 5/12/11 12:18 | Antimony/ICB | 0.0039 mg/L | MW-RM-110420 |
| ICP-2 TRACE 5/12/11 12:18 | Copper/ICB | 0.0033 mg/L | MW-RM-110420 |
| ICP-2 TRACE 5/12/11 12:18 | Selenium/ICB | 0.0411 mg/L | MW-RM-110420 |

ICB = Initial Calibration Blank; CCB = Continuing Calibration Blank

B. Field Blanks:

Calcium (3.60 and 1.34 mg/L) was detected in the following field blanks associated with this analytical package: RB-01-110420 and RB-02-110421. Since the associated sample concentrations were greater than the blank action concentrations, no qualifications are placed on the data.

7. ICP Interference Check:

All results for the Interference Check Sample were within the control limits of 80% to 120% of the true values with the following exceptions:

| ANALYTE | INSTRUMENT ID DATE/TIME | % RECOVERY | AFFECTED SAMPLES | QUALIFIER FLAG |
|---|---|---|---|---|
| Lead<br>Potassium<br>Selenium | ICP-2 TRACE 4/29/11 14:50 | 76<br>197<br>135 | All Aqueous except MW-RM-110420 | JL/UJL<br>JH<br>None, samples ND |
| Aluminum<br>Potassium<br>Selenium<br>Sodium | ICP-2 TRACE 5/11/11 11:25 | 134<br>228<br>12<br>228 | All Sediment | JH<br>JH<br>JL/UJL*<br>JH |
| Potassium<br>Selenium<br>Sodium | ICP-2 TRACE 5/12/11 12:29 | 183<br>39<br>33 | MW-RM-110420 | JH<br>UJL<br>JL |

*Ultimately qualified JK/UJK due to poor field duplicate precision as noted below.

8. Laboratory Control Sample (LCS):

The recoveries for the LCS were within the established control limits. No qualifications are placed on the data.

9. Duplicate Sample Analysis:

A. Laboratory Duplicate Analysis:

A matrix spike and matrix spike duplicate (MS/MSD) were performed on groundwater samples MW-1-110419, MW-3-110420, MW-8-110419, and MW-RM-110420. An MS/MSD was performed on sediment sample RM-JM-SED-110420. QC criteria are that the relative percent difference (RPD) values for the duplicate sample analysis be less than 20% for aqueous samples and less than 35% for solid samples for concentrations greater than five times the reporting limit (RL). For sample concentrations less than five times the RL, the QC criteria are within ± the RL for the aqueous matrix or ± two times the RL for the solid matrix. QC criteria were not met for the following analyte:

| MS/MSD | ANALYTE | MATRIX | RPD | AFFECTED SAMPLES | QUALIFIER FLAG |
|---|---|---|---|---|---|
| RM-JM-SED-110420 | Silver | Sediment | 55% | All Sediment | UJK* |

*UJK ultimately qualified as rejected, R due to extremely poor MS/MSD recoveries as noted below.

B. Field Duplicate Analysis:

The following sample pairs were submitted as field duplicates for the groundwater matrix: MW-2-110421/MW-2-2-110421 and MW-MD-02-110420/MW-MD-110420. The following sample pair was submitted as field duplicates for the sediment matrix: RM-JM-SED-02-110420/RM-JM-SED-110420. The following sample pair was submitted as field duplicates for the surface water matrix: RM-JM-SW-02-110420/RM-JM-SW-110420. QC criteria are that the RPD values for the field duplicate sample analysis be less than 30% for aqueous samples and less than 50% for solid samples for concentrations greater than five times the RL. For sample concentrations less than five times the RL, the QC criteria is that the absolute difference between the samples is less than two times the RL for aqueous samples or less than 3.5 times the RL for the solid matrix. QC criteria were not met for the following analytes:

| FIELD DUPLICATE SAMPLE PAIR | ANALYTE | MATRIX | RPD | AFFECTED SAMPLES | QUALIFIER FLAG |
|---|---|---|---|---|---|
| RM-JM-SED-02-110420/<br>RM-JM-SED-110420 | Antimony<br>Selenium | Sediment | NC<br>NC | RM-JM-SED-02-110420/<br>RM-JM-SED-110420 | JK/UJK<br>JK/UJK |

NC = Not Calculated; one result ND or less than RL and one result > 5X RL.

10. Matrix Spike/Matrix Spike Duplicate Analysis:

MS/MSD were performed on groundwater samples MW-1-110419, MW-3-110420, MW-8-110419, and MW-RM-110420. An MSMSD was performed on sediment sample RM-JM-SED-110420. The spike

recoveries for the following analytes were outside of the 75%-125% QC recovery limits for analytes whose sample concentration did not exceed the spike concentration by a factor of 4 times or more:

| ANALYTE | MATRIX | %R/%R | AFFECTED SAMPLES | QUALIFIER FLAG |
|---|---|---|---|---|
| Potassium | Groundwater | 219/211 | All Groundwater | JH |
| Silver | Groundwater | 8/8 | All Groundwater | JL/R |
| Potassium | Groundwater | 136/138 | All Groundwater | JH |
| Silver | Groundwater | 13/13 | All Groundwater | JL/R |
| Potassium | Groundwater | 211/209 | All Groundwater | JH |
| Silver | Groundwater | 7/7 | All Groundwater | JL/R |
| Antimony | Sediment | 41/51 | All Sediment | JL/UJL |
| Barium | Sediment | OK/133 | All Sediment | JH |
| Nickel | Sediment | 71/73 | All Sediment | JL |
| Potassium | Sediment | 205/205 | All Sediment | JH |
| Silver | Sediment | 4/8 | All Sediment | JL*/R |
| Potassium | Groundwater | 162/179 | All Groundwater | JH |
| Silver | Groundwater | 12/12 | All Groundwater | JL/R |

11. ICP Serial Dilution:

The laboratory did not analyze any samples at a serial dilution. No qualifications are placed on the data.

12. Sample Quantitation and Reporting Limits:

Concentrations of all reported analytes were correctly calculated.

Sample JPOP41S-110421 was analyzed at 50-fold dilution for iron due to matrix interference. All samples were analyzed at a dilution for calcium, iron, magnesium, potassium, and/or sodium. Reporting limits in these samples are elevated as a result of the dilutions performed.

Reported concentrations less than the RL qualified "J" by the laboratory are qualified "JQ" to indicate that the result is less than the RL but greater than the method detection limit (MDL).

13. Laboratory Contact

The laboratory was contacted June 22-24, 2011 regarding the discrepancies between field IDs used by the laboratory and those listed on the COC, the lack of sample preparation worksheets, the lack of blank and LCS data associated with one of the ICP metals samples, the lack of a "U" flag for one of the mercury sample results, the lack of the % solids data on some forms for the sediment samples; the lack of post digestion or serial dilution results for metals samples; and the percent solids raw data. An acceptable response was received on June 27-29, 2011.

14. Overall Assessment:

Many analytes in many samples were qualified as undetected due to blank actions.

The detected potassium results and the detected and non-detected lead results in all aqueous samples except MW-RM-110420 were estimated due to poor ICS recoveries.

The detected potassium and sodium results and the non-detected selenium results in sample MW-RM-110420 were estimated due to poor ICS recoveries.

The detected aluminum, potassium, and sodium and the detected and non-detected selenium results in all sediment samples were estimated due to poor ICS recovery.

Detected and non-detected silver results in all sediment samples were estimated due to high MS/MSD RPD.

The antimony and selenium results in the sediment field duplicate pair were estimated due to poor field duplicate precision.

The detected potassium results in all groundwater samples were estimated due to high MS/MSD recoveries.

The silver results in all groundwater and sediment samples were estimated (detected) or rejected (non-detected) due to extremely low MS/MSD recoveries.

The detected barium and potassium results in all sediment samples were estimated due to high MS and/or MSD recoveries.

The detected nickel results in all sediment samples were estimated due to low MS/MSD recoveries.

Antimony results in all sediment samples were estimated due to low MS/MSD recoveries.

Reported concentrations less than the RL qualified “J” by the laboratory are qualified “JQ” to indicate that the result is less than the RL but greater than the MDL.

The analytical data is acceptable for use with the qualifications listed above.

SAMPLE NO.

JPOP41S-110421

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-01

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 5.31 | | | P |
| 7440-36-0 | Antimony | 0.00237 | U | | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.008 | ~~J~~ | VB | P |
| 7440-41-7 | Beryllium | 0.0395 | | | P |
| 7440-43-9 | Cadmium | 0.0045 | ~~J~~ | VB | P |
| 7440-70-2 | Calcium | 744 | | D | P |
| 7440-47-3 | Chromium | 0.365 | | | P |
| 7440-48-4 | Cobalt | 0.0788 | | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.530 | U | D | P |
| 7439-92-1 | Lead | 0.341 | | JL | P |
| 7439-95-4 | Magnesium | 581 | | D | P |
| 7439-96-5 | Manganese | 2.84 | | | P |
| 7440-02-0 | Nickel | 0.0086 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 52.0 | | JH | P |
| 7782-49-2 | Selenium | 0.104 | | VB | P |
| 7440-22-4 | Silver | 0.321 | | JL | P |
| 7440-23-5 | Sodium | 561 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0155 | ~~J~~ | VB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

Due to interferences iron's detection limit was raised and reported From the 50 times dilution analyzed on 05/12/2011

7/1/2011

SAMPLE NO.

MD-SW-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-02

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0129 | ~~J~~ | UB | P |
| 7440-36-0 | Antimony | 0.0079 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.0028 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0722 | | | P |
| 7440-41-7 | Beryllium | 0.0008 | ~~J~~ | UB | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 270 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0018 | ~~J~~ | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.0026 | ~~J~~ | UBJL | P |
| 7439-95-4 | Magnesium | 198 | | D | P |
| 7439-96-5 | Manganese | 0.151 | | | P |
| 7440-02-0 | Nickel | 0.0036 | ~~J~~ | UB | P |
| 7440-09-7 | Potassium | 26.8 | | JH | P |
| 7782-49-2 | Selenium | 0.0322 | | UB | P |
| 7440-22-4 | Silver | 0.0019 | ~~J~~ | UBJL | P |
| 7440-23-5 | Sodium | 1290 | | D | P |
| 7440-28-0 | Thallium | 0.0062 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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& 6/3/2011

Comments:

SAMPLE NO.

MW-1-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-03

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0240 | ~~J~~ | VB | P |
| 7440-36-0 | Antimony | 0.0075 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0180 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 28.7 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0022 | ~~J~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | VJL | P |
| 7439-95-4 | Magnesium | 85.54 | | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.0025 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 7.031 | | ~~J~~ JH | P |
| 7782-49-2 | Selenium | 0.0309 | | VB | P |
| 7440-22-4 | Silver | 0.0014 | ~~J~~ | ~~J~~ VBJL | P |
| 7440-23-5 | Sodium | 867 | | D | P |
| 7440-28-0 | Thallium | 0.0212 | | VB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

7/1/2011

SAMPLE NO.

MW-2-110421

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-04

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0163 | J | UB | P |
| 7440-36-0 | Antimony | 0.0061 | J | UB | P |
| 7440-38-2 | Arsenic | 0.0033 | J | UB | P |
| 7440-39-3 | Barium | 0.0207 | J | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 247 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0006 | J | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 1.15 | | UB | P |
| 7439-92-1 | Lead | 0.0030 | J | UBJL | P |
| 7439-95-4 | Magnesium | 279 | | D | P |
| 7439-96-5 | Manganese | 0.275 | | | P |
| 7440-02-0 | Nickel | 0.0048 | J | UB | P |
| 7440-09-7 | Potassium | 18.7 | | JH | P |
| 7782-49-2 | Selenium | 0.0317 | | UB | P |
| 7440-22-4 | Silver | 0.0020 | J | UBJL | P |
| 7440-23-5 | Sodium | 648 | | D | P |
| 7440-28-0 | Thallium | 0.0106 | J | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0017 | J | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/6/2011

Comments:

SAMPLE NO.

MW-2-2-110421

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-05

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0164 | ~~J~~ | VB | P |
| 7440-36-0 | Antimony | 0.0057 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0221 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 267 | | D | P |
| 7440-47-3 | Chromium | 0.0019 | U | | P |
| 7440-48-4 | Cobalt | 0.0006 | ~~J~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 1.27 | | VB | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | VTL | P |
| 7439-95-4 | Magnesium | 297 | | D | P |
| 7439-96-5 | Manganese | 0.294 | | | P |
| 7440-02-0 | Nickel | 0.0052 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 20.32 | | JH | P |
| 7782-49-2 | Selenium | 0.0327 | | VB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 694 | | D | P |
| 7440-28-0 | Thallium | 0.0077 | ~~J~~ | VB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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7/1/2011

Comments:

SAMPLE NO.

MW-3-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-06

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0152 | ~~J~~ | UB | P |
| 7440-36-0 | Antimony | 0.0024 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0281 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 192 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | UJL | P |
| 7439-95-4 | Magnesium | 57.5 | | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.0016 | U | | P |
| 7440-09-7 | Potassium | 5.92 | | ~~N~~ JH | P |
| 7782-49-2 | Selenium | 0.0337 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | ~~N~~ R | P |
| 7440-23-5 | Sodium | 81.0 | | D | P |
| 7440-28-0 | Thallium | 0.0059 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0066 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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& 6/23/2011

Comments:

SAMPLE NO.

MW-4-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-07

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0117 | ~~J~~ | UB | P |
| 7440-36-0 | Antimony | 0.0207 | | UB | P |
| 7440-38-2 | Arsenic | 0.0041 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0357 | ~~J~~ | J Q | P |
| 7440-41-7 | Beryllium | 0.0008 | ~~J~~ | UB | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 203 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0011 | ~~J~~ | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.0027 | ~~J~~ | UBJL | P |
| 7439-95-4 | Magnesium | 121 | | D | P |
| 7439-96-5 | Manganese | 0.0324 | | | P |
| 7440-02-0 | Nickel | 0.0022 | ~~J~~ | UB | P |
| 7440-09-7 | Potassium | 11.8 | | J N | P |
| 7782-49-2 | Selenium | 0.0395 | | UB | P |
| 7440-22-4 | Silver | 0.0025 | ~~J~~ | UBJL | P |
| 7440-23-5 | Sodium | 152 | | D | P |
| 7440-28-0 | Thallium | 0.0075 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0103 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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7/1/2011

Comments:

SAMPLE NO.

MW-6-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-08

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0161 | ~~J~~ | UB | P |
| 7440-36-0 | Antimony | 0.0056 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0148 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 278 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0924 | ~~J~~ | UB | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | UJL | P |
| 7439-95-4 | Magnesium | 205 | | D | P |
| 7439-96-5 | Manganese | 0.0193 | ~~J~~ | UB | P |
| 7440-02-0 | Nickel | 0.0020 | ~~J~~ | UB | P |
| 7440-09-7 | Potassium | 16.9 | | JH | P |
| 7782-49-2 | Selenium | 0.0288 | | UB | P |
| 7440-22-4 | Silver | 0.0010 | ~~J~~ | UBJL | P |
| 7440-23-5 | Sodium | 450 | | D | P |
| 7440-28-0 | Thallium | 0.0081 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0037 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/23/2011

Comments:

SAMPLE NO.

MW-7-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-09

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0286 | ~~J~~ | UB | P |
| 7440-36-0 | Antimony | 0.0030 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.0028 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0274 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 6.02 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0006 | ~~J~~ | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0174 | ~~J~~ | UB | P |
| 7439-92-1 | Lead | 0.0029 | ~~J~~ | UBJL | P |
| 7439-95-4 | Magnesium | 1.64 | | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 1.82 | | JH | P |
| 7782-49-2 | Selenium | 0.0296 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 289 | | D | P |
| 7440-28-0 | Thallium | 0.0119 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0020 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
| | | | | | |
| | | | | | |
| | | | | | |

Comments:

6/23/2011

SAMPLE NO.

MW-8-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-10

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0227 | ~~J~~ | VB | P |
| 7440-36-0 | Antimony | 0.0096 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.0033 | ~~J~~ | VB | P |
| 7440-39-3 | Barium | 0.0389 | ~~J~~ | JP | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 15.3 | | D | P |
| 7440-47-3 | Chromium | 0.0012 | ~~J~~ | VB | P |
| 7440-48-4 | Cobalt | 0.0010 | ~~J~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0239 | ~~J~~ | VB | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | VJL | P |
| 7439-95-4 | Magnesium | 1.59 | | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.0019 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 5.59 | | N JH | P |
| 7782-49-2 | Selenium | 0.0317 | | VB | P |
| 7440-22-4 | Silver | 0.0011 | ~~J~~ | N VBJL | P |
| 7440-23-5 | Sodium | 593 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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& 6/23/2011

Comments:

SAMPLE NO.

MW-MD-02-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-11

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0074 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.0102 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0132 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 214 | | D | P |
| 7440-47-3 | Chromium | 0.0014 | ~~J~~ | UB | P |
| 7440-48-4 | Cobalt | 0.0017 | ~~J~~ | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 1.61 | | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | UJL | P |
| 7439-95-4 | Magnesium | 252 | | D | P |
| 7439-96-5 | Manganese | 0.693 | | | P |
| 7440-02-0 | Nickel | 0.0057 | ~~J~~ | UB | P |
| 7440-09-7 | Potassium | 13.3 | | JH | P |
| 7782-49-2 | Selenium | 0.0395 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~J~~ | R | P |
| 7440-23-5 | Sodium | 1410 | | D | P |
| 7440-28-0 | Thallium | 0.0099 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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7/1/2011

Comments:

350001545

SAMPLE NO.

MW-MD-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-12

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0041 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.0064 | ~~J~~ | VB | P |
| 7440-39-3 | Barium | 0.0116 | ~~J~~ | JB | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 200 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0013 | ~~J~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 1.45 | | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | VJL | P |
| 7439-95-4 | Magnesium | 237 | | D | P |
| 7439-96-5 | Manganese | 0.654 | | | P |
| 7440-02-0 | Nickel | 0.0048 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 12.6 | | JH | P |
| 7782-49-2 | Selenium | 0.0271 | | VB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | K | P |
| 7440-23-5 | Sodium | 1310 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/28/2011

Comments:

SAMPLE NO.

NPOP20E-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-13

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.822 | | | P |
| 7440-36-0 | Antimony | 0.00237 | U | | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0112 | ~~U~~ J | JQ | P |
| 7440-41-7 | Beryllium | 0.0067 | | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 571 | | D | P |
| 7440-47-3 | Chromium | 0.0604 | | | P |
| 7440-48-4 | Cobalt | 0.0692 | ~~J~~ | JQ | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 3.18 | | | P |
| 7439-92-1 | Lead | 0.0519 | | VBJL | P |
| 7439-95-4 | Magnesium | 276 | | D | P |
| 7439-96-5 | Manganese | 4.633 | | | P |
| 7440-02-0 | Nickel | 0.0374 | | VB | P |
| 7440-09-7 | Potassium | 39.7 | | JH | P |
| 7782-49-2 | Selenium | 0.0309 | | VB | P |
| 7440-22-4 | Silver | 0.0522 | | JL | P |
| 7440-23-5 | Sodium | 1260 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0107 | ~~J~~ | VB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

6/23/2011

SAMPLE NO.

PR-SED-01-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-14

Date Received: 04/26/2011

% Solids: 63.26

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 31900 | | D JH | P |
| 7440-36-0 | Antimony | 1.88 | ~~J~~ | UBJL | P |
| 7440-38-2 | Arsenic | 7.82 | | | P |
| 7440-39-3 | Barium | 187 | | JH | P |
| 7440-41-7 | Beryllium | 1.19 | ~~J~~ | UB | P |
| 7440-43-9 | Cadmium | 0.901 | | | P |
| 7440-70-2 | Calcium | 74200 | | D | P |
| 7440-47-3 | Chromium | 17.7 | | | P |
| 7440-48-4 | Cobalt | 7.30 | | | P |
| 7440-50-8 | Copper | 18.9 | | | P |
| 7439-89-6 | Iron | 27300 | | D | P |
| 7439-92-1 | Lead | 9.69 | | | P |
| 7439-95-4 | Magnesium | 12300 | | D | P |
| 7439-96-5 | Manganese | 558 | | | P |
| 7440-02-0 | Nickel | 14.7 | | JL | P |
| 7440-09-7 | Potassium | 9600 | | D JH | P |
| 7782-49-2 | Selenium | 0.158 | U | | P |
| 7440-22-4 | Silver | 0.158 | ~~J~~ | R | P |
| 7440-23-5 | Sodium | 5610 | | JH | P |
| 7440-28-0 | Thallium | 0.253 | U | | P |
| 7440-62-2 | Vanadium | 44.8 | | | P |
| 7440-66-6 | Zinc | 65.0 | | | P |
| 7439-97-6 | Mercury | 0.0632 | U | | AV |
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7/1/2011

Comments:

SAMPLE NO.

PR-SW-01-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-15

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0033 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.0075 | ~~J~~ | VB | P |
| 7440-39-3 | Barium | 0.140 | | | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 1010 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0009 | ~~J~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.269 | | VB | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | UJL | P |
| 7439-95-4 | Magnesium | 471 | | D | P |
| 7439-96-5 | Manganese | 0.970 | | | P |
| 7440-02-0 | Nickel | 0.0032 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 92.8 | | D JH | P |
| 7782-49-2 | Selenium | 0.0302 | | VB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 1200 | | D | P |
| 7440-28-0 | Thallium | 0.0130 | ~~J~~ | VB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

5/23/2011

SAMPLE NO.

RB-01-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-16

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0175 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.0033 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0009 | ~~J~~ | UB | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 3.60 | ~~J~~ | D JP | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0006 | ~~J~~ | UB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.0027 | ~~J~~ | UBJL | P |
| 7439-95-4 | Magnesium | 0.00079 | U | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.0012 | ~~J~~ | UB | P |
| 7440-09-7 | Potassium | 0.0240 | U | | P |
| 7782-49-2 | Selenium | 0.0343 | | UB | P |
| 7440-22-4 | Silver | 0.0029 | ~~J~~ | UBJL | P |
| 7440-23-5 | Sodium | 4.84 | ~~J~~ | D UB | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0058 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/23/2011

Comments:

SAMPLE NO.

RB-02-110421

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech  Contract: Jackpile

Matrix: (soil/water) water  Lab Sample ID: 1107985-17

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0076 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.0029 | ~~J~~ | UB | P |
| 7440-39-3 | Barium | 0.0011 | ~~J~~ | UB | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 1.34 | ~~J~~ | D JQ | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | UJL | P |
| 7439-95-4 | Magnesium | 0.00079 | U | | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 0.0240 | U | | P |
| 7782-49-2 | Selenium | 0.0257 | | UB | P |
| 7440-22-4 | Silver | 0.0012 | ~~J~~ | UBJL | P |
| 7440-23-5 | Sodium | 2.01 | ~~J~~ | D UB | P |
| 7440-28-0 | Thallium | 0.0151 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0067 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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& 6/23/2011

Comments:

SAMPLE NO.

RM-JM-SED-02-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-18

Date Received: 04/26/2011

% Solids: 91.71

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7420 | | D JH | P |
| 7440-36-0 | Antimony | 0.529 | | VBJK | P |
| 7440-38-2 | Arsenic | 4.65 | | | P |
| 7440-39-3 | Barium | 68.0 | | JH | P |
| 7440-41-7 | Beryllium | 0.393 | | VB | P |
| 7440-43-9 | Cadmium | 0.240 | | JQ | P |
| 7440-70-2 | Calcium | 20900 | | D | P |
| 7440-47-3 | Chromium | 7.88 | | | P |
| 7440-48-4 | Cobalt | 5.22 | | | P |
| 7440-50-8 | Copper | 8.27 | | | P |
| 7439-89-6 | Iron | 17900 | | D | P |
| 7439-92-1 | Lead | 3.06 | | VB | P |
| 7439-95-4 | Magnesium | 5060 | | | P |
| 7439-96-5 | Manganese | 160 | | | P |
| 7440-02-0 | Nickel | 9.36 | | JL | P |
| 7440-09-7 | Potassium | 2310 | | JH | P |
| 7782-49-2 | Selenium | 0.109 | | VJK | P |
| 7440-22-4 | Silver | 0.109 | U | | P |
| 7440-23-5 | Sodium | 3880 | | JH | P |
| 7440-28-0 | Thallium | 0.174 | U | | P |
| 7440-62-2 | Vanadium | 19.8 | | | P |
| 7440-66-6 | Zinc | 34.2 | | | P |
| 7439-97-6 | Mercury | 0.0436 | U | | AV |
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Comments:

7/1/2011

SAMPLE NO.

RM-JM-SED-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-19

Date Received: 04/26/2011

% Solids: 84.30

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 6660 | | D JH | P |
| 7440-36-0 | Antimony | 23.3 | | ~~N~~ JK | P |
| 7440-38-2 | Arsenic | 5.72 | | | P |
| 7440-39-3 | Barium | 57.0 | | JH | P |
| 7440-41-7 | Beryllium | 0.558 | ~~J~~ | UB | P |
| 7440-43-9 | Cadmium | 0.0237 | U | | P |
| 7440-70-2 | Calcium | 18000 | | D | P |
| 7440-47-3 | Chromium | 9.10 | | | P |
| 7440-48-4 | Cobalt | 5.26 | | | P |
| 7440-50-8 | Copper | 7.31 | | | P |
| 7439-89-6 | Iron | 16900 | | D | P |
| 7439-92-1 | Lead | 2.35 | ~~J~~ | UB | P |
| 7439-95-4 | Magnesium | 4890 | | | P |
| 7439-96-5 | Manganese | 173 | | | P |
| 7440-02-0 | Nickel | 9.18 | | ~~N~~ JL | P |
| 7440-09-7 | Potassium | 2660 | | ~~N~~ JH | P |
| 7782-49-2 | Selenium | 23.3 | | JK | P |
| 7440-22-4 | Silver | 0.119 | U | ~~N~~ * | P |
| 7440-23-5 | Sodium | 4240 | | D JH | P |
| 7440-28-0 | Thallium | 0.717 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 22.4 | | | P |
| 7440-66-6 | Zinc | 36 | | | P |
| 7439-97-6 | Mercury | 0.0474 | U | | AV |
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8 7/1/2011

Comments:

SAMPLE NO.

RM-JM-SW-02-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-20

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0062 | ~~J~~ | JQ | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0232 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 224 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | UJL | P |
| 7439-95-4 | Magnesium | 222 | | D | P |
| 7439-96-5 | Manganese | 0.0152 | ~~J~~ | JQ | P |
| 7440-02-0 | Nickel | 0.0023 | ~~J~~ | JQ | P |
| 7440-09-7 | Potassium | 18.6 | | UH | P |
| 7782-49-2 | Selenium | 0.0278 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 532 | | D | P |
| 7440-28-0 | Thallium | 0.0154 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

6/28/2011

SAMPLE NO.

RM-JM-SW-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-21

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0041 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0228 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 218 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.0025 | ~~J~~ | UBJL | P |
| 7439-95-4 | Magnesium | 217 | | D | P |
| 7439-96-5 | Manganese | 0.0131 | ~~J~~ | UB | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 18.1 | | JH | P |
| 7782-49-2 | Selenium | 0.0324 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 519 | | D | P |
| 7440-28-0 | Thallium | 0.0175 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/23/2011

Comments:

SAMPLE NO.

RM-SED-BG-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-22

Date Received: 04/26/2011

% Solids: 70.99

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 15800 | | D JH | P |
| 7440-36-0 | Antimony | 0.113 | ~~J~~ | VJL | P |
| 7440-38-2 | Arsenic | 6.68 | | | P |
| 7440-39-3 | Barium | 154 | | JH | P |
| 7440-41-7 | Beryllium | 0.916 | ~~J~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0282 | U | | P |
| 7440-70-2 | Calcium | 23300 | | D | P |
| 7440-47-3 | Chromium | 8.40 | | | P |
| 7440-48-4 | Cobalt | 7.78 | | | P |
| 7440-50-8 | Copper | 13.1 | | | P |
| 7439-89-6 | Iron | 25900 | | D | P |
| 7439-92-1 | Lead | 4.58 | ~~J~~ | JP | P |
| 7439-95-4 | Magnesium | 6910 | | | P |
| 7439-96-5 | Manganese | 226 | | | P |
| 7440-02-0 | Nickel | 14.6 | | JL | P |
| 7440-09-7 | Potassium | 4180 | | JH | P |
| 7782-49-2 | Selenium | 29.1 | | | P |
| 7440-22-4 | Silver | 0.141 | U | | P |
| 7440-23-5 | Sodium | 1950 | | D JH | P |
| 7440-28-0 | Thallium | 0.662 | ~~J~~ | VB | P |
| 7440-62-2 | Vanadium | 29.8 | | | P |
| 7440-66-6 | Zinc | 57.0 | | | P |
| 7439-97-6 | Mercury | 0.0563 | U | | AV |
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Comments:

7/1/2011

SAMPLE NO.

RM-SW-BG-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-23

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0043 | ~~J~~ | UB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0261 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 117 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | UL | P |
| 7439-95-4 | Magnesium | 106 | | D | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 15.0 | | JH | P |
| 7782-49-2 | Selenium | 0.0350 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 280 | | D | P |
| 7440-28-0 | Thallium | 0.0151 | ~~U~~ | UB | P |
| 7440-62-2 | Vanadium | 0.001741 | U | | P |
| 7440-66-6 | Zinc | 0.0023 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

6/23/2011

SAMPLE NO.

RP-JM-SED-01

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-24

Date Received: 04/26/2011

% Solids: 85.42

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 7230 | | D JH | P |
| 7440-36-0 | Antimony | 0.0937 | ~~J~~ | VJL | P |
| 7440-38-2 | Arsenic | 6.57 | | | P |
| 7440-39-3 | Barium | 116 | | JH | P |
| 7440-41-7 | Beryllium | 0.615 | ~~J~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0234 | U | | P |
| 7440-70-2 | Calcium | 30400 | | D | P |
| 7440-47-3 | Chromium | 9.33 | | | P |
| 7440-48-4 | Cobalt | 6.29 | | | P |
| 7440-50-8 | Copper | 6.18 | | | P |
| 7439-89-6 | Iron | 32600 | | D | P |
| 7439-92-1 | Lead | 1.90 | ~~J~~ | VB | P |
| 7439-95-4 | Magnesium | 4650 | | | P |
| 7439-96-5 | Manganese | 490 | | | P |
| 7440-02-0 | Nickel | 10.6 | | JL | P |
| 7440-09-7 | Potassium | 1950 | | JH | P |
| 7782-49-2 | Selenium | 30.0 | | | P |
| 7440-22-4 | Silver | 0.117 | U | | P |
| 7440-23-5 | Sodium | 2330 | | D JH | P |
| 7440-28-0 | Thallium | 0.187 | U | | P |
| 7440-62-2 | Vanadium | 23.8 | | | P |
| 7440-66-6 | Zinc | 34.1 | | | P |
| 7439-97-6 | Mercury | 0.0468 | U | | AV |
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7/1/2011

Comments:

SAMPLE NO.

RP-JM-SED-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-25

Date Received: 04/26/2011

% Solids: 76.14

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 13500 | | D JH | P |
| 7440-36-0 | Antimony | 0.105 | ~~U~~ | KJC | P |
| 7440-38-2 | Arsenic | 5.73 | | | P |
| 7440-39-3 | Barium | 72.9 | | JH | P |
| 7440-41-7 | Beryllium | 0.729 | ~~J~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0263 | U | | P |
| 7440-70-2 | Calcium | 18200 | | D | P |
| 7440-47-3 | Chromium | 11.7 | | | P |
| 7440-48-4 | Cobalt | 5.63 | | | P |
| 7440-50-8 | Copper | 9.81 | | | P |
| 7439-89-6 | Iron | 19800 | | D | P |
| 7439-92-1 | Lead | 3.15 | ~~J~~ | VB | P |
| 7439-95-4 | Magnesium | 6430 | | | P |
| 7439-96-5 | Manganese | 166 | | | P |
| 7440-02-0 | Nickel | 11.1 | | JL | P |
| 7440-09-7 | Potassium | 3410 | | JH | P |
| 7782-49-2 | Selenium | 23.6 | | | P |
| 7440-22-4 | Silver | 0.131 | U | | P |
| 7440-23-5 | Sodium | 1520 | | D JH | P |
| 7440-28-0 | Thallium | 0.210 | | | P |
| 7440-62-2 | Vanadium | 24.3 | U | | P |
| 7440-66-6 | Zinc | 52.3 | | | P |
| 7439-97-6 | Mercury | 0.0525 | U | | AV |
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& 7/1/2011

Comments:

110419

SAMPLE NO.

RP-JM-SW-01-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-26

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.00237 | U | | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0370 | ~~J~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 200 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | UJL | P |
| 7439-95-4 | Magnesium | 150 | | D | P |
| 7439-96-5 | Manganese | 0.0348 | | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 15.3 | | JH | P |
| 7782-49-2 | Selenium | 0.0341 | | UB R | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | | P |
| 7440-23-5 | Sodium | 295 | | D | P |
| 7440-28-0 | Thallium | 0.0071 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0025 | ~~J~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

8 6/23/2011

110419

SAMPLE NO.

RP-JM-SW-110420

1A-IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-27

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0048 | ~~J~~ | VB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0472 | | | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 181 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~J~~ | VJL | P |
| 7439-95-4 | Magnesium | 96.7 | | D | P |
| 7439-96-5 | Manganese | 0.0374 | | | P |
| 7440-02-0 | Nickel | 0.0019 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 12.3 | | JH | P |
| 7782-49-2 | Selenium | 0.0276 | | VB | P |
| 7440-22-4 | Silver | 0.0012 | ~~J~~ | VBJL | P |
| 7440-23-5 | Sodium | 127 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0034 | ~~J~~ | VB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/28/2011

Comments:

SAMPLE NO.

RP-SED-01-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-28

Date Received: 04/26/2011

% Solids: 78.35

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 10100 | | D JH | P |
| 7440-36-0 | Antimony | 0.102 | ~~U~~ | UJL | P |
| 7440-38-2 | Arsenic | 4.56 | | | P |
| 7440-39-3 | Barium | 76.2 | | JH | P |
| 7440-41-7 | Beryllium | 0.574 | ~~J~~ | UB | P |
| 7440-43-9 | Cadmium | 0.0255 | U | | P |
| 7440-70-2 | Calcium | 26000 | | D | P |
| 7440-47-3 | Chromium | 8.09 | | | P |
| 7440-48-4 | Cobalt | 4.00 | | | P |
| 7440-50-8 | Copper | 7.26 | | | P |
| 7439-89-6 | Iron | 15500 | | D | P |
| 7439-92-1 | Lead | 3.32 | ~~J~~ | UB | P |
| 7439-95-4 | Magnesium | 8410 | | D | P |
| 7439-96-5 | Manganese | 150 | | | P |
| 7440-02-0 | Nickel | 7.54 | | JL | P |
| 7440-09-7 | Potassium | 4060 | | JH | P |
| 7782-49-2 | Selenium | 18.4 | | UB | P |
| 7440-22-4 | Silver | 0.128 | U | | P |
| 7440-23-5 | Sodium | 4830 | | D JH | P |
| 7440-28-0 | Thallium | 0.747 | ~~J~~ | UB | P |
| 7440-62-2 | Vanadium | 18.6 | | | P |
| 7440-66-6 | Zinc | 32.7 | | | P |
| 7439-97-6 | Mercury | 0.0511 | U | | AV |
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& 7/1/2011

Comments:

SAMPLE NO.

RP-SED-02-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-29

Date Received: 04/26/2011

% Solids: 77.62

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 13900 | | D JH | P |
| 7440-36-0 | Antimony | 0.103 | ~~J~~ | VJL | P |
| 7440-38-2 | Arsenic | 4.52 | | | P |
| 7440-39-3 | Barium | 157 | | JH | P |
| 7440-41-7 | Beryllium | 0.728 | ~~J~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0258 | U | | P |
| 7440-70-2 | Calcium | 31700 | | D | P |
| 7440-47-3 | Chromium | 9.58 | | | P |
| 7440-48-4 | Cobalt | 4.88 | | | P |
| 7440-50-8 | Copper | 8.87 | | | P |
| 7439-89-6 | Iron | 16900 | | D | P |
| 7439-92-1 | Lead | 2.59 | ~~J~~ | VB | P |
| 7439-95-4 | Magnesium | 7920 | | D | P |
| 7439-96-5 | Manganese | 258 | | | P |
| 7440-02-0 | Nickel | 8.95 | | JL | P |
| 7440-09-7 | Potassium | 4250 | | JH | P |
| 7782-49-2 | Selenium | 19.9 | | VB | P |
| 7440-22-4 | Silver | 0.129 | U | | P |
| 7440-23-5 | Sodium | 1850 | | D JH | P |
| 7440-28-0 | Thallium | 0.206 | U | | P |
| 7440-62-2 | Vanadium | 22.2 | | | P |
| 7440-66-6 | Zinc | 38.8 | | | P |
| 7439-97-6 | Mercury | 0.0515 | U | | AV |
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Comments:

& 7/1/2011

SAMPLE NO.

RP-SED-03-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-30

Date Received: 04/26/2011

% Solids: 95.47

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 23200 | | D JH | P |
| 7440-36-0 | Antimony | 0.0838 | ~~B~~ | VJL | P |
| 7440-38-2 | Arsenic | 6.05 | | | P |
| 7440-39-3 | Barium | 132 | | JH | P |
| 7440-41-7 | Beryllium | 1.14 | ~~I~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0209 | U | | P |
| 7440-70-2 | Calcium | 26900 | | D | P |
| 7440-47-3 | Chromium | 16.1 | | | P |
| 7440-48-4 | Cobalt | 7.17 | | | P |
| 7440-50-8 | Copper | 14.1 | | | P |
| 7439-89-6 | Iron | 25200 | | D | P |
| 7439-92-1 | Lead | 3.22 | ~~J~~ | VB | P |
| 7439-95-4 | Magnesium | 9800 | | D | P |
| 7439-96-5 | Manganese | 231 | | | P |
| 7440-02-0 | Nickel | 14.7 | | JL | P |
| 7440-09-7 | Potassium | 5460 | | D JH | P |
| 7782-49-2 | Selenium | 28.7 | | | P |
| 7440-22-4 | Silver | 0.105 | U | | P |
| 7440-23-5 | Sodium | 1450 | | D JH | P |
| 7440-28-0 | Thallium | 0.168 | U | | P |
| 7440-62-2 | Vanadium | 34.6 | | | P |
| 7440-66-6 | Zinc | 60.1 | | | P |
| 7439-97-6 | Mercury | 0.0419 | U | | AV |
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7/1/2011

Comments:

SAMPLE NO.

RP-SED-BG-041911

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) soil Lab Sample ID: 1107985-31

Date Received: 04/26/2011

% Solids: 75.14

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/kg

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 8160 | | D JW | P |
| 7440-36-0 | Antimony | 0.106 | ~~J~~ | VJL | P |
| 7440-38-2 | Arsenic | 4.53 | | | P |
| 7440-39-3 | Barium | 97.7 | | JW | P |
| 7440-41-7 | Beryllium | 0.586 | ~~J~~ | VB | P |
| 7440-43-9 | Cadmium | 0.0266 | U | | P |
| 7440-70-2 | Calcium | 28500 | | D | P |
| 7440-47-3 | Chromium | 9.12 | | | P |
| 7440-48-4 | Cobalt | 9.34 | | | P |
| 7440-50-8 | Copper | 5.94 | | | P |
| 7439-89-6 | Iron | 32800 | | D | P |
| 7439-92-1 | Lead | 1.72 | ~~J~~ | VB | P |
| 7439-95-4 | Magnesium | 3880 | | | P |
| 7439-96-5 | Manganese | 358 | | | P |
| 7440-02-0 | Nickel | 9.17 | | JL | P |
| 7440-09-7 | Potassium | 2170 | | JW | P |
| 7782-49-2 | Selenium | 28.3 | | | P |
| 7440-22-4 | Silver | 0.133 | U | | P |
| 7440-23-5 | Sodium | 1040 | | D JW | P |
| 7440-28-0 | Thallium | 0.213 | U | | P |
| 7440-62-2 | Vanadium | 29.9 | | | P |
| 7440-66-6 | Zinc | 38.7 | | | P |
| 7439-97-6 | Mercury | 0.0532 | U | | AV |
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Comments:

7/1/2011

110419

SAMPLE NO.

RP-SW-01-110419

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-32

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.0047 | ~~U~~ | VB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0255 | ~~U~~ | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 223 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.0007 | ~~U~~ | VB | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | VJL | P |
| 7439-95-4 | Magnesium | 211 | | D | P |
| 7439-96-5 | Manganese | 0.0424 | | | P |
| 7440-02-0 | Nickel | 0.0025 | ~~U~~ | VB | P |
| 7440-09-7 | Potassium | 17.3 | | JH | P |
| 7782-49-2 | Selenium | 0.0299 | | VB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 445 | | D | P |
| 7440-28-0 | Thallium | 0.0082 | ~~U~~ | VB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/23/2011

Comments:

110419

SAMPLE NO.

RP-SW-BG-041911

1A-IN

INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-33

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0105 | U | | P |
| 7440-36-0 | Antimony | 0.00237 | U | | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0742 | | | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 124 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | ~~U~~ | UJL | P |
| 7439-95-4 | Magnesium | 36.0 | | | P |
| 7439-96-5 | Manganese | 0.641 | | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 6.16 | | JH | P |
| 7782-49-2 | Selenium | 0.0273 | | UB | P |
| 7440-22-4 | Silver | 0.00039 | ~~U~~ | R | P |
| 7440-23-5 | Sodium | 57.3 | | D | P |
| 7440-28-0 | Thallium | 0.0111 | ~~U~~ | UB | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.0046 | ~~U~~ | UB | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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8 6/23/2011

Comments:

110419

SAMPLE NO.

SPOP35-110421

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-34

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.0237 | ~~J~~ | VB | P |
| 7440-36-0 | Antimony | 0.00237 | U | | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0070 | ~~J~~ | VB | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 483 | | D | P |
| 7440-47-3 | Chromium | 0.0057 | ~~J~~ | JQ | P |
| 7440-48-4 | Cobalt | 0.0016 | ~~J~~ | VBJ | P |
| 7440-50-8 | Copper | 0.00183 | U | | P |
| 7439-89-6 | Iron | 0.0504 | ~~J~~ | VB | P |
| 7439-92-1 | Lead | 0.0080 | ~~J~~ | VBJL | P |
| 7439-95-4 | Magnesium | 359 | | D | P |
| 7439-96-5 | Manganese | 0.186 | | | P |
| 7440-02-0 | Nickel | 0.0062 | ~~J~~ | VB | P |
| 7440-09-7 | Potassium | 63.5 | | JH | P |
| 7782-49-2 | Selenium | 0.0337 | | VB | P |
| 7440-22-4 | Silver | 0.0047 | ~~J~~ | VBJL | P |
| 7440-23-5 | Sodium | 2030 | | D | P |
| 7440-28-0 | Thallium | 0.00529 | U | | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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Comments:

6/23/2011

110419

SAMPLE NO.

MW-RM-110420

1A-IN
INORGANIC ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Lab Sample ID: 1107985-35

Date Received: 04/26/2011

% Solids:

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| CAS No. | Analyte | Concentration | C | Q | M |
|---|---|---|---|---|---|
| 7429-90-5 | Aluminum | 0.278 | | UB | P |
| 7440-36-0 | Antimony | 0.0114 | J | UB | P |
| 7440-38-2 | Arsenic | 0.00206 | U | | P |
| 7440-39-3 | Barium | 0.0134 | J | JQ | P |
| 7440-41-7 | Beryllium | 0.00072 | U | | P |
| 7440-43-9 | Cadmium | 0.00082 | U | | P |
| 7440-70-2 | Calcium | 146 | | D | P |
| 7440-47-3 | Chromium | 0.00109 | U | | P |
| 7440-48-4 | Cobalt | 0.00051 | U | | P |
| 7440-50-8 | Copper | 0.0029 | J | UB | P |
| 7439-89-6 | Iron | 0.0106 | U | | P |
| 7439-92-1 | Lead | 0.00210 | U | | P |
| 7439-95-4 | Magnesium | 111 | | D | P |
| 7439-96-5 | Manganese | 0.00043 | U | | P |
| 7440-02-0 | Nickel | 0.00116 | U | | P |
| 7440-09-7 | Potassium | 19.4 | | JH | P |
| 7782-49-2 | Selenium | 0.0344 | | UBJL | P |
| 7440-22-4 | Silver | 0.00039 | U | R | P |
| 7440-23-5 | Sodium | 187 | | D JL | P |
| 7440-28-0 | Thallium | 0.0082 | J | JQ | P |
| 7440-62-2 | Vanadium | 0.00174 | U | | P |
| 7440-66-6 | Zinc | 0.00053 | U | | P |
| 7439-97-6 | Mercury | 0.00006 | U | | AV |
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6/23/2011

Comments:

**DATA QUALITY ASSURANCE REVIEW**

| | | | |
|---|---|---|---|
| SITE NAME | Jackpile-Paguate Uranium Mine ESI | | |
| WORK ORDER NUMBER | 20406.012.019.0603.01 | TDD NUMBER | TO-0019-10-11-01 |
| PROJECT NUMBER | | SDG NUMBER | 1107985 |

Weston Solutions, Inc. (WESTON®) has completed a QA review for Work Order Number 20406.012.019.0603.01, SDG No. 1107985, Jackpile-Paguate Uranium Mine ESI. Twenty five samples were analyzed for alkalinity/carbonate-alkalinity/bicarbonate-alkalinity, total dissolved solids (TDS), and anions (chloride, nitrate-N, nitrite-N, and sulfate) by Summit Environmental Technologies, Inc. Sample numbers are listed below.

SAMPLE NUMBERS

| | | |
|---|---|---|
| JPOP41S-110421 | MD-SW-110420 | MW-1-110419 |
| MW-2-110421 | MW-2-2-110421 | MW-3-110420 |
| MW-4-110420 | MW-6-110420 | MW-7-110419 |
| MW-8-110419 | MW-MD-02-110420 | MW-MD-110420 |
| NPOP20E-110420 | PR-SW-01-110420 | RB-01-110420 |
| RB-02-110421 | RM-JM-SW-02-110420 | RM-JM-SW-110420 |
| RM-SW-BG-110419 | RP-JM-SW-01-110420 | RP-JM-SW-110420 |
| RP-SW-01-110419 | RP-SW-BG-041911 | SPOP35-110421 |
| MW-RM-110420 | | |
| | | |
| | | |
| | | |

This data package was validated to determine if Quality Control (QC) specifications were achieved, following *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review* (October, 1999), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review* (July, 2002), *USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data Review* (August, 2002), *Quality Assurance/Quality Control Guidance for Removal Activities* (April, 1990), and the Regional Protocol for Holding Times, Blanks, and VOA Preservation (April 13, 1989). Specific data qualifications are listed in the following discussion.

| | | | |
|---|---|---|---|
| REVIEWER | Gloria J. Switalski | DATE | July 1, 2011 |

Data Qualifiers

Data Qualifier Definitions were supplied by the Office of Solid Waste and Emergency Response (September 1989) and are included in the Functional Guidelines. Data qualifiers may be combined (UJ, QJ) with the corresponding combination of meanings. Additional qualifier may be added to provide additional, more specific information (JL, UB, QJK), modifying the meaning of the primary qualifier. Addition qualifiers utilized by WESTON are H, L, K, B, Q, and D.

U - The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation or detection limit, which has been adjusted for sample weight/sample volume, extraction volume, percent solids, sample dilution or other analysis specific parameters.

An additional qualifier, "B", may be appended to indicate that while the analyte was detected in the sample, the presence of the analyte may be attributable to blank contamination and the analyte is therefore considered undetected with the sample detection or quantitation limit for the analyte being elevated.

J - The analyte was analyzed for, but the associated numerical value may not be consistent with the amount actually present in the environmental sample or may not be consistent with the sample detection or quantitation limit. The value is an estimated quantity. The data should be seriously considered for decision-making and are usable for many purposes.

An additional qualifier will be appended to the "J" qualifier that indicates the bias in the reported results:

L Low bias

H High bias

K Unknown bias

Q The reported concentration is less than the sample quantitation limit for the specific analyte in the sample.

The L and H qualifier will only be employed when a single qualification is required. When more than one quality control parameter affects the analytical result and a conflict results in assigning a bias, the result will be flagged JK.

R - Quality Control indicates that data are unusable for all purposes. The analyte was analyzed for, but the presence or absence of the analyte has not been verified. Resampling and reanalysis are necessary for verification to confirm or deny the presence of an analyte.

N - The analysis indicates the presence of analyte for which there is presumptive evidence to make a "tentative identification."

D - The concentration reported was determined in the re-analysis of the sample at a secondary dilution.

## ALKALINITY, TDS, AND ANIONS DATA EVALUATION

1. Analytical Method:

Samples were prepared and analyzed for alkalinity/carbonate-alkalinity/bicarbonate-alkalinity using the procedures specified in **SM Methods 2310B, 2320B, and 4500-CO2D**. Samples were prepared and analyzed for TDS using the procedures specified in **SM Method 2540-C**, Samples were prepared and analyzed for anions using the procedures specified in **EPA Method 300.0.**

2. Holding Times:

Samples were maintained at 4°C±2°C. All samples analyzed for anions met the 28 day established holding time criteria. No qualifications are placed on the data. Sample MW-RM-110420 was analyzed beyond the 14 day established holding time for alkalinity/carbonate-alkalinity/bicarbonate-alkalinity. The alkalinity/carbonate-alkalinity/bicarbonate-alkalinity results in sample MW-RM-110420 were estimated (JL/UJL) since the holding time was exceeded. All samples were analyzed beyond the 7 day established holding time for TDS. The TDS results in all samples were estimated (JL) since the holding time was exceeded. All samples were analyzed beyond the 48 hour holding time for nitrate and nitrite. The nitrate and nitrite results in all samples were estimated (JL/UJL) since the holding time was exceeded.

3. Initial Calibration:

All initial calibrations and verifications were within control limits. No qualifications are placed on the data.

4. Continuing Calibration:

All continuing calibrations were within control limits. No qualifications are placed on the data.

5. Blanks:

A. Laboratory Blanks:

A method blank was prepared at the required frequency of every time samples were prepared/extracted for each matrix and concentration or every 20 samples whichever is greater. Target analytes were not detected in the associated alkalinity/carbonate-alkalinity/bicarbonate-alkalinity, TDS, or anion blank(s) analyzed. No qualifications are placed on the data.

B. Field Blanks:

Field blank samples RB-01-110420 and RB-02-110421 were non-detect for alkalinity/carbonate-alkalinity/bicarbonate-alkalinity and anions. No qualifications are placed on the data. TDS was detected in RB-01-110420 (100 mg/L) and RB-02-110421 (60 mg/L). Since all associated sample results were greater than the blank action concentration, no qualifications are placed on the data.

6. Laboratory Control Sample (LCS):

The recoveries for all LCS were within the control limits. No qualifications are placed on the data.

7. Duplicate Sample Analysis:

A. Laboratory Duplicate Analysis:

Sample MW-RM-110420 underwent duplicate analysis for the groundwater matrix for TDS. The relative percent difference (RPD) values for the duplicate sample analysis were within QC criteria of less than 20% for aqueous samples for concentrations greater than five times the reporting limit (RL). For sample concentrations less than five times the RL, the QC criteria are within ± the RL for the aqueous matrix. No qualifications are placed on the data.

B. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis:

Samples MW-1-110419 and MW-RM-110420 underwent MS/MSD anaysis for the groundwater matrix for anions. Sample RP-JM-SW-110420 underwent MS/MSD anaysis for the surface water matrix for anions. The RPD values for the duplicate sample analysis were within QC criteria of less than 20% for aqueous samples for concentrations greater than five times the RL. For sample concentrations less than five times the RL, the QC criteria are within ± the RL for the aqueous matrix. No qualifications are placed on the data.

C. Field Duplicate Analysis:

The following sample pairs were submitted as field duplicates for the groundwater matrix: MW-2-110421/MW-2-2-100421 and MW-MD-02-110420/MW-MD-110420. The following sample pair was submitted as field duplicates for the surface water matrix: RM-JM-SW-02-110420/RM-JM-SW-110420. The RPD values for the field duplicate sample analysis were within the QC criteria of less than 30% for aqueous samples for concentrations greater than five times the RL. For sample concentrations less than five times the RL, the absolute difference between the samples is less than two times the RL for aqueous samples.

8. Spiked Sample Analysis:

Samples MW-1-110419 and MW-RM-110420 underwent MS/MSD analysis for the groundwater matrix for anions. Sample RP-JM-SW-110420 underwent MS/MSD analysis for the surface water matrix for anions. The spike recoveries for all analytes were within control limits or the sample concentration exceeded the spike concentration by a factor of 4 times or more with the following exception:

| ANALYTE | MATRIX | %R/%R | QC LIMITS | AFFECTED SAMPLES | QUALIFIER FLAG |
|---|---|---|---|---|---|
| Chloride | Surface Water | 145/144 | 80-120 | MD-SW-110420, PR-SW-01-110420, RM-JM-SW-02-110420, RM-JM-SW-110420, RM-SW-BG-110419, RP-JM-SW-01-110420, RP-JM-SW-110420, RP-SW-01-110419, RP-SW-BG-041911 | JH |

9. Sample Quantitation and Reporting Limits:

Concentrations of all analytes were correctly calculated.

All anion samples were analyzed at an initial 5-fold dilution as per the laboratories normal protocol and some samples were analyzed at further dilutions for some analytes to keep the concentration within the calibration range. RL in these samples are elevated as a result of the dilutions performed.

10. Laboratory Contact:

The laboratory was contacted on June 22, 2011 regarding the lack of blank and duplicate data for alkalinity, why all TDS samples were analyzed beyond the established holding time, the lack of LCS data for one of the anions samples, and the dilution factors associated with the anions samples. An acceptable response was received on June 27-29, 2011.

11. Overall Assessment:

The alkalinity/carbonate-alkalinity/bicarbonate-alkalinity results in one sample were qualified as estimated since the holding time was exceeded.

The TDS, nitrate, and nitrite results in all samples were estimated since the holding times were exceeded.

The chloride results in all surface water samples were estimated due to high MS/MSD recoveries.

The analytical data is acceptable for use with the qualifications listed above.

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# ALKALINITY ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech  Contract: Jackpile

Matrix: (soil/water) water  Date Received: 04/26/2011

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| Sample # | Sample ID | Analyte | Conc. | Q | ANALYSIS DATE |
|---|---|---|---|---|---|
| 1107985-01 | JPOP41S-110421 | Alkalinity | 1000 | | 05/02/11 |
| 1107985-01 | JPOP41S-110421 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-01 | JPOP41S-110421 | Bicarbonate - Alkalinity | 999 | | 05/02/11 |
| | | | | | |
| 1107985-02 | MD-SW-110420 | Alkalinity | 322 | | 05/02/11 |
| 1107985-02 | MD-SW-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-02 | MD-SW-110420 | Bicarbonate - Alkalinity | 317 | | 05/02/11 |
| | | | | | |
| 1107985-03 | MW-1-110419 | Alkalinity | 470 | | 05/02/11 |
| 1107985-03 | MW-1-110419 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-03 | MW-1-110419 | Bicarbonate - Alkalinity | 465 | | 05/02/11 |
| | | | | | |
| 1107985-04 | MW-2-110421 | Alkalinity | 475 | | 05/02/11 |
| 1107985-04 | MW-2-110421 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-04 | MW-2-110421 | Bicarbonate - Alkalinity | 473 | | 05/02/11 |
| | | | | | |
| 1107985-05 | MW-2-2-110421 | Alkalinity | 400 | | 05/02/11 |
| 1107985-05 | MW-2-2-110421 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-05 | MW-2-2-110421 | Bicarbonate - Alkalinity | 398 | | 05/02/11 |
| | | | | | |
| 1107985-06 | MW-3-110420 | Alkalinity | 312 | | 05/02/11 |
| 1107985-06 | MW-3-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-06 | MW-3-110420 | Bicarbonate - Alkalinity | 311 | | 05/02/11 |
| | | | | | |
| 1107985-07 | MW-4-110420 | Alkalinity | 451 | | 05/02/11 |
| 1107985-07 | MW-4-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-07 | MW-4-110420 | Bicarbonate - Alkalinity | 450 | | 05/02/11 |
| | | | | | |
| 1107985-08 | MW-6-110420 | Alkalinity | 370 | | 05/02/11 |
| 1107985-08 | MW-6-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-08 | MW-6-110420 | Bicarbonate - Alkalinity | 369 | | 05/02/11 |

Comments:

6/23/2011

# ALKALINITY ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Date Received: 04/26/2011

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| Sample # | Sample ID | Analyte | Conc. | Q | ANALYSIS DATE |
|---|---|---|---|---|---|
| 1107985-09 | MW-7-110419 | Alkalinity | 351 | | 05/02/11 |
| 1107985-09 | MW-7-110419 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-09 | MW-7-110419 | Bicarbonate - Alkalinity | 334 | | 05/02/11 |
| | | | | | |
| 1107985-10 | MW-8-110419 | Alkalinity | 452 | | 05/02/11 |
| 1107985-10 | MW-8-110419 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-10 | MW-8-110419 | Bicarbonate - Alkalinity | 445 | | 05/02/11 |
| | | | | | |
| 1107985-11 | MW-MD-02-110420 | Alkalinity | 570 | | 05/02/11 |
| 1107985-11 | MW-MD-02-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-11 | MW-MD-02-110420 | Bicarbonate - Alkalinity | 567 | | 05/02/11 |
| | | | | | |
| 1107985-12 | MW-MD-110420 | Alkalinity | 580 | | 05/02/11 |
| 1107985-12 | MW-MD-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-12 | MW-MD-110420 | Bicarbonate - Alkalinity | 577 | | 05/02/11 |
| | | | | | |
| 1107985-13 | NPOP20E-110420 | Alkalinity | 590 | | 05/02/11 |
| 1107985-13 | NPOP20E-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-13 | NPOP20E-110420 | Bicarbonate - Alkalinity | 590 | | 05/02/11 |
| | | | | | |
| 1107985-15 | PR-SW-01-110420 | Alkalinity | 80 | | 05/02/11 |
| 1107985-15 | PR-SW-01-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-15 | PR-SW-01-110420 | Bicarbonate - Alkalinity | 75.0 | | 05/02/11 |
| | | | | | |
| 1107985-16 | RB-01-110420 | Alkalinity | 5.0 | U | 05/02/11 |
| 1107985-16 | RB-01-110420 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-16 | RB-01-110420 | Bicarbonate - Alkalinity | 5.0 | U | 05/02/11 |
| | | | | | |
| 1107985-17 | RB-02-110421 | Alkalinity | 5.0 | U | 05/02/11 |
| 1107985-17 | RB-02-110421 | Carbonate - Alkalinity | 20 | U | 05/02/11 |
| 1107985-17 | RB-02-110421 | Bicarbonate - Alkalinity | 5.0 | U | 05/02/11 |

Comments:

6/23/2011

# ALKALINITY ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Date Received: 04/26/2011

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| Sample # | Sample ID | Analyte | Conc. | Q | ANALYSIS DATE |
|---|---|---|---|---|---|
| 1107985-20 | RM-JM-SW-02-110420 | Alkalinity | 290 | | 05/03/11 |
| 1107985-20 | RM-JM-SW-02-110420 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-20 | RM-JM-SW-02-110420 | Bicarbonate - Alkalinity | 287 | | 05/03/11 |
| | | | | | |
| 1107985-21 | RM-JM-SW-110420 | Alkalinity | 291 | | 05/03/11 |
| 1107985-21 | RM-JM-SW-110420 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-21 | RM-JM-SW-110420 | Bicarbonate - Alkalinity | 287 | | 05/03/11 |
| | | | | | |
| 1107985-23 | RM-SW-BG-110419 | Alkalinity | 250 | | 05/03/11 |
| 1107985-23 | RM-SW-BG-110419 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-23 | RM-SW-BG-110419 | Bicarbonate - Alkalinity | 246 | | 05/03/11 |
| | | | | | |
| 1107985-26 | RP-JM-SW-01-110420 | Alkalinity | 284 | | 05/03/11 |
| 1107985-26 | RP-JM-SW-01-110420 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-26 | RP-JM-SW-01-110420 | Bicarbonate - Alkalinity | 281 | | 05/03/11 |
| | | | | | |
| 1107985-27 | RP-JM-SW-110420 | Alkalinity | 285 | | 05/03/11 |
| 1107985-27 | RP-JM-SW-110420 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-27 | RP-JM-SW-110420 | Bicarbonate - Alkalinity | 282 | | 05/03/11 |
| | | | | | |
| 1107985-32 | RP-SW-01-110419 | Alkalinity | 333 | | 05/03/11 |
| 1107985-32 | RP-SW-01-110419 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-32 | RP-SW-01-110419 | Bicarbonate - Alkalinity | 329 | | 05/03/11 |
| | | | | | |
| 1107985-33 | RP-SW-BG-041911 | Alkalinity | 343 | | 05/03/11 |
| 1107985-33 | RP-SW-BG-041911 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-33 | RP-SW-BG-041911 | Bicarbonate - Alkalinity | 339 | | 05/03/11 |
| | | | | | |
| 1107985-34 | SPOP35-110421 | Alkalinity | 620 | | 05/03/11 |
| 1107985-34 | SPOP35-110421 | Carbonate - Alkalinity | 20 | U | 05/03/11 |
| 1107985-34 | SPOP35-110421 | Bicarbonate - Alkalinity | 619 | | 05/03/11 |

Comments:

6/23/2011

ALKALINITY ANALYSIS DATA SHEET

Lab Name: Summit Environmental Tech Contract: Jackpile

Matrix: (soil/water) water Date Received: 04/26/2011

Concentration Units (**mg/L** or **mg/kg** dry weight): mg/L

| Sample # | Sample ID | Analyte | Conc. | Q | ANALYSIS DATE |
|---|---|---|---|---|---|
| 1107985-35 | MW-RM-110420 | Alkalinity | 220 | | 05/12/11 |
| 1107985-35 | MW-RM-110420 | Carbonate - Alkalinity | 20 | ~~U~~ | 05/12/11 |
| 1107985-35 | MW-RM-110420 | Bicarbonate - Alkalinity | 218 | | 05/12/11 |
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| | | Alkalinity | | | |
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| | | Bicarbonate - Alkalinity | | | |
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| | | Bicarbonate - Alkalinity | | | |
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| | | Alkalinity | | | |
| | | Carbonate - Alkalinity | | | |
| | | Bicarbonate - Alkalinity | | | |

JL
VJL
JL

Comments:

BS 6/3/2011

# Summit

**ENVIRONMENTAL TECHNOLOGIES, INC.**

***Analytical Laboratories***

June 06, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Collected | Analyte | Result | Units | Matrix | Method | DF | LOD | LOQ | Run | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JPOP41S-110421 | 1107985-01 | 21-Apr-11 | Total Dissolved Solids (TDS) | 6370 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MD-SW-110420 | 1107985-02 | 20-Apr-11 | Total Dissolved Solids (TDS) | 3860 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-1-110419 | 1107985-03 | 19-Apr-11 | Total Dissolved Solids (TDS) | 2000 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-2-110421 | 1107985-04 | 21-Apr-11 | Total Dissolved Solids (TDS) | 3500 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-2-2-110421 | 1107985-05 | 21-Apr-11 | Total Dissolved Solids (TDS) | 3330 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-3-110420 | 1107985-06 | 20-Apr-11 | Total Dissolved Solids (TDS) | 785 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-4-110420 | 1107985-07 | 20-Apr-11 | Total Dissolved Solids (TDS) | 1210 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-6-110420 | 1107985-08 | 20-Apr-11 | Total Dissolved Solids (TDS) | 2690 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |

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"Analytical Integrity"
3310 Win Street Cuyahoga Falls, Ohio 44223 Phone: 330-253-8211 Fax: 330-253-4489
NELAP Certified
Web Site: www.settek.com

6/30/2011

**Summit**
ENVIRONMENTAL TECHNOLOGIES, INC.
*Analytical Laboratories*

June 06, 2011
Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354
Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Collected | Analyte | Result | Units | Matrix | Method | DF | LOD | LOQ | Run | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-7-110419 | 1107985-09 | 19-Apr-11 | Total Dissolved Solids (TDS) | 515 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-8-110419 | 1107985-10 | 19-Apr-11 | Total Dissolved Solids (TDS) | 940 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-MD-02-110420 | 1107985-11 | 20-Apr-11 | Total Dissolved Solids (TDS) | 5490 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| MW-MD-110420 | 1107985-12 | 20-Apr-11 | Total Dissolved Solids (TDS) | 7250 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| NPOP20E-110420 | 1107985-13 | 20-Apr-11 | Total Dissolved Solids (TDS) | 4440 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| PR-SW-01-110420 | 1107985-15 | 20-Apr-11 | Total Dissolved Solids (TDS) | 7950 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RB-01-110420 | 1107985-16 | 20-Apr-11 | Total Dissolved Solids (TDS) | 100 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RB-02-110421 | 1107985-17 | 21-Apr-11 | Total Dissolved Solids (TDS) | 60 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |

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Web Site: www.settek.com

6/3/2011

# Summit

**ENVIRONMENTAL TECHNOLOGIES, INC.**

***Analytical Laboratories***

June 06, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Collected | Analyte | Result | Units | Matrix | Method | DF | LOD | LOQ | Run | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RM-JM-SW-02 | 1107985-20 | 20-Apr-11 | Total Dissolved Solids (TDS) | 1920 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RM-JM-SW-110420 | 1107985-21 | 20-Apr-11 | Total Dissolved Solids (TDS) | 2410 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RM-SW-BG-110419 | 1107985-23 | 19-Apr-11 | Total Dissolved Solids (TDS) | 1260 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RP-JM-SW-01-110420 | 1107985-26 | 20-Apr-11 | Total Dissolved Solids (TDS) | 1800 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RP-JM-SW-110420 | 1107985-27 | 20-Apr-11 | Total Dissolved Solids (TDS) | 1220 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RP-SW-01-110419 | 1107985-32 | 19-Apr-11 | Total Dissolved Solids (TDS) | 2120 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| RP-SW-BG-041911 | 1107985-33 | 19-Apr-11 | Total Dissolved Solids (TDS) | 420 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |
| SPOP35-110421 | 1107985-34 | 21-Apr-11 | Total Dissolved Solids (TDS) | 9360 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 29-Apr-11 | JRK |

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Web Site: www.settek.com

6/6/2011

# Summit

**ENVIRONMENTAL TECHNOLOGIES, INC.**

***Analytical Laboratories***

June 06, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Collected | Analyte | Result | Units | Matrix | Method | DF | LOD | LOQ | Run | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-RM-110420 | 1107985-35 | 21-Apr-11 | Total Dissolved Solids (TDS) | 1340 | mg/L | L | SM 2540-C | 1 | 5 | 5 | 12-May-11 | JRK |

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Web Site: www.settek.com

6/23/2011

# Summit

**ENVIRONMENTAL TECHNOLOGIES, INC.**

***Analytical Laboratories***

June 28, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Analyte | Result | Q | Units | LOD | LOQ | DF | Matrix | Method | Analyst | Analyzed | Collected | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JPOP41S-110421 | 1107985-01 | Chloride | 15.4 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| JPOP41S-110421 | 1107985-01 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| JPOP41S-110421 | 1107985-01 | Nitrate | 54.4 | D | mg/L | 1.15 | 6.00 | 10 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | JL |
| JPOP41S-110421 | 1107985-01 | Sulfate | 3140 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | JL (R) |
| MD-SW-110420 | 1107985-02 | Chloride | 363 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JL |
| MD-SW-110420 | 1107985-02 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MD-SW-110420 | 1107985-02 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MD-SW-110420 | 1107985-02 | Sulfate | 2050 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-1-110419 | 1107985-03 | Chloride | 15.6 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-1-110419 | 1107985-03 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| MW-1-110419 | 1107985-03 | Nitrate | 2.40 | | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | JL |
| MW-1-110419 | 1107985-03 | Sulfate | 1190 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-2-110421 | 1107985-04 | Chloride | 39.7 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| MW-2-110421 | 1107985-04 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| MW-2-110421 | 1107985-04 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| MW-2-110421 | 1107985-04 | Sulfate | 2460 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| MW-2-2-110421 | 1107985-05 | Chloride | 45.3 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| MW-2-2-110421 | 1107985-05 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| MW-2-2-110421 | 1107985-05 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| MW-2-2-110421 | 1107985-05 | Sulfate | 2030 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| MW-3-110420 | 1107985-06 | Chloride | 7.90 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-3-110420 | 1107985-06 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-3-110420 | 1107985-06 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-3-110420 | 1107985-06 | Sulfate | 381 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-4-110420 | 1107985-07 | Chloride | 14.9 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-4-110420 | 1107985-07 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-4-110420 | 1107985-07 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-4-110420 | 1107985-07 | Sulfate | 660 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |

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"Analytical Integrity"
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NELAP Certified
Web Site: www.settek.com

**Summit**
**ENVIRONMENTAL TECHNOLOGIES, INC.**
***Analytical Laboratories***

June 28, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Analyte | Result | Q | Units | LOD | LOQ | DF | Matrix | Method | Analyst | Analyzed | Collected | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-6-110420 | 1107985-08 | Chloride | 32.9 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-6-110420 | 1107985-08 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-6-110420 | 1107985-08 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-6-110420 | 1107985-08 | Sulfate | 1560 | D | mg/L | 2.00 | 25.0 | 10 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-7-110419 | 1107985-09 | Chloride | 3.50 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-7-110419 | 1107985-09 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| MW-7-110419 | 1107985-09 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| MW-7-110419 | 1107985-09 | Sulfate | 106 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-8-110419 | 1107985-10 | Chloride | 19.4 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-8-110419 | 1107985-10 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| MW-8-110419 | 1107985-10 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| MW-8-110419 | 1107985-10 | Sulfate | 350 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| MW-MD-02-110420 | 1107985-11 | Chloride | 133 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-MD-02-110420 | 1107985-11 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-MD-02-110420 | 1107985-11 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-MD-02-110420 | 1107985-11 | Sulfate | 3670 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-MD-110420 | 1107985-12 | Chloride | 128 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| MW-MD-110420 | 1107985-12 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-MD-110420 | 1107985-12 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| MW-MD-110420 | 1107985-12 | Sulfate | 3790 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| NPOP20E-110420 | 1107985-13 | Chloride | 18.9 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| NPOP20E-110420 | 1107985-13 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| NPOP20E-110420 | 1107985-13 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| NPOP20E-110420 | 1107985-13 | Sulfate | 3580 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| PR-SW-01-110420 | 1107985-15 | Chloride | 145 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JH |
| PR-SW-01-110420 | 1107985-15 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| PR-SW-01-110420 | 1107985-15 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJL |
| PR-SW-01-110420 | 1107985-15 | Sulfate | 5330 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |

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"Analytical Integrity"
3310 Win Street Cuyahoga Falls, Ohio 44223 Phone: 330-253-8211 Fax: 330-253-4489
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Web Site: www.settek.com

**Summit**
**ENVIRONMENTAL TECHNOLOGIES, INC.**
***Analytical Laboratories***

June 28, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Analyte | Result | Q | Units | LOD | LOQ | DF | Matrix | Method | Analyst | Analyzed | Collected | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RB-01-110420 | 1107985-16 | Chloride | 0.200 | U | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| RB-01-110420 | 1107985-16 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RB-01-110420 | 1107985-16 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RB-01-110420 | 1107985-16 | Sulfate | 0.200 | U | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| RB-02-110421 | 1107985-17 | Chloride | 0.200 | U | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| RB-02-110421 | 1107985-17 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJ |
| RB-02-110421 | 1107985-17 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJ |
| RB-02-110421 | 1107985-17 | Sulfate | 0.200 | U | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| RM-JM-SW-02-110420 | 1107985-20 | Chloride | 26.7 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JH |
| RM-JM-SW-02-110420 | 1107985-20 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RM-JM-SW-02-110420 | 1107985-20 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RM-JM-SW-02-110420 | 1107985-20 | Sulfate | 1900 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| RM-JM-SW-110420 | 1107985-21 | Chloride | 24.5 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JH |
| RM-JM-SW-110420 | 1107985-21 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RM-JM-SW-110420 | 1107985-21 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RM-JM-SW-110420 | 1107985-21 | Sulfate | 1920 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| RM-SW-BG-110419 | 1107985-23 | Chloride | 13.4 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | JH |
| RM-SW-BG-110419 | 1107985-23 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJ |
| RM-SW-BG-110419 | 1107985-23 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJ |
| RM-SW-BG-110419 | 1107985-23 | Sulfate | 877 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| RP-JM-SW-01-110420 | 1107985-26 | Chloride | 19.1 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JH |
| RP-JM-SW-01-110420 | 1107985-26 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RP-JM-SW-01-110420 | 1107985-26 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RP-JM-SW-01-110420 | 1107985-26 | Sulfate | 1040 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |
| RP-JM-SW-110420 | 1107985-27 | Chloride | 13.0 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | JH |
| RP-JM-SW-110420 | 1107985-27 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RP-JM-SW-110420 | 1107985-27 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | UJ |
| RP-JM-SW-110420 | 1107985-27 | Sulfate | 642 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 20-Apr-11 | |

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"Analytical Integrity"
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# Summit

**ENVIRONMENTAL TECHNOLOGIES, INC.**

***Analytical Laboratories***

June 28, 2011

Client: Weston Solutions
Address: 14160 Dallas Parkway, Suite 850
Dallas, TX 75354

Received: 4/26/2011
Project #: Jackpile

| Client ID# | Lab ID# | Analyte | Result | Q | Units | LOD | LOQ | DF | Matrix | Method | Analyst | Analyzed | Collected | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RP-SW-01-110419 | 1107985-32 | Chloride | 27.2 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | JH |
| RP-SW-01-110419 | 1107985-32 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| RP-SW-01-110419 | 1107985-32 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| RP-SW-01-110419 | 1107985-32 | Sulfate | 1640 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| RP-SW-BG-041911 | 1107985-33 | Chloride | 6.40 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | JH |
| RP-SW-BG-041911 | 1107985-33 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| RP-SW-BG-041911 | 1107985-33 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | UJL |
| RP-SW-BG-041911 | 1107985-33 | Sulfate | 146 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 19-Apr-11 | |
| SPOP35-110421 | 1107985-34 | Chloride | 41.7 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| SPOP35-110421 | 1107985-34 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| SPOP35-110421 | 1107985-34 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | UJL |
| SPOP35-110421 | 1107985-34 | Sulfate | 5500 | D | mg/L | 4.00 | 50.0 | 20 | L | 300.0 | KMG | 03-May-11 | 21-Apr-11 | |
| MW-RM-110420 | 1107985-35 | Chloride | 14.0 | | mg/L | 0.200 | 2.50 | 1 | L | 300.0 | KMG | 12-May-11 | 21-Apr-11 | |
| MW-RM-110420 | 1107985-35 | Nitrite | 0.165 | U | mg/L | 0.165 | 0.800 | 1 | L | 300.0 | KMG | 12-May-11 | 21-Apr-11 | UJL |
| MW-RM-110420 | 1107985-35 | Nitrate | 0.115 | U | mg/L | 0.115 | 0.600 | 1 | L | 300.0 | KMG | 12-May-11 | 21-Apr-11 | UJL |
| MW-RM-110420 | 1107985-35 | Sulfate | 454 | D | mg/L | 1.00 | 12.5 | 5 | L | 300.0 | KMG | 12-May-11 | 21-Apr-11 | |

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6/30/11



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Review of Radiochemistry Data Reports, Sample Delivery Groups ARS1-11-00895, ARS1-11-00897, and 1170985, Related to the Paquate Uranium Mine Site ESI Sampling Event

Completed by Nels R. Johnson, C.H.P., Weston Solutions, Inc.

3 July 2011

Radiochemistry data on 10 soil / sediment and 25 aqueous samples collected from the Jackpile site were reviewed. It appears that the sample analyses were split between two commercial laboratories.

Samples were analyzed by American Radiological Services (ARS) for isotopic uranium and isotopic thorium by alpha spectrometry. The analytical procedure consisted of sample digestion, followed by sequential separation by ion exchange. Samples were then electroplated on stainless steel, and counted by alpha spectrometry. Data packages appeared to conform to the requirements of a level 4 package. These packages appeared complete, and the data appeared valid.

Analytical results for the soil and aqueous samples appeared reasonable. Reasonableness was determined by review of radioisotopes within the same decay chain to determine if they were in equilibrium, and review of the analytical results to determine if the concentrations seemed reasonable. In the solid samples, the U-234 and U-238 were in approximate equilibrium, and the results were at approximate background levels. In some of the samples, the Th-230 concentration exceeded the uranium concentrations by a factor of 2, which may be indicative of uranium tailings. In the aqueous samples, the U-234 was greater than the U-238 by a factor of about 2, which is not reasonable. It is assumed that the associated counting error of the analyses is the cause of this anomaly. The analytical results of the aqueous samples often contained elevated concentrations of uranium, with three samples at a concentration above the USNRC discharge limit of 300 pCi/l. The highest concentration reported was approximately 114,000 pCi/l.

Samples were also apparently analyzed by Summit Environmental Technologies for gross alpha, gross beta, Ra-226 and Ra-228 activity. This data package was not as easy to interpret. There seemed to be multiple analytical results for some samples, and other sample results were not obvious to this reviewer. These data could not be evaluated for their completeness and validity.

# APPENDIX F

## EPA NATIONAL PRIMARY DRINKING WATER REGUALTIONS (MCLs) AND 2009 EPA REGION 6 HUMAN HEALTH MEDIUM-SPECIFIC SCREENING LEVELS (MSSLs)

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | mg/kg | mg/kg |
| ALAR | 1596-84-5 | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I | | | | | 1 | 0.1 | | 2.7E+01 | c | 9.6E+01 | c | 4.8E-01 | c | 2.4E+00 | c | 3.7E+00 | c | | 8.2E-04 | |
| Acephate | 30560-19-1 | 8.7E-03 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 5.6E+01 | c** | 2.0E+02 | c* | | | | | 7.7E+00 | c* | | 1.7E-03 | |
| Acetaldehyde | 75-07-0 | | | 2.2E-06 | I | | | 9.0E-03 | I | V | | 1 | | 1.1E+05 | 1.0E+01 | c** | 5.2E+01 | c** | 1.1E+00 | c** | 5.6E+00 | c** | 2.2E+00 | c** | | 4.5E-04 | |
| Acetochlor | 34256-82-1 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 5.8E-01 | |
| Acetone | 67-64-1 | | | | | 9.0E-01 | I | 3.1E+01 | A | V | | 1 | | 1.1E+05 | 6.1E+04 | n | 6.3E+05 | nms | 3.2E+04 | n | 1.4E+05 | n | 2.2E+04 | n | | 4.5E+00 | |
| Acetone Cyanohydrin | 75-86-5 | | | | | 3.0E-03 | P | 6.0E-02 | P | V | | 1 | | 1.1E+05 | 2.0E+02 | n | 2.1E+03 | n | 6.3E+01 | n | 2.6E+02 | n | 5.8E+01 | n | | 1.2E-02 | |
| Acetonitrile | 75-05-8 | | | | | | | 6.0E-02 | I | V | | 1 | | 1.3E+05 | 8.7E+02 | n | 3.7E+03 | n | 6.3E+01 | n | 2.6E+02 | n | 1.3E+02 | n | | 2.6E-02 | |
| Acetophenone | 98-86-2 | | | | | 1.0E-01 | I | | | V | | 1 | | 2.5E+03 | 7.8E+03 | ns | 1.0E+05 | nms | | | | | 3.7E+03 | n | | 1.1E+00 | |
| Acetylaminofluorene, 2- | 53-96-3 | 3.8E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | | 1.3E-01 | c | 4.5E-01 | c | 1.9E-03 | c | 9.4E-03 | c | 1.8E-02 | c | | 8.2E-05 | |
| Acrolein | 107-02-8 | | | | | 5.0E-04 | I | 2.0E-05 | I | V | | 1 | | 2.3E+04 | 1.5E-01 | n | 6.5E-01 | n | 2.1E-02 | n | 8.8E-02 | n | 4.2E-02 | n | | 8.4E-06 | |
| Acrylamide | 79-06-1 | 4.5E+00 | I | 1.3E-03 | I | 2.0E-04 | I | | | | | 1 | 0.1 | | 1.1E-01 | c | 3.8E-01 | c | 1.9E-03 | c | 9.4E-03 | c | 1.5E-02 | c | | 3.2E-06 | |
| Acrylic Acid | 79-10-7 | | | | | 5.0E-01 | I | 1.0E-03 | I | | | 1 | 0.1 | | 3.0E+04 | n | 2.9E+05 | nm | 1.0E+00 | n | 4.4E+00 | n | 1.8E+04 | n | | 3.7E+00 | |
| Acrylonitrile | 107-13-1 | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A | 2.0E-03 | I | V | | 1 | | 1.1E+04 | 2.4E-01 | c* | 1.2E+00 | c* | 3.6E-02 | c* | 1.8E-01 | c* | 4.5E-02 | c* | | 9.9E-06 | |
| Adiponitrile | 111-69-3 | | | | | | | 6.0E-03 | P | | | 1 | 0.1 | | 8.5E+06 | nm | 3.6E+07 | nm | 6.3E+00 | n | 2.6E+01 | n | | | | | |
| Alachlor | 15972-60-8 | 5.6E-02 | C | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 8.7E+00 | c* | 3.1E+01 | c | | | | | 1.2E+00 | c | 2.0E+00 | 9.9E-04 | 1.6E-03 |
| Aldicarb | 116-06-3 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 9.1E-03 | |
| Aldicarb Sulfone | 1646-88-4 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 8.0E-03 | |
| Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I | | | | | 1 | 0.1 | | 2.9E-02 | c* | 1.0E-01 | c | 5.0E-04 | c | 2.5E-03 | c | 4.0E-03 | c | | 6.5E-04 | |
| Ally | 74223-64-6 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | | 1.5E+04 | n | 1.5E+05 | nm | | | | | 9.1E+03 | n | | 3.5E+00 | |
| Allyl Alcohol | 107-18-6 | | | | | 5.0E-03 | I | 1.0E-04 | X | | | 1 | 0.1 | | 3.0E+02 | n | 3.1E+03 | n | 1.0E-01 | n | 4.4E-01 | n | 1.8E+02 | n | | 3.7E-02 | |
| Allyl Chloride | 107-05-1 | 2.1E-02 | C | 6.0E-06 | C | | | 1.0E-03 | I | V | | 1 | | 1.4E+03 | 6.8E-01 | c** | 3.4E+00 | c** | 4.1E-01 | c** | 2.0E+00 | c** | 6.5E-01 | c** | | 2.1E-04 | |
| Aluminum | 7429-90-5 | | | | | 1.0E+00 | P | 5.0E-03 | P | | | 1 | | | 7.7E+04 | n | 9.9E+05 | nm | 5.2E+00 | n | 2.2E+01 | n | 3.7E+04 | n | | 5.5E+04 | |
| Aluminum Phosphide | 20859-73-8 | | | | | 4.0E-04 | I | | | | | 1 | | | 3.1E+01 | n | 4.1E+02 | n | | | | | 1.5E+01 | n | | | |
| Amdro | 67485-29-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 3.9E+03 | |
| Ametryn | 834-12-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | | 5.5E+02 | n | 5.5E+03 | n | | | | | 3.3E+02 | n | | 3.5E-01 | |
| Aminobiphenyl, 4- | 92-67-1 | 2.1E+01 | C | 6.0E-03 | C | | | | | | | 1 | 0.1 | | 2.3E-02 | c | 8.2E-02 | c | 4.1E-04 | c | 2.0E-03 | c | 3.2E-03 | c | | 1.6E-05 | |
| Aminophenol, m- | 591-27-5 | | | | | 8.0E-02 | P | | | | | 1 | 0.1 | | 4.9E+03 | n | 4.9E+04 | n | | | | | 2.9E+03 | n | | 1.1E+00 | |
| Aminophenol, p- | 123-30-8 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 2.8E-01 | |
| Amitraz | 33089-61-1 | | | | | 2.5E-03 | I | | | | | 1 | 0.1 | | 1.5E+02 | n | 1.5E+03 | n | | | | | 9.1E+01 | n | | 4.7E+01 | |
| Ammonia | 7664-41-7 | | | | | | | 1.0E-01 | I | | | 1 | | | | | | | 1.0E+02 | n | 4.4E+02 | n | | | | | |
| Ammonium Perchlorate | 7790-98-9 | | | | | 7.0E-04 | I | | | | | 1 | | | 5.5E+01 | n | 7.2E+02 | n | | | | | 2.6E+01 | n | | | |
| Ammonium Sulfamate | 7773-06-0 | | | | | 2.0E-01 | I | | | | | 1 | | | 1.6E+04 | n | 2.0E+05 | nm | | | | | 7.3E+03 | n | | | |
| Aniline | 62-53-3 | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P | 1.0E-03 | I | | | 1 | 0.1 | | 8.5E+01 | c** | 3.0E+02 | c* | 1.0E+00 | n | 4.4E+00 | n | 1.2E+01 | c* | | 4.0E-03 | |
| Antimony (metallic) | 7440-36-0 | | | | | 4.0E-04 | I | | | | | 0.15 | | | 3.1E+01 | n | 4.1E+02 | n | | | | | 1.5E+01 | n | 6.0E+00 | 6.6E-01 | 2.7E-01 |
| Antimony Pentoxide | 1314-60-9 | | | | | 5.0E-04 | H | | | | | 0.15 | | | 3.9E+01 | n | 5.1E+02 | n | | | | | 1.8E+01 | n | | | |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | 9.0E-04 | H | | | | | 0.15 | | | 7.0E+01 | n | 9.2E+02 | n | | | | | 3.3E+01 | n | | | |
| Antimony Tetroxide | 1332-81-6 | | | | | 4.0E-04 | H | | | | | 0.15 | | | 3.1E+01 | n | 4.1E+02 | n | | | | | 1.5E+01 | n | | | |
| Antimony Trioxide | 1309-64-4 | | | | | | | 2.0E-04 | I | | | 0.15 | | | 2.8E+05 | nm | 1.2E+06 | nm | 2.1E-01 | n | 8.8E-01 | n | | | | | |
| Apollo | 74115-24-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 2.9E+01 | |
| Aramite | 140-57-8 | 2.5E-02 | I | 7.1E-06 | I | 5.0E-02 | H | | | | | 1 | 0.1 | | 1.9E+01 | c | 6.9E+01 | c | 3.4E-01 | c | 1.7E+00 | c | 2.7E+00 | c | | 3.0E-02 | |
| Arsenic, Inorganic | 7440-38-2 | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I | 1.5E-05 | C | | | 1 | 0.03 | | 3.9E-01 | c* | 1.6E+00 | c | 5.7E-04 | c* | 2.9E-03 | c* | 4.5E-02 | c | 1.0E+01 | 1.3E-03 | 2.9E-01 |
| Arsine | 7784-42-1 | | | | | 3.5E-06 | C | 5.0E-05 | I | | | 1 | | | 2.7E-01 | n | 3.6E+00 | n | 5.2E-02 | n | 2.2E-01 | n | 1.3E-01 | n | | | |
| Assure | 76578-14-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | | 5.5E+02 | n | 5.5E+03 | n | | | | | 3.3E+02 | n | | 5.1E+00 | |
| Asulam | 3337-71-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 4.7E-01 | |
| Atrazine | 1912-24-9 | 2.3E-01 | C | | | 3.5E-02 | I | | | | | 1 | 0.1 | | 2.1E+00 | c | 7.5E+00 | c | | | | | 2.9E-01 | c | 3.0E+00 | 1.9E-04 | 1.9E-03 |
| Auramine | 492-80-8 | 8.8E-01 | C | 2.5E-04 | C | | | | | | | | | | 7.3E-01 | c | 3.3E+00 | c | 9.7E-03 | c | 4.9E-02 | c | 7.6E-02 | c | | 7.0E-04 | |
| Avermectin B1 | 65195-55-3 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | | 2.4E+01 | n | 2.5E+02 | n | | | | | 1.5E+01 | n | | 2.6E+01 | |
| Azobenzene | 103-33-3 | 1.1E-01 | I | 3.1E-05 | I | | | | | V | | 1 | | | 5.1E+00 | c | 2.3E+01 | c | 7.8E-02 | c | 4.0E-01 | c | 1.2E-01 | c | | 9.6E-04 | |
| Barium | 7440-39-3 | | | | | 2.0E-01 | I | 5.0E-04 | H | | | 0.07 | | | 1.5E+04 | n | 1.9E+05 | nm | 5.2E-01 | n | 2.2E+00 | n | 7.3E+03 | n | 2.0E+03 | 3.0E+02 | 8.2E+01 |
| Baygon | 114-26-1 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 2.4E+02 | n | 2.5E+03 | n | | | | | 1.5E+02 | n | | 4.7E-02 | |
| Bayleton | 43121-43-3 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 8.7E-01 | |
| Baythroid | 68359-37-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | 2.4E+02 | |
| Benefin | 1861-40-1 | | | | | 3.0E-01 | I | | | | | 1 | 0.1 | | 1.8E+04 | n | 1.8E+05 | nm | | | | | 1.1E+04 | n | | 3.6E+02 | |
| Benomyl | 17804-35-2 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 1.6E+00 | |
| Bentazon | 25057-89-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 2.4E-01 | |
| Benzaldehyde | 100-52-7 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.2E+03 | 7.8E+03 | ns | 1.0E+05 | nms | | | | | 3.7E+03 | n | | 8.1E-01 | |
| Benzene | 71-43-2 | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I | 3.0E-02 | I | V | | 1 | | 1.8E+03 | 1.1E+00 | c* | 5.4E+00 | c* | 3.1E-01 | c | 1.6E+00 | c* | 4.1E-01 | c | 5.0E+00 | 2.1E-04 | 2.6E-03 |
| Benzenethiol | 108-98-5 | | | | | 1.0E-05 | H | | | V | | 1 | | 1.3E+03 | 7.8E-01 | n | 1.0E+01 | n | | | | | 3.7E-01 | n | | 2.4E-04 | |
| Benzidine | 92-87-5 | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I | | | | M | 1 | 0.1 | | 5.0E-04 | c | 7.5E-03 | c | 1.4E-05 | c | 1.8E-04 | c | 9.4E-05 | c | | 2.4E-07 | |
| Benzoic Acid | 65-85-0 | | | | | 4.0E+00 | I | | | | | 1 | 0.1 | | 2.4E+05 | nm | 2.5E+06 | nm | | | | | 1.5E+05 | n | | 3.4E+01 | |
| Benzotrichloride | 98-07-7 | 1.3E+01 | I | | | | | | | V | | 1 | | 3.2E+02 | 4.9E-02 | c | 2.2E-01 | c | | | | | 5.2E-03 | c | | 1.1E-05 | |
| Benzyl Alcohol | 100-51-6 | | | | | 1.0E-01 | P | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 8.9E-01 | |
| Benzyl Chloride | 100-44-7 | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P | 1.0E-03 | P | V | | 1 | | 1.5E+03 | 1.0E+00 | c* | 4.9E+00 | c* | 5.0E-02 | c* | 2.5E-01 | c* | 7.9E-02 | c* | | 8.7E-05 | |
| Beryllium and compounds | 7440-41-7 | | | 2.4E-03 | I | 2.0E-03 | I | 2.0E-05 | I | | | 0.007 | | | 1.6E+02 | n | 2.0E+03 | n | 1.0E-03 | c* | 5.1E-03 | c* | 7.3E+01 | n | 4.0E+00 | 5.8E+01 | 3.2E+00 |
| Bidrin | 141-66-2 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 8.5E-04 | |
| Bifenox | 42576-02-3 | | | | | 9.0E-03 | P | | | | | 1 | 0.1 | | 5.5E+02 | n | 5.5E+03 | n | | | | | 3.3E+02 | n | | 2.5E+00 | |
| Biphenthrin | 82657-04-3 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | | 9.2E+02 | n | 9.2E+03 | n | | | | | 5.5E+02 | n | | 2.5E+03 | |
| Biphenyl, 1,1'- | 92-52-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 2.1E+02 | 3.9E+03 | ns | 5.1E+04 | ns | | | | | 1.8E+03 | n | | 1.9E+01 | |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 7.0E-02 | H | 1.0E-05 | H | 4.0E-02 | I | | | V | | 1 | | 1.0E+03 | 4.6E+00 | c | 2.2E+01 | c | 2.4E-01 | c | 1.2E+00 | c | 3.2E-01 | c | | 1.2E-04 | |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | 3.0E-03 | P | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 2.5E-02 | |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | I | 3.3E-04 | I | | | | | V | | 1 | | 5.1E+03 | 2.1E-01 | c | 1.0E+00 | c | 7.4E-03 | c | 3.7E-02 | c | 1.2E-02 | c | | 3.1E-06 | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | I | 2.4E-06 | C | 2.0E-02 | I | | | | | 1 | 0.1 | | 3.5E+01 | c* | 1.2E+02 | c | 1.0E+00 | c | 5.1E+00 | c | 4.8E+00 | c | 6.0E+00 | 1.1E+00 | 1.4E+00 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | I | 6.2E-02 | I | | | | | V | | 1 | | 4.2E+03 | 7.7E-05 | c | 3.9E-04 | c | 3.9E-05 | c | 2.0E-04 | c | 6.2E-05 | c | | 1.5E-08 | |
| Bisphenol A | 80-05-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 1.4E+02 | |
| Boron And Borates Only | 7440-42-8 | | | | | 2.0E-01 | I | 2.0E-02 | H | | | 1 | | | 1.6E+04 | n | 2.0E+05 | nm | 2.1E+01 | n | 8.8E+01 | n | 7.3E+03 | n | | 2.3E+01 | |
| Boron Trifluoride | 7637-07-2 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | 1 | | | 3.1E+03 | n | 4.1E+04 | n | 1.4E+01 | n | 5.7E+01 | n | 1.5E+03 | n | | | |
| Bromate | 15541-45-4 | 7.0E-01 | I | | | 4.0E-03 | I | | | | | 1 | | | 9.1E-01 | c | 4.1E+00 | c | | | | | 9.6E-02 | c | 1.0E+01 | 7.4E-04 | 7.7E-02 |
| Bromo-2-chloroethane, 1- | 107-04-0 | 2.0E+00 | X | 6.0E-04 | X | | | | | V | | 1 | | 2.4E+03 | 2.4E-02 | c | 1.2E-01 | c | 4.1E-03 | c | 2.0E-02 | c | 6.5E-03 | c | | 1.8E-06 | |
| Bromobenzene | 108-86-1 | | | | | 8.0E-03 | I | 6.0E-02 | I | V | | 1 | | 6.8E+02 | 3.0E+02 | n | 1.8E+03 | ns | 6.3E+01 | n | 2.6E+02 | n | 8.8E+01 | n | | 5.9E-02 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | volc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | | mg/kg | | ug/m$^3$ | | ug/m$^3$ | | ug/L | | ug/L | mg/kg | mg/kg |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I | | | V | | 1 | | 9.3E+02 | 2.7E-01 | c | 1.4E+00 | c | 6.6E-02 | c | 3.3E-01 | c | 1.2E-01 | c | | 3.2E-05 | |
| Bromoform | 75-25-2 | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+01 | c* | 2.2E+02 | c* | 2.2E+00 | c | 1.1E+01 | c | 8.5E+00 | c* | | 2.3E-03 | |
| Bromomethane | 74-83-9 | | | | | 1.4E-03 | I | 5.0E-03 | I | V | | 1 | | 3.6E+03 | 7.3E+00 | n | 3.2E+01 | n | 5.2E+00 | n | 2.2E+01 | n | 8.7E+00 | n | | 2.2E-03 | |
| Bromophos | 2104-96-3 | | | | | 5.0E-03 | H | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 7.7E-01 | |
| Bromoxynil | 1689-84-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 6.3E-01 | |
| Bromoxynil Octanoate | 1689-99-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 6.4E+00 | |
| Butadiene, 1,3- | 106-99-0 | 3.4E+00 | C | 3.0E-05 | I | | | 2.0E-03 | I | V | | 1 | | 6.7E+02 | 5.4E-02 | c* | 2.6E-01 | c* | 8.1E-02 | c* | 4.1E-01 | c* | 1.8E-02 | c | | 9.7E-06 | |
| Butanol, N- | 71-36-3 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 7.6E-01 | |
| Butyl Benzyl Phthlate | 85-68-7 | 1.9E-03 | P | | | 2.0E-01 | I | | | | | 1 | 0.1 | | 2.6E+02 | c* | 9.1E+02 | c | | | | | 3.5E+01 | c | | 5.1E-01 | |
| Butyl alcohol, sec- | 78-92-2 | | | | | 2.0E+00 | P | 3.0E+01 | P | | | | | | 1.6E+05 | nm | 2.0E+06 | nm | 3.1E+04 | n | 1.3E+05 | n | 7.3E+04 | n | | 1.5E+01 | |
| Butylate | 2008-41-5 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 1.8E+00 | |
| Butylated hydroxyanisole | 25013-16-5 | 2.0E-04 | C | 5.7E-08 | C | | | | | | | | | | 3.2E+03 | c | 1.4E+04 | c | 4.3E+01 | c | 2.2E+02 | c | 3.4E+02 | c | | 6.3E-01 | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | 1.0E+00 | I | | | | | 1 | 0.1 | | 6.1E+04 | n | 6.2E+05 | nm | | | | | 3.7E+04 | n | | 8.3E+02 | |
| Cacodylic Acid | 75-60-5 | | | | | 2.0E-02 | A | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | | |
| Cadmium (Diet) | 7440-43-9 | | | 1.8E-03 | I | 1.0E-03 | I | 1.0E-05 | A | | | 0.025 | 0.001 | | 7.0E+01 | n | 8.0E+02 | n | | | | | | | | | |
| Cadmium (Water) | 7440-43-9 | | | 1.8E-03 | I | 5.0E-04 | I | 1.0E-05 | A | | | 0.05 | 0.001 | | | | | | 1.4E-03 | c** | 6.8E-03 | c** | 1.8E+01 | n | 5.0E+00 | 1.4E+00 | 3.8E-01 |
| Caprolactam | 105-60-2 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | | 3.1E+04 | n | 3.1E+05 | nm | | | | | 1.8E+04 | n | | 4.5E+00 | |
| Captafol | 2425-06-1 | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I | | | | | 1 | 0.1 | | 3.2E+00 | c* | 1.1E+01 | c | 5.7E-02 | c | 2.9E-01 | c | 4.5E-01 | c | | 7.9E-04 | |
| Captan | 133-06-2 | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I | | | | | 1 | 0.1 | | 2.1E+02 | c* | 7.5E+02 | c | 3.7E+00 | c | 1.9E+01 | c | 2.9E+01 | c | | 2.1E-02 | |
| Carbaryl | 63-25-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 3.3E+00 | |
| Carbofuran | 1563-66-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | 4.0E+01 | 7.1E-02 | 1.6E-02 |
| Carbon Disulfide | 75-15-0 | | | | | 1.0E-01 | I | 7.0E-01 | I | V | | 1 | | 7.4E+02 | 8.2E+02 | ns | 3.7E+03 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.0E+03 | n | | 3.1E-01 | |
| Carbon Tetrachloride | 56-23-5 | 1.3E-01 | I | 1.5E-05 | I | 7.0E-04 | I | 1.9E-01 | A | V | | 1 | | 4.6E+02 | 2.5E-01 | c | 1.2E+00 | c | 1.6E-01 | c | 8.2E-01 | c | 2.0E-01 | c | 5.0E+00 | 7.7E-05 | 1.9E-03 |
| Carbosulfan | 55285-14-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 8.8E+00 | |
| Carboxin | 5234-68-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 2.0E+00 | |
| Ceric oxide | 1306-38-3 | | | | | | | 9.0E-04 | I | | | 1 | | | 1.3E+06 | nm | 5.4E+06 | nm | 9.4E-01 | n | 3.9E+00 | n | | | | | |
| Chloral Hydrate | 302-17-0 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 7.4E-01 | |
| Chloramben | 133-90-4 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | | 9.2E+02 | n | 9.2E+03 | n | | | | | 5.5E+02 | n | | 1.3E-01 | |
| Chloranil | 118-75-2 | 4.0E-01 | H | | | | | | | | | 1 | 0.1 | | 1.2E+00 | c | 4.3E+00 | c | | | | | 1.7E-01 | c | | 1.4E-04 | |
| Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I | 7.0E-04 | I | | | 1 | 0.04 | | 1.6E+00 | c* | 6.5E+00 | c* | 2.4E-02 | c* | 1.2E-01 | c* | 1.9E-01 | c* | 2.0E+00 | 1.3E-02 | 1.4E-01 |
| Chlordecone (Kepone) | 143-50-0 | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I | | | | | 1 | 0.1 | | 4.9E-02 | c | 1.7E-01 | c | 5.3E-04 | c | 2.7E-03 | c | 6.7E-03 | c | | 2.4E-04 | |
| Chlorfenvinphos | 470-90-6 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | | 4.3E+01 | n | 4.3E+02 | n | | | | | 2.6E+01 | n | | 7.0E-02 | |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 2.5E-01 | |
| Chlorine | 7782-50-5 | | | | | 1.0E-01 | I | 1.5E-04 | A | | | 1 | | | 7.5E+03 | n | 9.1E+04 | n | 1.5E-01 | n | 6.4E-01 | n | 3.7E+03 | n | | 1.6E+00 | |
| Chlorine Dioxide | 10049-04-4 | | | | | 3.0E-02 | I | 2.0E-04 | I | | | 1 | | | 2.3E+03 | n | 3.0E+04 | n | 2.1E-01 | n | 8.8E-01 | n | 1.1E+03 | n | | | |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | 3.0E-02 | I | | | | | 1 | | | 2.3E+03 | n | 3.1E+04 | n | | | | | 1.1E+03 | n | | | |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.2E+03 | 5.8E+04 | ns | 2.4E+05 | nms | 5.2E+04 | n | 2.2E+05 | n | 1.0E+05 | n | | 5.2E+01 | |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | | | 2.0E-02 | H | 7.0E-03 | H | V | | 1 | | 7.5E+02 | 8.4E+00 | n | 3.6E+01 | n | 7.3E+00 | n | 3.1E+01 | n | 1.4E+01 | n | | 7.5E-03 | |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 4.6E-01 | H | | | | | | | | | 1 | 0.1 | | 1.1E+00 | c | 3.7E+00 | c | | | | | 1.5E-01 | c | | 8.3E-05 | |
| Chloroacetic Acid | 79-11-8 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 1.5E-02 | |
| Chloroacetophenone, 2- | 532-27-4 | | | | | | | 3.0E-05 | I | | | 1 | 0.1 | | 4.3E+04 | n | 1.8E+05 | nm | 3.1E-02 | n | 1.3E-01 | n | | | | | |
| Chloroaniline, p- | 106-47-8 | 2.0E-01 | P | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 2.4E+00 | c | 8.6E+00 | c | | | | | 3.4E-01 | c | | 1.4E-04 | |
| Chlorobenzene | 108-90-7 | | | | | 2.0E-02 | I | 5.0E-02 | P | V | | 1 | | 7.6E+02 | 2.9E+02 | n | 1.4E+03 | ns | 5.2E+01 | n | 2.2E+02 | n | 9.1E+01 | n | 1.0E+02 | 6.2E-02 | 6.8E-02 |
| Chlorobenzilate | 510-15-6 | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I | | | | | 1 | 0.1 | | 4.4E+00 | c | 1.6E+01 | c | 7.8E-02 | c | 4.0E-01 | c | 6.1E-01 | c | | 2.0E-03 | |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | 3.0E-02 | X | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 2.8E-01 | |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | | | 3.0E-03 | P | 3.0E-01 | P | V | | 1 | | 1.2E+02 | 2.1E+02 | ns | 2.3E+03 | ns | 3.1E+02 | n | 1.3E+03 | n | 9.3E+01 | n | | 3.3E-01 | |
| Chlorobutane, 1- | 109-69-3 | | | | | 4.0E-02 | P | | | V | | 1 | | 7.3E+02 | 3.1E+03 | ns | 4.1E+04 | ns | | | | | 1.5E+03 | n | | 5.9E-01 | |
| Chlorodifluoromethane | 75-45-6 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.7E+03 | 5.3E+04 | ns | 2.2E+05 | nms | 5.2E+04 | n | 2.2E+05 | n | 1.0E+05 | n | | 4.3E+01 | |
| Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I | 9.8E-02 | A | V | | 1 | | 2.5E+03 | 2.9E-01 | c | 1.5E+00 | c | 1.1E-01 | c | 5.3E-01 | c | 1.9E-01 | c | | 5.3E-05 | |
| Chloromethane | 74-87-3 | | | | | | | 9.0E-02 | I | V | | 1 | | 1.3E+03 | 1.2E+02 | n | 5.0E+02 | n | 9.4E+01 | n | 3.9E+02 | n | 1.9E+02 | n | | 4.9E-02 | |
| Chloromethyl Methyl Ether | 107-30-2 | 2.4E+00 | C | 6.9E-04 | C | | | | | V | | 1 | | 2.6E+04 | 1.9E-02 | c | 9.4E-02 | c | 3.5E-03 | c | 1.8E-02 | c | 5.6E-03 | c | | 1.2E-06 | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | 8.0E-02 | I | | | V | | 1 | | 1.8E+02 | 6.3E+03 | ns | 8.2E+04 | ns | | | | | 2.9E+03 | n | | 1.5E+01 | |
| Chloronitrobenzene, o- | 88-73-3 | 3.0E-01 | P | | | 3.0E-03 | P | 1.0E-05 | X | | | 1 | 0.1 | | 1.6E+00 | c | 5.7E+00 | c | 1.0E-02 | n | 4.4E-02 | n | 2.2E-01 | c | | 2.1E-04 | |
| Chloronitrobenzene, p- | 100-00-5 | 6.3E-03 | P | | | 1.0E-03 | P | 6.0E-04 | P | | | 1 | 0.1 | | 6.1E+01 | n | 2.7E+02 | c** | 6.3E-01 | n | 2.6E+00 | n | 1.1E+01 | c** | | 9.9E-03 | |
| Chlorophenol, 2- | 95-57-8 | | | | | 5.0E-03 | I | | | V | | 1 | | 2.2E+04 | 3.9E+02 | n | 5.1E+03 | n | | | | | 1.8E+02 | n | | 1.5E-01 | |
| Chloropicrin | 76-06-2 | | | | | | | 4.0E-04 | C | | | | | | 5.7E+05 | nm | 2.4E+06 | nm | 4.2E-01 | n | 1.8E+00 | n | | | | | |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I | | | | | 1 | 0.1 | | 1.6E+02 | c** | 5.6E+02 | c* | 2.7E+00 | c | 1.4E+01 | c | 2.2E+01 | c* | | 4.9E-02 | |
| Chlorotoluene, o- | 95-49-8 | | | | | 2.0E-02 | I | | | V | | 1 | | 9.1E+02 | 1.6E+03 | ns | 2.0E+04 | ns | | | | | 7.3E+02 | n | | 7.1E-01 | |
| Chlorotoluene, p- | 106-43-4 | | | | | 7.0E-02 | P | | | V | | 1 | | 2.5E+02 | 5.5E+03 | ns | 7.2E+04 | ns | | | | | 2.6E+03 | n | | 2.5E+00 | |
| Chlorozotocin | 54749-90-5 | 2.4E+02 | C | 6.9E-02 | C | | | | | | | | | | 2.7E-03 | c | 1.2E-02 | c | 3.5E-05 | c | 1.8E-04 | c | 2.8E-04 | c | | 6.2E-08 | |
| Chlorpropham | 101-21-3 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | | 1.2E+04 | n | 1.2E+05 | nm | | | | | 7.3E+03 | n | | 6.6E+00 | |
| Chlorpyrifos | 2921-88-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 1.6E+00 | |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | 1.0E-02 | H | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 1.7E+00 | |
| Chlorsulfuron | 64902-72-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 1.5E+00 | |
| Chlorthiophos | 60238-56-4 | | | | | 8.0E-04 | H | | | | | 1 | 0.1 | | 4.9E+01 | n | 4.9E+02 | n | | | | | 2.9E+01 | n | | 7.5E-01 | |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | 1.5E+00 | I | | | | | 0.013 | | | 1.2E+05 | nm | 1.5E+06 | nm | | | | | 5.5E+04 | n | | 9.9E+07 | |
| Chromium(VI) | 18540-29-9 | 5.0E-01 | J | 8.4E-02 | I | 3.0E-03 | I | 1.0E-04 | I | | M | 0.025 | | | 2.9E-01 | c | 5.6E+00 | c | 1.1E-05 | c | 1.5E-04 | c | 4.3E-02 | c | | 8.3E-04 | |
| Chromium, Total | 7440-47-3 | | | | | | | | | | | 0.013 | | | | | | | | | | | | | 1.0E+02 | | 1.8E+05 |
| Cobalt | 7440-48-4 | | | 9.0E-03 | P | 3.0E-04 | P | 6.0E-06 | P | | | 1 | | | 2.3E+01 | n | 3.0E+02 | n | 2.7E-04 | c* | 1.4E-03 | c* | 1.1E+01 | n | | 4.9E-01 | |
| Coke Oven Emissions | 8007-45-2 | | | 6.2E-04 | I | | | | | | M | 1 | 0.1 | | | | | | 1.5E-03 | c | 2.0E-02 | c | | | | | |
| Copper | 7440-50-8 | | | | | 4.0E-02 | H | | | | | 1 | | | 3.1E+03 | n | 4.1E+04 | n | | | | | 1.5E+03 | n | 1.3E+03 | 5.1E+01 | 4.6E+01 |
| Cresol, m- | 108-39-4 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | 6.3E+02 | n | 2.6E+03 | n | 1.8E+03 | n | | 1.5E+00 | |
| Cresol, o- | 95-48-7 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | 6.3E+02 | n | 2.6E+03 | n | 1.8E+03 | n | | 1.5E+00 | |
| Cresol, p- | 106-44-5 | | | | | 5.0E-03 | H | 6.0E-01 | C | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | 6.3E+02 | n | 2.6E+03 | n | 1.8E+02 | n | | 1.5E-01 | |
| Cresol, p-chloro-m- | 59-50-7 | | | | | 1.0E-01 | X | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 4.3E+00 | |
| Cresols | 1319-77-3 | | | | | 1.0E-01 | A | 6.0E-01 | C | V | | 1 | | 5.0E+04 | 7.5E+03 | n | 9.1E+04 | ns | 6.3E+02 | n | 2.6E+03 | n | 9.3E+02 | n | | 7.6E-01 | |
| Crotonaldehyde, trans- | 123-73-9 | 1.9E+00 | H | | | | | | | V | | 1 | | 1.7E+04 | 3.4E-01 | c | 1.5E+00 | c | | | | | 3.5E-02 | c | | 7.2E-06 | |
| Cumene | 98-82-8 | | | | | 1.0E-01 | I | 4.0E-01 | I | V | | 1 | | 2.7E+02 | 2.1E+03 | ns | 1.1E+04 | ns | 4.2E+02 | n | 1.8E+03 | n | 6.8E+02 | n | | 1.1E+00 | |
| Cupferron | 135-20-6 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | | | | 2.9E+00 | c | 1.3E+01 | c | 3.9E-02 | c | 1.9E-01 | c | 3.1E-01 | c | | 5.3E-04 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | volc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | | mg/kg | | ug/m$^3$ | | ug/m$^3$ | | ug/L | | ug/L | mg/kg | mg/kg |
| Cyanazine | 21725-46-2 | 8.4E-01 | H | | | 2.0E-03 | H | | | | | 1 | 0.1 | | 5.8E-01 | c | 2.1E+00 | c | | | | | 8.0E-02 | c | | 3.7E-05 | |
| **Cyanides** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | 4.0E-02 | I | | | | | 1 | | | 3.1E+03 | n | 4.1E+04 | n | | | | | 1.5E+03 | n | | | |
| ~Copper Cyanide | 544-92-3 | | | | | 5.0E-03 | I | | | | | 1 | | | 3.9E+02 | n | 5.1E+03 | n | | | | | 1.8E+02 | n | | | |
| ~Cyanide (CN-) | 57-12-5 | | | | | 2.0E-02 | I | | | V | | 1 | | 1.0E+07 | 1.6E+03 | n | 2.0E+04 | n | | | | | 7.3E+02 | n | 2.0E+02 | 7.4E+00 | 2.0E+00 |
| ~Cyanogen | 460-19-5 | | | | | 4.0E-02 | I | | | V | | 1 | | 1.5E+03 | 3.1E+03 | ns | 4.1E+04 | ns | | | | | 1.5E+03 | n | | 3.0E-01 | |
| ~Cyanogen Bromide | 506-68-3 | | | | | 9.0E-02 | I | | | V | | 1 | | 1.0E+05 | 7.0E+03 | n | 9.2E+04 | n | | | | | 3.3E+03 | n | | 6.9E-01 | |
| ~Cyanogen Chloride | 506-77-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 4.3E+03 | 3.9E+03 | n | 5.1E+04 | ns | | | | | 1.8E+03 | n | | 3.8E-01 | |
| ~Hydrogen Cyanide | 74-90-8 | | | | | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | | 1.2E+05 | 1.9E+01 | n | 8.0E+01 | n | 3.1E+00 | n | 1.3E+01 | n | 6.2E+00 | n | | 1.3E-03 | |
| ~Potassium Cyanide | 151-50-8 | | | | | 5.0E-02 | I | | | | | 1 | | | 3.9E+03 | n | 5.1E+04 | n | | | | | 1.8E+03 | n | | | |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | 2.0E-01 | I | | | | | 0.04 | | | 1.6E+04 | n | 2.0E+05 | nm | | | | | 7.3E+03 | n | | | |
| ~Silver Cyanide | 506-64-9 | | | | | 1.0E-01 | I | | | | | 0.04 | | | 7.8E+03 | n | 1.0E+05 | nm | | | | | 3.7E+03 | n | | | |
| ~Sodium Cyanide | 143-33-9 | | | | | 4.0E-02 | I | | | | | 1 | | | 3.1E+03 | n | 4.1E+04 | n | | | | | 1.5E+03 | n | | | |
| ~Thiocyanate | 463-56-9 | | | | | 2.0E-04 | P | | | V | | 1 | | 4.6E+03 | 1.6E+01 | n | 2.0E+02 | n | | | | | 7.3E+00 | n | | 1.5E-03 | |
| ~Zinc Cyanide | 557-21-1 | | | | | 5.0E-02 | I | | | | | 1 | | | 3.9E+03 | n | 5.1E+04 | n | | | | | 1.8E+03 | n | | | |
| Cyclohexane | 110-82-7 | | | | | | | 6.0E+00 | I | V | | 1 | | 1.2E+02 | 7.0E+03 | ns | 2.9E+04 | ns | 6.3E+03 | n | 2.6E+04 | n | 1.3E+04 | n | | 1.3E+01 | |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 2.3E-02 | H | | | | | | | | | 1 | 0.1 | | 2.1E+01 | c | 7.5E+01 | c | | | | | 2.9E+00 | c | | 1.7E-02 | |
| Cyclohexanone | 108-94-1 | | | | | 5.0E+00 | I | | | | | 1 | 0.1 | | 3.1E+05 | nm | 3.1E+06 | nm | | | | | 1.8E+05 | n | | 4.3E+01 | |
| Cyclohexylamine | 108-91-8 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | | 1.2E+04 | n | 1.2E+05 | nm | | | | | 7.3E+03 | n | | 1.9E+00 | |
| Cyhalothrin/karate | 68085-85-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 1.2E+02 | |
| Cypermethrin | 52315-07-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 5.8E+01 | |
| Cyromazine | 66215-27-8 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | | 4.6E+02 | n | 4.6E+03 | n | | | | | 2.7E+02 | n | | 7.0E-02 | |
| DDD | 72-54-8 | 2.4E-01 | I | 6.9E-05 | C | | | | | | | 1 | 0.1 | | 2.0E+00 | c | 7.2E+00 | c | 3.5E-02 | c | 1.8E-01 | c | 2.8E-01 | c | | 6.6E-02 | |
| DDE, p,p'- | 72-55-9 | 3.4E-01 | I | 9.7E-05 | C | | | | | | | 1 | 0.1 | | 1.4E+00 | c | 5.1E+00 | c | 2.5E-02 | c | 1.3E-01 | c | 2.0E-01 | c | | 4.7E-02 | |
| DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I | | | | | 1 | 0.03 | | 1.7E+00 | c* | 7.0E+00 | c* | 2.5E-02 | c | 1.3E-01 | c | 2.0E-01 | c* | | 6.7E-02 | |
| Dacthal | 1861-32-1 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 4.5E-01 | |
| Dalapon | 75-99-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | 2.0E+02 | 2.3E-01 | 4.1E-02 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 7.0E-04 | I | | | 7.0E-03 | I | | | | | 1 | 0.1 | | 4.3E+02 | n | 2.5E+03 | c** | | | | | 9.6E+01 | c** | | 5.3E+01 | |
| Demeton | 8065-48-3 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | | 2.4E+00 | n | 2.5E+01 | n | | | | | 1.5E+00 | n | | | |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | I | | | 6.0E-01 | I | | | | | 1 | 0.1 | | 4.0E+02 | c* | 1.4E+03 | c | | | | | 5.6E+01 | c | 4.0E+02 | 4.0E+00 | 2.9E+01 |
| Diallate | 2303-16-4 | 6.1E-02 | H | | | | | | | | | 1 | 0.1 | | 8.0E+00 | c | 2.8E+01 | c | | | | | 1.1E+00 | c | | 1.6E-03 | |
| Diazinon | 333-41-5 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | | 4.3E+01 | n | 4.3E+02 | n | | | | | 2.6E+01 | n | | 1.6E-01 | |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P | 2.0E-04 | I | V | M | 1 | | 9.8E+02 | 5.4E-03 | c | 6.9E-02 | c | 1.6E-04 | c | 2.0E-03 | c | 3.2E-04 | c | 2.0E-01 | 1.4E-07 | 8.6E-05 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 3.5E-01 | |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | I | 2.7E-05 | C | 2.0E-02 | I | | | V | | 1 | 0.1 | 8.0E+02 | 6.8E-01 | c | 3.3E+00 | c | 9.0E-02 | c | 4.5E-01 | c | 1.5E-01 | c | | 3.9E-05 | |
| Dibromoethane, 1,2- | 106-93-4 | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I | 9.0E-03 | I | V | | 1 | | 1.3E+03 | 3.4E-02 | c | 1.7E-01 | c | 4.1E-03 | c | 2.0E-02 | c | 6.5E-03 | c | 5.0E-02 | 1.8E-06 | 1.4E-05 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | | | 1.0E-02 | H | 4.0E-03 | X | V | | 1 | | 2.8E+03 | 2.5E+01 | n | 1.1E+02 | n | 4.2E+00 | n | 1.8E+01 | n | 8.2E+00 | n | | 2.0E-03 | |
| Dibutyl Phthalate | 84-74-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 9.2E+00 | |
| Dibutyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | | |
| Dicamba | 1918-00-9 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 2.8E-01 | |
| Dichloro-2-butene, 1,4- | 764-41-0 | | | 4.2E-03 | P | | | | | V | | 1 | | 5.2E+02 | 6.5E-03 | c | 3.3E-02 | c | 5.8E-04 | c | 2.9E-03 | c | 1.2E-03 | c | | 5.4E-07 | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 5.2E+02 | 6.9E-03 | c | 3.5E-02 | c | 5.8E-04 | c | 2.9E-03 | c | 1.2E-03 | c | | 5.4E-07 | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 7.6E+02 | 6.9E-03 | c | 3.5E-02 | c | 5.8E-04 | c | 2.9E-03 | c | 1.2E-03 | c | | 5.4E-07 | |
| Dichloroacetic Acid | 79-43-6 | 5.0E-02 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 9.7E+00 | c* | 3.4E+01 | c* | | | | | 1.3E+00 | c | | 2.8E-04 | |
| Dichlorobenzene, 1,2- | 95-50-1 | | | | | 9.0E-02 | I | 2.0E-01 | H | V | | 1 | | 3.8E+02 | 1.9E+03 | ns | 9.8E+03 | ns | 2.1E+02 | n | 8.8E+02 | n | 3.7E+02 | n | 6.0E+02 | 3.6E-01 | 5.8E-01 |
| Dichlorobenzene, 1,4- | 106-46-7 | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A | 8.0E-01 | I | V | | 1 | | | 2.4E+00 | c | 1.2E+01 | c | 2.2E-01 | c | 1.1E+00 | c | 4.3E-01 | c | 7.5E+01 | 4.1E-04 | 7.2E-02 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 4.5E-01 | I | 3.4E-04 | C | | | | | | | 1 | 0.1 | | 1.1E+00 | c | 3.8E+00 | c | 7.2E-03 | c | 3.6E-02 | c | 1.5E-01 | c | | 9.8E-04 | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | 9.0E-03 | X | | | | | 1 | 0.1 | | 5.5E+02 | n | 5.5E+03 | n | | | | | 3.3E+02 | n | | 2.0E+00 | |
| Dichlorodifluoromethane | 75-71-8 | | | | | 2.0E-01 | I | 2.0E-01 | H | V | | 1 | | 8.5E+02 | 1.8E+02 | n | 7.8E+02 | n | 2.1E+02 | n | 8.8E+02 | n | 3.9E+02 | n | | 6.1E-01 | |
| Dichloroethane, 1,1- | 75-34-3 | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P | | | V | | 1 | | 1.7E+03 | 3.3E+00 | c | 1.7E+01 | c | 1.5E+00 | c | 7.7E+00 | c | 2.4E+00 | c | | 6.9E-04 | |
| Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 2.0E-02 | P | 2.4E+00 | A | V | | 1 | | 3.0E+03 | 4.3E-01 | c | 2.2E+00 | c | 9.4E-02 | c | 4.7E-01 | c | 1.5E-01 | c | 5.0E+00 | 4.2E-05 | 1.4E-03 |
| Dichloroethylene, 1,1- | 75-35-4 | | | | | 5.0E-02 | I | 2.0E-01 | I | V | | 1 | | 1.2E+03 | 2.4E+02 | n | 1.1E+03 | n | 2.1E+02 | n | 8.8E+02 | n | 3.4E+02 | n | 7.0E+00 | 1.2E-01 | 2.5E-03 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | 9.0E-03 | H | | | V | | 1 | | 1.3E+03 | 7.0E+02 | n | 9.2E+03 | ns | | | | | 3.3E+02 | n | | 9.7E-02 | |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 1.0E-02 | P | | | V | | 1 | | 2.4E+03 | 7.8E+02 | n | 1.0E+04 | ns | | | | | 3.7E+02 | n | 7.0E+01 | 1.1E-01 | 2.1E-02 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | | | 2.0E-02 | I | 6.0E-02 | P | V | | 1 | | 1.7E+03 | 1.5E+02 | n | 6.9E+02 | n | 6.3E+01 | n | 2.6E+02 | n | 1.1E+02 | n | 1.0E+02 | 3.1E-02 | 2.9E-02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 1.3E-01 | |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.05 | | 6.9E+02 | n | 7.7E+03 | n | | | | | 3.7E+02 | n | 7.0E+01 | 9.5E-02 | 1.8E-02 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | | 4.9E+02 | n | 4.9E+03 | n | | | | | 2.9E+02 | n | | 1.2E-01 | |
| Dichloropropane, 1,2- | 78-87-5 | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A | 4.0E-03 | I | V | | 1 | | 1.4E+03 | 8.9E-01 | c* | 4.5E+00 | c* | 2.4E-01 | c* | 1.2E+00 | c* | 3.9E-01 | c* | 5.0E+00 | 1.3E-04 | 1.7E-03 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | 2.0E-02 | P | | | V | | 1 | | 1.5E+03 | 1.6E+03 | ns | 2.0E+04 | ns | | | | | 7.3E+02 | n | | 2.5E-01 | |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 2.3E-02 | |
| Dichloropropene, 1,3- | 542-75-6 | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I | 2.0E-02 | I | V | | 1 | | 1.6E+03 | 1.7E+00 | c* | 8.1E+00 | c* | 6.1E-01 | c* | 3.1E+00 | c* | 4.3E-01 | c* | | 1.5E-04 | |
| Dichlorvos | 62-73-7 | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I | 5.0E-04 | I | | | 1 | 0.1 | | 1.7E+00 | c* | 5.9E+00 | c* | 2.9E-02 | c* | 1.5E-01 | c* | 2.3E-01 | c* | | 7.1E-05 | |
| Dicyclopentadiene | 77-73-6 | | | | | 8.0E-03 | P | 7.0E-03 | P | V | | 1 | | 1.3E+02 | 2.7E+01 | n | 1.2E+02 | n | 7.3E+00 | n | 3.1E+01 | n | 1.4E+01 | n | | 4.8E-02 | |
| Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I | | | | | 1 | 0.1 | | 3.0E-02 | c | 1.1E-01 | c | 5.3E-04 | c | 2.7E-03 | c | 4.2E-03 | c | | 1.7E-04 | |
| Diesel Engine Exhaust | NA | | | 3.0E-04 | C | | | 5.0E-03 | I | | | 1 | 0.1 | | | | | | 8.1E-03 | c | 4.1E-02 | c | | | | | |
| Diethanolamine | 111-42-2 | | | | | | | 3.0E-03 | C | | | | | | 4.3E+06 | nm | 1.8E+07 | nm | 3.1E+00 | n | 1.3E+01 | n | | | | | |
| Diethyl Phthalate | 84-66-2 | | | | | 8.0E-01 | I | | | | | 1 | 0.1 | | 4.9E+04 | n | 4.9E+05 | nm | | | | | 2.9E+04 | n | | 1.2E+01 | |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | | | 3.0E-02 | P | 1.0E-04 | P | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | 1.0E-01 | n | 4.4E-01 | n | 1.1E+03 | n | | 2.4E-01 | |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | | | 6.0E-02 | P | 3.0E-04 | P | | | 1 | 0.1 | | 3.6E+03 | n | 3.6E+04 | n | 3.1E-01 | n | 1.3E+00 | n | 2.2E+03 | n | | 4.4E-01 | |
| Diethylformamide | 617-84-5 | | | | | 1.0E-03 | P | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 7.5E-03 | |
| Diethylstilbestrol | 56-53-1 | 3.5E+02 | C | 1.0E-01 | C | | | | | | | 1 | 0.1 | | 1.4E-03 | c | 4.9E-03 | c | 2.4E-05 | c | 1.2E-04 | c | 1.9E-04 | c | | 1.1E-04 | |
| Difenzoquat | 43222-48-6 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | | 4.9E+03 | n | 4.9E+04 | n | | | | | 2.9E+03 | n | | | |
| Diflubenzuron | 35367-38-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 8.2E-01 | |
| Difluoroethane, 1,1- | 75-37-6 | | | | | | | 4.0E+01 | I | V | | 1 | | 1.4E+03 | 5.2E+04 | ns | 2.2E+05 | nms | 4.2E+04 | n | 1.8E+05 | n | 8.3E+04 | n | | 2.8E+01 | |
| Dihydrosafrole | 94-58-6 | 4.4E-02 | C | 1.3E-05 | C | | | | | | | | | | 1.5E+01 | c | 6.5E+01 | c | 1.9E-01 | c | 9.4E-01 | c | 1.5E+00 | c | | 1.9E-03 | |
| Diisopropyl Ether | 108-20-3 | | | | | | | 4.0E-01 | P | V | | 1 | | 2.3E+03 | 1.4E+03 | n | 5.8E+03 | ns | 4.2E+02 | n | 1.8E+03 | n | 8.3E+02 | n | | 2.1E-01 | |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | 8.0E-02 | I | | | V | | 1 | | 5.3E+02 | 6.3E+03 | ns | 8.2E+04 | ns | | | | | 2.9E+03 | n | | 8.3E-01 | |
| Dimethipin | 55290-64-7 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 1.6E-01 | |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | | mg/kg | | ug/m$^3$ | | ug/m$^3$ | | ug/L | | ug/L | mg/kg | mg/kg |
| Dimethoate | 60-51-5 | | | | | 2.0E-04 | I | | | | | 1 | 0.1 | | 1.2E+01 | n | 1.2E+02 | n | | | | | 7.3E+00 | n | | 1.6E-03 | |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 1.4E-02 | H | | | | | | | | | 1 | 0.1 | | 3.5E+01 | c | 1.2E+02 | c | | | | | 4.8E+00 | c | | 5.8E-03 | |
| Dimethyl methylphosphonate | 756-79-6 | 1.7E-03 | P | | | 6.0E-02 | P | | | | | 1 | 0.1 | | 2.9E+02 | c* | 1.0E+03 | c* | | | | | 4.0E+01 | c* | | 8.3E-03 | |
| Dimethylamino azobenzene [p-] | 60-11-7 | 4.6E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | | 1.1E-01 | c | 3.7E-01 | c | 1.9E-03 | c | 9.4E-03 | c | 1.5E-02 | c | | 6.2E-05 | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 5.8E-01 | H | | | | | | | | | 1 | 0.1 | | 8.4E-01 | c | 3.0E+00 | c | | | | | 1.2E-01 | c | | 6.6E-05 | |
| Dimethylaniline, 2,4- | 95-68-1 | 7.5E-01 | H | | | | | | | | | 1 | 0.1 | | 6.5E-01 | c | 2.3E+00 | c | | | | | 9.0E-02 | c | | 5.1E-05 | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | 2.0E-03 | I | | | V | | 1 | | 8.3E+02 | 1.6E+02 | n | 2.0E+03 | ns | | | | | 7.3E+01 | n | | 2.6E-02 | |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 1.1E+01 | P | | | | | | | | | 1 | 0.1 | | 4.4E-02 | c | 1.6E-01 | c | | | | | 6.1E-03 | c | | 4.0E-05 | |
| Dimethylformamide | 68-12-2 | | | | | 1.0E-01 | P | 3.0E-02 | I | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | 3.1E+01 | n | 1.3E+02 | n | 3.7E+03 | n | | 7.4E-01 | |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | | | 1.0E-04 | X | 2.0E-06 | X | | | 1 | 0.1 | | 6.1E+00 | n | 6.1E+01 | n | 2.1E-03 | n | 8.8E-03 | n | 3.7E+00 | n | | 8.2E-04 | |
| Dimethylhydrazine, 1,2- | 540-73-8 | 5.5E+02 | C | 1.6E-01 | C | | | | | | | 1 | 0.1 | | 8.8E-04 | c | 3.1E-03 | c | 1.5E-05 | c | 7.7E-05 | c | 1.2E-04 | c | | 2.8E-08 | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 8.6E-01 | |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | 6.0E-04 | I | | | | | 1 | 0.1 | | 3.7E+01 | n | 3.7E+02 | n | | | | | 2.2E+01 | n | | 2.6E-02 | |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 4.3E-02 | |
| Dimethylterephthalate | 120-61-6 | | | | | 1.0E-01 | I | | | V | | 1 | | 5.5E+00 | 7.8E+03 | ns | 1.0E+05 | nms | | | | | 3.7E+03 | n | | 9.6E-01 | |
| Dimethylvinylchloride | 513-37-1 | 4.5E-02 | C | 1.3E-05 | C | | | | | | | | | | 1.4E+01 | c | 6.4E+01 | c | 1.9E-01 | c | 9.4E-01 | c | 1.5E+00 | c | | 9.2E-04 | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 6.2E-03 | |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 2.4E+00 | |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 3.3E-03 | |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 3.3E-03 | |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 3.3E-03 | |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 8.2E-02 | |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 6.8E-01 | I | | | | | | | | | 1 | 0.1 | | 7.1E-01 | c | 2.5E+00 | c | | | | | 9.9E-02 | c | | 1.4E-04 | |
| Dinitrotoluene, 2,4- | 121-14-2 | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I | | | | | 1 | 0.102 | | 1.6E+00 | c* | 5.5E+00 | c | 2.7E-02 | c | 1.4E-01 | c | 2.2E-01 | c | | 2.9E-04 | |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | 1.0E-03 | P | | | | | 1 | 0.099 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 5.0E-02 | |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | 2.0E-03 | S | | | | | 1 | 0.006 | | 1.5E+02 | n | 2.0E+03 | n | | | | | 7.3E+01 | n | | 5.6E-02 | |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | 2.0E-03 | S | | | | | 1 | 0.009 | | 1.5E+02 | n | 1.9E+03 | n | | | | | 7.3E+01 | n | | 5.6E-02 | |
| Dinoseb | 88-85-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | 7.0E+00 | 3.2E-01 | 6.2E-02 |
| Dioxane, 1,4- | 123-91-1 | 1.1E-02 | I | 7.7E-06 | C | 1.0E-01 | A | 3.6E+00 | A | | | 1 | 0.1 | | 4.4E+01 | c | 1.6E+02 | c | 3.2E-01 | c | 1.6E+00 | c | 6.1E+00 | c | | 1.3E-03 | |
| **Dioxins** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 6.2E+03 | I | 1.3E+00 | I | | | | | | | 1 | 0.03 | | 9.4E-05 | c | 3.9E-04 | c | 1.9E-06 | c | 9.4E-06 | c | 1.1E-05 | c | | 9.0E-06 | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 1.0E-09 | A | 4.0E-08 | C | | | 1 | 0.03 | | 4.5E-06 | c* | 1.8E-05 | c* | 6.4E-08 | c | 3.2E-07 | c | 5.2E-07 | c* | 3.0E-05 | 2.6E-07 | 1.5E-05 |
| Diphenamid | 957-51-7 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 1.1E+01 | |
| Diphenyl Sulfone | 127-63-9 | | | | | 8.0E-04 | X | | | | | 1 | 0.1 | | 4.9E+01 | n | 4.9E+02 | n | | | | | 2.9E+01 | n | | 7.1E-02 | |
| Diphenylamine | 122-39-4 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | 1.7E+00 | |
| Diphenylhydrazine, 1,2- | 122-66-7 | 8.0E-01 | I | 2.2E-04 | I | | | | | | | 1 | 0.1 | | 6.1E-01 | c | 2.2E+00 | c | 1.1E-02 | c | 5.6E-02 | c | 8.4E-02 | c | | 2.7E-04 | |
| Diquat | 85-00-7 | | | | | 2.2E-03 | I | | | | | 1 | 0.1 | | 1.3E+02 | n | 1.4E+03 | n | | | | | 8.0E+01 | n | 2.0E+01 | 1.5E+00 | 3.7E-01 |
| Direct Black 38 | 1937-37-7 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | | 6.6E-02 | c | 2.3E-01 | c | 1.2E-03 | c | 5.8E-03 | c | 9.1E-03 | c | | 4.4E+00 | |
| Direct Blue 6 | 2602-46-2 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | | 6.6E-02 | c | 2.3E-01 | c | 1.2E-03 | c | 5.8E-03 | c | 9.1E-03 | c | | 1.4E+01 | |
| Direct Brown 95 | 16071-86-6 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | | 7.2E-02 | c | 2.6E-01 | c | 1.3E-03 | c | 6.5E-03 | c | 1.0E-02 | c | | | |
| Disulfoton | 298-04-4 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | | 2.4E+00 | n | 2.5E+01 | n | | | | | 1.5E+00 | n | | 2.7E-03 | |
| Dithiane, 1,4- | 505-29-3 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 1.8E-01 | |
| Diuron | 330-54-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 3.1E-02 | |
| Dodine | 2439-10-3 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 2.4E+02 | n | 2.5E+03 | n | | | | | 1.5E+02 | n | | 7.5E-01 | |
| EPTC | 759-94-4 | | | | | 2.5E-02 | I | | | V | | 1 | | 4.1E+02 | 2.0E+03 | ns | 2.6E+04 | ns | | | | | 9.1E+02 | n | | 4.8E-01 | |
| Endosulfan | 115-29-7 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | | 3.7E+02 | n | 3.7E+03 | n | | | | | 2.2E+02 | n | | 3.0E+00 | |
| Endothall | 145-73-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | 1.0E+02 | 1.7E-01 | 2.4E-02 |
| Endrin | 72-20-8 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | 2.0E+00 | 4.4E-01 | 8.1E-02 |
| Epichlorohydrin | 106-89-8 | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P | 1.0E-03 | I | V | | 1 | | 1.1E+04 | 2.0E+01 | n | 8.8E+01 | n | 1.0E+00 | n | 4.4E+00 | n | 2.1E+00 | n | | 4.5E-04 | |
| Epoxybutane, 1,2- | 106-88-7 | | | | | | | 2.0E-02 | I | V | | 1 | | 1.5E+04 | 1.7E+02 | n | 7.2E+02 | n | 2.1E+01 | n | 8.8E+01 | n | 4.2E+01 | n | | 9.2E-03 | |
| Ethephon | 16672-87-0 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 3.8E-02 | |
| Ethion | 563-12-2 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | | 3.1E+01 | n | 3.1E+02 | n | | | | | 1.8E+01 | n | | 3.6E-02 | |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | | | 3.0E-01 | H | 3.0E-01 | C | | | 1 | 0.1 | | 1.8E+04 | n | 1.8E+05 | nm | 3.1E+02 | n | 1.3E+03 | n | 1.1E+04 | n | | 2.3E+00 | |
| Ethoxyethanol, 2- | 110-80-5 | | | | | 4.0E-01 | H | 2.0E-01 | I | | | 1 | 0.1 | | 2.4E+04 | n | 2.5E+05 | nm | 2.1E+02 | n | 8.8E+02 | n | 1.5E+04 | n | | 2.9E+00 | |
| Ethyl Acetate | 141-78-6 | | | | | 9.0E-01 | I | | | V | | 1 | | 1.1E+04 | 7.0E+04 | ns | 9.2E+05 | nms | | | | | 3.3E+04 | n | | 7.0E+00 | |
| Ethyl Acrylate | 140-88-5 | 4.8E-02 | H | | | | | | | V | | 1 | | 2.5E+03 | 1.3E+01 | c | 6.0E+01 | c | | | | | 1.4E+00 | c | | 3.1E-04 | |
| Ethyl Chloride | 75-00-3 | | | | | | | 1.0E+01 | I | V | | 1 | | 2.1E+03 | 1.5E+04 | ns | 6.1E+04 | ns | 1.0E+04 | n | 4.4E+04 | n | 2.1E+04 | n | | 5.9E+00 | |
| Ethyl Ether | 60-29-7 | | | | | 2.0E-01 | I | | | V | | 1 | | 1.0E+04 | 1.6E+04 | ns | 2.0E+05 | nms | | | | | 7.3E+03 | n | | 1.6E+00 | |
| Ethyl Methacrylate | 97-63-2 | | | | | 9.0E-02 | H | | | V | | 1 | | 1.1E+03 | 7.0E+03 | ns | 9.2E+04 | ns | | | | | 3.3E+03 | n | | 7.7E-01 | |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | 1.0E-05 | I | | | | | 1 | 0.1 | | 6.1E-01 | n | 6.2E+00 | n | | | | | 3.7E-01 | n | | 1.1E-02 | |
| Ethylbenzene | 100-41-4 | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I | 1.0E+00 | I | V | | 1 | | 4.8E+02 | 5.4E+00 | c | 2.7E+01 | c | 9.7E-01 | c | 4.9E+00 | c | 1.5E+00 | c | 7.0E+02 | 1.7E-03 | 7.8E-01 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | 3.0E-02 | P | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 2.2E-01 | |
| Ethylene Diamine | 107-15-3 | | | | | 9.0E-02 | P | | | | | 1 | 0.1 | | 5.5E+03 | n | 5.5E+04 | n | | | | | 3.3E+03 | n | | 7.5E-01 | |
| Ethylene Glycol | 107-21-1 | | | | | 2.0E+00 | I | 4.0E-01 | C | | | 1 | 0.1 | | 1.2E+05 | nm | 1.2E+06 | nm | 4.2E+02 | n | 1.8E+03 | n | 7.3E+04 | n | | 1.5E+01 | |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | | | 5.0E-01 | I | 1.3E+01 | I | | | 1 | 0.1 | | 3.1E+04 | n | 3.1E+05 | nm | 1.4E+04 | n | 5.7E+04 | n | 1.8E+04 | n | | 3.8E+00 | |
| Ethylene Oxide | 75-21-8 | 3.1E-01 | C | 8.8E-05 | C | | | 3.0E-02 | C | V | | 1 | | 1.2E+05 | 1.7E-01 | c | 8.3E-01 | c | 2.8E-02 | c | 1.4E-01 | c | 4.4E-02 | c | | 9.1E-06 | |
| Ethylene Thiourea | 96-45-7 | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I | | | | | 1 | 0.1 | | 4.9E+00 | n | 3.8E+01 | c** | 1.9E-01 | c | 9.4E-01 | c | 1.5E+00 | c** | | 3.4E-04 | |
| Ethyleneimine | 151-56-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | | | | 9.8E-03 | c | 4.4E-02 | c | 1.3E-04 | c | 6.5E-04 | c | 1.0E-03 | c | | 2.3E-07 | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | | 1.8E+05 | nm | 1.8E+06 | nm | | | | | 1.1E+05 | n | | 2.5E+02 | |
| Express | 101200-48-0 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | | 4.9E+02 | n | 4.9E+03 | n | | | | | 2.9E+02 | n | | 1.1E-01 | |
| Fenamiphos | 22224-92-6 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | | 1.5E+01 | n | 1.5E+02 | n | | | | | 9.1E+00 | n | | 9.1E-03 | |
| Fenpropathrin | 39515-41-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | 4.1E+01 | |
| Fluometuron | 2164-17-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 3.7E-01 | |
| Fluoride | 16984-48-8 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | | 3.1E+03 | n | 4.1E+04 | n | 1.4E+01 | n | 5.7E+01 | n | 1.5E+03 | n | | | |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | | | 6.0E-02 | I | 1.3E-02 | C | | | 1 | | | 4.7E+03 | n | 6.1E+04 | n | 1.4E+01 | n | 5.7E+01 | n | 2.2E+03 | n | 4.0E+03 | 3.3E+02 | 6.0E+02 |
| Fluridone | 59756-60-4 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | | 4.9E+03 | n | 4.9E+04 | n | | | | | 2.9E+03 | n | | 3.3E+02 | |
| Flurprimidol | 56425-91-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 3.3E+00 | |
| Flutolanil | 66332-96-5 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | | 3.7E+03 | n | 3.7E+04 | n | | | | | 2.2E+03 | n | | 1.2E+01 | |
| Fluvalinate | 69409-94-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 5.3E+02 | |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | mg/kg | mg/kg |
| Folpet | 133-07-3 | 3.5E-03 | I | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 1.4E+02 | c* | 4.9E+02 | c | | | | | 1.9E+01 | c | | 4.5E-03 | |
| Fomesafen | 72178-02-0 | 1.9E-01 | I | | | | | | | | | 1 | 0.1 | | 2.6E+00 | c | 9.1E+00 | c | | | | | 3.5E-01 | c | | 1.2E-03 | |
| Fonofos | 944-22-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 1.4E-01 | |
| Formaldehyde | 50-00-0 | | | 1.3E-05 | I | 2.0E-01 | I | 9.8E-03 | A | | | 1 | 0.1 | | 1.2E+04 | n | 1.2E+05 | nm | 1.9E-01 | c* | 9.4E-01 | c* | 7.3E+03 | n | | 1.5E+00 | |
| Formic Acid | 64-18-6 | | | | | 2.0E+00 | H | 3.0E-03 | P | | | 1 | 0.1 | | 1.2E+05 | nm | 1.2E+06 | nm | 3.1E+00 | n | 1.3E+01 | n | 7.3E+04 | n | | 1.5E+01 | |
| Fosetyl-AL | 39148-24-8 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | | 1.8E+05 | nm | 1.8E+06 | nm | | | | | 1.1E+05 | n | | | |
| **Furans** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | 1.0E-03 | X | | | V | | 1 | | 1.7E+02 | 7.8E+01 | n | 1.0E+03 | ns | | | | | 3.7E+01 | n | | 6.8E-01 | |
| ~Furan | 110-00-9 | | | | | 1.0E-03 | I | | | V | | 1 | | 6.2E+03 | 7.8E+01 | n | 1.0E+03 | n | | | | | 3.7E+01 | n | | 1.4E-02 | |
| Furazolidone | 67-45-8 | 3.8E+00 | H | | | | | | | | | 1 | 0.1 | | 1.3E-01 | c | 4.5E-01 | c | | | | | 1.8E-02 | c | | 3.4E-05 | |
| Furfural | 98-01-1 | | | | | 3.0E-03 | I | 5.0E-02 | H | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | 5.2E+01 | n | 2.2E+02 | n | 1.1E+02 | n | | 2.3E-02 | |
| Furium | 531-82-8 | 1.5E+00 | C | 4.3E-04 | C | | | | | | | 1 | 0.1 | | 3.2E-01 | c | 1.1E+00 | c | 5.7E-03 | c | 2.9E-02 | c | 4.5E-02 | c | | 6.1E-05 | |
| Furmecyclox | 60568-05-0 | 3.0E-02 | I | 8.6E-06 | C | | | | | | | 1 | 0.1 | | 1.6E+01 | c | 5.7E+01 | c | 2.8E-01 | c | 1.4E+00 | c | 2.2E+00 | c | | 2.4E-03 | |
| Glufosinate, Ammonium | 77182-82-2 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | | 2.4E+01 | n | 2.5E+02 | n | | | | | 1.5E+01 | n | | 3.2E-03 | |
| Glutaraldehyde | 111-30-8 | | | | | | | 8.0E-05 | C | | | | | | 1.1E+05 | nm | 4.8E+05 | nm | 8.3E-02 | n | 3.5E-01 | n | | | | | |
| Glycidyl | 765-34-4 | | | | | 4.0E-04 | I | 1.0E-03 | H | | | 1 | 0.1 | | 2.4E+01 | n | 2.5E+02 | n | 1.0E+00 | n | 4.4E+00 | n | 1.5E+01 | n | | 2.9E-03 | |
| Glyphosate | 1071-83-6 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | 7.0E+02 | 7.4E-01 | 1.4E-01 |
| Goal | 42874-03-3 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 8.8E+00 | |
| Guthion | 86-50-0 | | | | | 3.0E-03 | A | 1.0E-02 | A | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | 1.0E+01 | n | 4.4E+01 | n | 1.1E+02 | n | | 3.3E-02 | |
| Haloxyfop, Methyl | 69806-40-2 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | | 3.1E+00 | n | 3.1E+01 | n | | | | | 1.8E+00 | n | | 2.0E-02 | |
| Harmony | 79277-27-3 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 1.4E-01 | |
| Heptachlor | 76-44-8 | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I | | | | | 1 | 0.1 | | 1.1E-01 | c | 3.8E-01 | c | 1.9E-03 | c | 9.4E-03 | c | 1.5E-02 | c | 4.0E-01 | 1.2E-03 | 3.3E-02 |
| Heptachlor Epoxide | 1024-57-3 | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I | | | | | 1 | 0.1 | | 5.3E-02 | c* | 1.9E-01 | c* | 9.4E-04 | c | 4.7E-03 | c | 7.4E-03 | c* | 2.0E-01 | 1.5E-04 | 4.1E-03 |
| Hexabromobenzene | 87-82-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 4.2E-01 | |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | 2.0E-04 | I | | | | | | | | 1.6E+01 | n | 2.0E+02 | n | | | | | 7.3E+00 | n | | | |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I | | | | | 1 | 0.1 | | 3.0E-01 | c | 1.1E+00 | c | 5.3E-03 | c | 2.7E-02 | c | 4.2E-02 | c | 1.0E+00 | 5.3E-04 | 1.3E-02 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P | | | | | 1 | 0.1 | | 6.2E+00 | c** | 2.2E+01 | c* | 1.1E-01 | c | 5.6E-01 | c | 8.6E-01 | c* | | 1.7E-03 | |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A | | | | | 1 | 0.1 | | 7.7E-02 | c | 2.7E-01 | c | 1.4E-03 | c | 6.8E-03 | c | 1.1E-02 | c | | 6.2E-05 | |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 1.8E+00 | I | 5.3E-04 | I | | | | | | | 1 | 0.1 | | 2.7E-01 | c | 9.6E-01 | c | 4.6E-03 | c | 2.3E-02 | c | 3.7E-02 | c | | 2.2E-04 | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I | | | | | 1 | 0.04 | | 5.2E-01 | c* | 2.1E+00 | c | 7.8E-03 | c | 4.0E-02 | c | 6.1E-02 | c | 2.0E-01 | 3.6E-04 | 1.2E-03 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.8E+00 | I | 5.1E-04 | I | | | | | | | 1 | 0.1 | | 2.7E-01 | c | 9.6E-01 | c | 4.8E-03 | c | 2.4E-02 | c | 3.7E-02 | c | | 2.2E-04 | |
| Hexachlorocyclopentadiene | 77-47-4 | | | | | 6.0E-03 | I | 2.0E-04 | I | | | 1 | 0.1 | | 3.7E+02 | n | 3.7E+03 | n | 2.1E-01 | n | 8.8E-01 | n | 2.2E+02 | n | 5.0E+01 | 6.8E-01 | 1.6E-01 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | I | 4.0E-06 | I | 1.0E-03 | I | | | | | 1 | 0.1 | | 3.5E+01 | c** | 1.2E+02 | c** | 6.1E-01 | c | 3.1E+00 | c | 4.8E+00 | c** | | 2.9E-03 | |
| Hexachlorophene | 70-30-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 1.5E+01 | |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 1.1E-01 | I | | | 3.0E-03 | I | | | | | 1 | 0.015 | | 5.5E+00 | c* | 2.4E+01 | c | | | | | 6.1E-01 | c | | 2.3E-04 | |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | | | | | 1.0E-05 | I | V | | 1 | | 5.2E+03 | 3.4E+00 | n | 1.4E+01 | n | 1.0E-02 | n | 4.4E-02 | n | 2.1E-02 | n | | 2.1E-04 | |
| Hexane, N- | 110-54-3 | | | | | 6.0E-02 | H | 7.0E-01 | I | V | | 1 | | 1.4E+02 | 5.7E+02 | ns | 2.6E+03 | ns | 7.3E+02 | n | 3.1E+03 | n | 8.8E+02 | n | | 6.2E+00 | |
| Hexanedioic Acid | 124-04-9 | | | | | 2.0E+00 | P | | | | | 1 | 0.1 | | 1.2E+05 | nm | 1.2E+06 | nm | | | | | 7.3E+04 | n | | 1.8E+01 | |
| Hexanone, 2- | 591-78-6 | | | | | 5.0E-03 | I | 3.0E-02 | I | V | | 1 | | 3.3E+03 | 2.1E+02 | n | 1.4E+03 | n | 3.1E+01 | n | 1.3E+02 | n | 4.7E+01 | n | | 1.1E-02 | |
| Hexazinone | 51235-04-2 | | | | | 3.3E-02 | I | | | | | 1 | 0.1 | | 2.0E+03 | n | 2.0E+04 | n | | | | | 1.2E+03 | n | | 5.5E-01 | |
| Hydrazine | 302-01-2 | 3.0E+00 | I | 4.9E-03 | I | | | 3.0E-05 | P | | | 1 | | | 2.1E-01 | c | 9.5E-01 | c | 5.0E-04 | c* | 2.5E-03 | c* | 2.2E-02 | c | | | |
| Hydrazine Sulfate | 10034-93-2 | 3.0E+00 | I | 4.9E-03 | I | | | | | | | 1 | | | 2.1E-01 | c | 9.5E-01 | c | 5.0E-04 | c | 2.5E-03 | c | 2.2E-02 | c | | | |
| Hydrogen Chloride | 7647-01-0 | | | | | | | 2.0E-02 | I | | | 1 | | | 2.8E+07 | nm | 1.2E+08 | nm | 2.1E+01 | n | 8.8E+01 | n | | | | | |
| Hydrogen Fluoride | 7664-39-3 | | | | | 4.0E-02 | C | 1.4E-02 | C | | | 1 | | | 3.1E+03 | n | 4.1E+04 | n | 1.5E+01 | n | 6.1E+01 | n | 1.5E+03 | n | | | |
| Hydrogen Sulfide | 7783-06-4 | | | | | | | 2.0E-03 | I | | | 1 | | | 2.8E+06 | nm | 1.2E+07 | nm | 2.1E+00 | n | 8.8E+00 | n | | | | | |
| Hydroquinone | 123-31-9 | 6.0E-02 | P | | | 4.0E-02 | P | | | | | 1 | 0.1 | | 8.1E+00 | c | 2.9E+01 | c | | | | | 1.1E+00 | c | | 7.6E-04 | |
| Imazalil | 35554-44-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 8.2E+00 | |
| Imazaquin | 81335-37-7 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | | 1.5E+04 | n | 1.5E+05 | nm | | | | | 9.1E+03 | n | | 4.5E+01 | |
| Iodine | 7553-56-2 | | | | | 1.0E-02 | A | | | | | | | | 7.8E+02 | n | 1.0E+04 | n | | | | | 3.7E+02 | n | | | |
| Iprodione | 36734-19-7 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | | 2.4E+03 | n | 2.5E+04 | n | | | | | 1.5E+03 | n | | 4.5E-01 | |
| Iron | 7439-89-6 | | | | | 7.0E-01 | P | | | | | 1 | | | 5.5E+04 | n | 7.2E+05 | nm | | | | | 2.6E+04 | n | | 6.4E+02 | |
| Isobutyl Alcohol | 78-83-1 | | | | | 3.0E-01 | I | | | V | | 1 | | 1.0E+04 | 2.3E+04 | ns | 3.1E+05 | nms | | | | | 1.1E+04 | n | | 2.3E+00 | |
| Isophorone | 78-59-1 | 9.5E-04 | I | | | 2.0E-01 | I | 2.0E+00 | C | | | 1 | 0.1 | | 5.1E+02 | c* | 1.8E+03 | c* | 2.1E+03 | n | 8.8E+03 | n | 7.1E+01 | c | | 2.3E-02 | |
| Isopropalin | 33820-53-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | | 9.2E+02 | n | 9.2E+03 | n | | | | | 5.5E+02 | n | | 1.3E+01 | |
| Isopropanol | 67-63-0 | | | | | | | 7.0E+00 | C | | | 1 | 0.1 | | 9.9E+09 | nm | 4.2E+10 | nm | 7.3E+03 | n | 3.1E+04 | n | | | | | |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 7.9E-01 | |
| Isoxaben | 82558-50-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 5.0E+00 | |
| JP-7 | NA | | | | | | | 3.0E-01 | A | V | | 1 | | | 4.3E+08 | nm | 1.8E+09 | nm | 3.1E+02 | n | 1.3E+03 | n | 6.3E+02 | n | | | |
| Kerb | 23950-58-5 | | | | | 7.5E-02 | I | | | | | 1 | 0.1 | | 4.6E+03 | n | 4.6E+04 | n | | | | | 2.7E+03 | n | | 2.8E+00 | |
| Lactofen | 77501-63-4 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 3.4E+00 | |
| **Lead Compounds** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | | | | 1 | | | 4.0E+02 | nL | 8.0E+02 | nL | | | | | | | 1.5E+01 | | 1.4E+01 |
| ~Tetraethyl Lead | 78-00-2 | | | | | 1.0E-07 | I | | | | | 1 | 0.1 | | 6.1E-03 | n | 6.2E-02 | n | | | | | 3.7E-03 | n | | 1.3E-05 | |
| Lead acetate | 301-04-2 | 2.8E-01 | C | 8.0E-05 | C | | | | | | | | | | 2.3E+00 | c | 1.0E+01 | c | 3.0E-02 | c | 1.5E-01 | c | 2.4E-01 | c | | | |
| Lead subacetate | 1335-32-6 | 3.8E-02 | C | 1.1E-05 | C | | | | | | | | | | 1.7E+01 | c | 7.5E+01 | c | 2.2E-01 | c | 1.1E+00 | c | 1.8E+00 | c | | | |
| Linuron | 330-55-2 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 6.4E-02 | |
| Lithium | 7439-93-2 | | | | | 2.0E-03 | P | | | | | 1 | | | 1.6E+02 | n | 2.0E+03 | n | | | | | 7.3E+01 | n | | 2.2E+01 | |
| Lithium Perchlorate | 7791-03-9 | | | | | 7.0E-04 | I | | | | | 1 | | | 5.5E+01 | n | 7.2E+02 | n | | | | | 2.6E+01 | n | | | |
| Londax | 83055-99-6 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | | 1.2E+04 | n | 1.2E+05 | nm | | | | | 7.3E+03 | n | | 1.9E+00 | |
| MCPA | 94-74-6 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | | 3.1E+01 | n | 3.1E+02 | n | | | | | 1.8E+01 | n | | 4.7E-03 | |
| MCPB | 94-81-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 1.4E-01 | |
| MCPP | 93-65-2 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 1.1E-02 | |
| Malathion | 121-75-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 1.9E-01 | |
| Maleic Anhydride | 108-31-6 | | | | | 1.0E-01 | I | 7.0E-04 | C | | | 1 | 0.1 | | 6.1E+03 | n | 6.1E+04 | n | 7.3E-01 | n | 3.1E+00 | n | 3.7E+03 | n | | 7.4E-01 | |
| Maleic Hydrazide | 123-33-1 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | | 3.1E+04 | n | 3.1E+05 | nm | | | | | 1.8E+04 | n | | 3.8E+00 | |
| Malononitrile | 109-77-3 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 7.5E-04 | |
| Mancozeb | 8018-01-7 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 1.5E+00 | |
| Maneb | 12427-38-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 2.6E-01 | |
| Manganese (Diet) | 7439-96-5 | | | | | 1.4E-01 | I | 5.0E-05 | I | | | 1 | | | | | | | | | | | | | | | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | volc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | key | mg/kg | mg/kg |
| Manganese (Water) | 7439-96-5 | | | | | 2.4E-02 | I | 5.0E-05 | I | | | 0.04 | | | 1.8E+03 | n | 2.3E+04 | n | 5.2E-02 | n | 2.2E-01 | n | 8.8E+02 | n | | | 5.7E+01 | |
| Mephosfolan | 950-10-7 | | | | | 9.0E-05 | H | | | | | 1 | 0.1 | | 5.5E+00 | n | 5.5E+01 | n | | | | | 3.3E+00 | n | | | 4.8E-03 | |
| Mepiquat Chloride | 24307-26-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | | 3.6E-01 | |
| **Mercury Compounds** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | | | 3.0E-04 | I | 3.0E-05 | C | | | 0.07 | | | 2.3E+01 | n | 3.1E+02 | n | 3.1E-02 | n | 1.3E-01 | n | 1.1E+01 | n | | | | |
| ~Mercuric Sulfide | 1344-48-5 | | | | | 3.0E-04 | S | | | | | 1 | | | 2.3E+01 | n | 3.1E+02 | n | | | | | 1.1E+01 | n | | | | |
| ~Mercury (elemental) | 7439-97-6 | | | | | 1.6E-04 | C | 3.0E-04 | I | V | | 1 | | 3.1E+00 | 5.6E+00 | ns | 3.4E+01 | ns | 3.1E-01 | n | 1.3E+00 | n | 5.7E-01 | n | 2.0E+00 | | 3.0E-02 | 1.0E-01 |
| ~Mercury, Inorganic Salts | NA | | | | | 3.0E-04 | S | | | | | 0.07 | | | 2.3E+01 | n | 3.1E+02 | n | | | | | 1.1E+01 | n | | | 5.7E-01 | |
| ~Methyl Mercury | 22967-92-6 | | | | | 1.0E-04 | I | | | | | 1 | | | 7.8E+00 | n | 1.0E+02 | n | | | | | 3.7E+00 | n | | | | |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | 8.0E-05 | I | | | | | 1 | 0.1 | | 4.9E+00 | n | 4.9E+01 | n | | | | | 2.9E+00 | n | | | 9.1E-04 | |
| Merphos | 150-50-5 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | | 1.8E+00 | n | 1.8E+01 | n | | | | | 1.1E+00 | n | | | 1.1E-01 | |
| Merphos Oxide | 78-48-8 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | | 1.8E+00 | n | 1.8E+01 | n | | | | | 1.1E+00 | n | | | 5.4E-03 | |
| Metalaxyl | 57837-19-1 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | | 3.7E+03 | n | 3.7E+04 | n | | | | | 2.2E+03 | n | | | 6.1E-01 | |
| Methacrylonitrile | 126-98-7 | | | | | 1.0E-04 | I | 7.0E-04 | H | V | | 1 | | 4.6E+03 | 3.2E+00 | n | 1.8E+01 | n | 7.3E-01 | n | 3.1E+00 | n | 1.0E+00 | n | | | 2.4E-04 | |
| Methamidophos | 10265-92-6 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | | 3.1E+00 | n | 3.1E+01 | n | | | | | 1.8E+00 | n | | | 3.8E-04 | |
| Methanol | 67-56-1 | | | | | 5.0E-01 | I | 4.0E+00 | C | | | 1 | 0.1 | | 3.1E+04 | n | 3.1E+05 | nm | 4.2E+03 | n | 1.8E+04 | n | 1.8E+04 | n | | | 3.7E+00 | |
| Methidathion | 950-37-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | | 8.9E-03 | |
| Methomyl | 16752-77-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | | 2.0E-01 | |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 4.9E-02 | C | 1.4E-05 | C | | | | | | | 1 | 0.1 | | 9.9E+00 | c | 3.5E+01 | c | 1.7E-01 | c | 8.8E-01 | c | 1.4E+00 | c | | | 4.7E-04 | |
| Methoxychlor | 72-43-5 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | 4.0E+01 | | 9.9E+00 | 2.2E+00 |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | | | 2.0E-03 | H | 9.0E-02 | C | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | 9.4E+01 | n | 3.9E+02 | n | 7.3E+01 | n | | | 1.5E-02 | |
| Methoxyethanol, 2- | 109-86-4 | | | | | 3.0E-03 | P | 2.0E-02 | I | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | 2.1E+01 | n | 8.8E+01 | n | 1.1E+02 | n | | | 2.2E-02 | |
| Methyl Acetate | 79-20-9 | | | | | 1.0E+00 | H | | | V | | 1 | | 2.9E+04 | 7.8E+04 | ns | 1.0E+06 | nms | | | | | 3.7E+04 | n | | | 7.5E+00 | |
| Methyl Acrylate | 96-33-3 | | | | | 3.0E-02 | H | | | V | | 1 | | 6.8E+03 | 2.3E+03 | n | 3.1E+04 | ns | | | | | 1.1E+03 | n | | | 2.3E-01 | |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | | | 6.0E-01 | I | 5.0E+00 | I | V | | 1 | | 2.8E+04 | 2.8E+04 | n | 2.0E+05 | nms | 5.2E+03 | n | 2.2E+04 | n | 7.1E+03 | n | | | 1.5E+00 | |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | | | 8.0E-02 | H | 3.0E+00 | I | V | | 1 | | 3.4E+03 | 5.3E+03 | ns | 5.3E+04 | ns | 3.1E+03 | n | 1.3E+04 | n | 2.0E+03 | n | | | 4.5E-01 | |
| Methyl Isocyanate | 624-83-9 | | | | | | | 1.0E-03 | C | | | | | | 1.4E+06 | nm | 6.0E+06 | nm | 1.0E+00 | n | 4.4E+00 | n | | | | | | |
| Methyl Methacrylate | 80-62-6 | | | | | 1.4E+00 | I | 7.0E-01 | I | V | | 1 | | 2.4E+03 | 4.8E+03 | ns | 2.1E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.4E+03 | n | | | 3.1E-01 | |
| Methyl Parathion | 298-00-0 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | | 1.5E+01 | n | 1.5E+02 | n | | | | | 9.1E+00 | n | | | 1.5E-02 | |
| Methyl Phosphonic Acid | 993-13-5 | | | | | 6.0E-02 | X | | | | | 1 | 0.1 | | 3.7E+03 | n | 3.7E+04 | n | | | | | 2.2E+03 | n | | | 4.4E-01 | |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | | | 6.0E-03 | H | 4.0E-02 | H | V | | 1 | | 3.8E+02 | 2.5E+02 | n | 1.6E+03 | ns | 4.2E+01 | n | 1.8E+02 | n | 6.0E+01 | n | | | 9.7E-02 | |
| Methyl methanesulfonate | 66-27-3 | 9.9E-02 | C | 2.8E-05 | C | | | | | | | 1 | 0.1 | | 4.9E+00 | c | 1.7E+01 | c | 8.7E-02 | c | 4.4E-01 | c | 6.8E-01 | c | | | 1.4E-04 | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 1.8E-03 | C | 2.6E-07 | C | | | 3.0E+00 | I | V | | 1 | | 8.9E+03 | 4.3E+01 | c | 2.2E+02 | c | 9.4E+00 | c | 4.7E+01 | c | 1.2E+01 | c | | | 2.8E-03 | |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 3.3E-02 | H | | | | | | | | | 1 | 0.1 | | 1.5E+01 | c | 5.2E+01 | c | | | | | 2.0E+00 | c | | | 1.1E-03 | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 8.3E+00 | C | 2.4E-03 | C | | | | | | | | | | 7.7E-02 | c | 3.4E-01 | c | 1.0E-03 | c | 5.1E-03 | c | 8.1E-03 | c | | | 2.8E-06 | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 1.3E-01 | C | 3.7E-05 | C | | | | | | | 1 | 0.1 | | 3.7E+00 | c | 1.3E+01 | c | 6.6E-02 | c | 3.3E-01 | c | 5.2E-01 | c | | | 2.2E-04 | |
| Methylarsonic acid | 124-58-3 | | | | | 1.0E-02 | A | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | | | |
| Methylcholanthrene, 3- | 56-49-5 | 2.2E+01 | C | 6.3E-03 | C | | | | | | | 1 | 0.1 | | 2.2E-02 | c | 7.8E-02 | c | 3.9E-04 | c | 1.9E-03 | c | 3.1E-03 | c | | | 5.9E-03 | |
| Methylene Chloride | 75-09-2 | 7.5E-03 | I | 4.7E-07 | I | 6.0E-02 | I | 1.0E+00 | A | V | | 1 | | 3.3E+03 | 1.1E+01 | c | 5.3E+01 | c | 5.2E+00 | c | 2.6E+01 | c | 4.8E+00 | c | 5.0E+00 | | 1.2E-03 | 1.3E-03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P | | | | M | 1 | 0.1 | | 1.2E+00 | c | 1.7E+01 | c* | 2.2E-03 | c | 2.9E-02 | c | 2.2E-01 | c | | | 2.5E-03 | |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 4.6E-02 | I | 1.3E-05 | C | | | | | | | 1 | 0.1 | | 1.1E+01 | c | 3.7E+01 | c | 1.9E-01 | c | 9.4E-01 | c | 1.5E+00 | c | | | 8.1E-03 | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 1.6E+00 | C | 4.6E-04 | C | | | 2.0E-02 | C | | | 1 | 0.1 | | 3.0E-01 | c | 1.1E+00 | c | 5.3E-03 | c | 2.7E-02 | c | 4.2E-02 | c | | | 1.9E-04 | |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | | 8.5E+05 | nm | 3.6E+06 | nm | 6.3E-01 | n | 2.6E+00 | n | | | | | | |
| Methylstyrene, Alpha- | 98-83-9 | | | | | 7.0E-02 | H | | | V | | 1 | | 5.0E+02 | 5.5E+03 | ns | 7.2E+04 | ns | | | | | 2.6E+03 | n | | | 4.1E+00 | |
| Metolachlor | 51218-45-2 | | | | | 1.5E-01 | I | | | | | 1 | 0.1 | | 9.2E+03 | n | 9.2E+04 | n | | | | | 5.5E+03 | n | | | 6.4E+00 | |
| Metribuzin | 21087-64-9 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | | 2.8E-01 | |
| Mineral oils | 8012-95-1 | | | | | 3.0E+00 | P | | | | | | | | 2.3E+05 | nm | 3.1E+06 | nm | | | | | 1.1E+05 | n | | | 4.3E+03 | |
| Mirex | 2385-85-5 | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I | | | | | 1 | 0.1 | | 2.7E-02 | c | 9.6E-02 | c | 4.8E-04 | c | 2.4E-03 | c | 3.7E-03 | c | | | 2.7E-03 | |
| Molinate | 2212-67-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | | 4.1E-02 | |
| Molybdenum | 7439-98-7 | | | | | 5.0E-03 | I | | | | | 1 | | | 3.9E+02 | n | 5.1E+03 | n | | | | | 1.8E+02 | n | | | 3.7E+00 | |
| Monochloramine | 10599-90-3 | | | | | 1.0E-01 | I | | | | | 1 | | | 7.8E+03 | n | 1.0E+05 | nm | | | | | 3.7E+03 | n | | | | |
| Monomethylaniline | 100-61-8 | | | | | 2.0E-03 | P | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | | 2.7E-02 | |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | 3.0E-04 | X | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | | 1.1E+00 | |
| Naled | 300-76-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | | 3.3E-02 | |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | 3.0E-02 | X | 1.0E-01 | P | V | | | | | 2.3E+03 | n | 3.1E+04 | n | 1.0E+02 | n | 4.4E+02 | n | 1.8E+02 | n | | | | |
| Naphthylamine, 2- | 91-59-8 | 1.8E+00 | C | 0.0E+00 | C | | | | | | | 1 | 0.1 | | 2.7E-01 | c | 9.6E-01 | c | | | | | 3.7E-02 | c | | | 1.9E-04 | |
| Napropamide | 15299-99-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | | 2.4E+01 | |
| Nickel Carbonyl | 13463-39-3 | | | | | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | | 3.7E+03 | n | 4.4E+04 | n | 5.2E-02 | n | 2.2E-01 | n | 1.8E+03 | n | | | | |
| Nickel Oxide | 1313-99-1 | | | | | 5.0E-02 | C | 1.0E-04 | C | | | | | | 3.8E+03 | n | 4.7E+04 | n | 1.0E-01 | n | 4.4E-01 | n | 1.8E+03 | n | | | | |
| Nickel Refinery Dust | NA | | | 2.4E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | | 3.7E+03 | n | 4.4E+04 | n | 1.0E-02 | c** | 5.1E-02 | c** | 1.8E+03 | n | | | | |
| Nickel Soluble Salts | 7440-02-0 | | | 2.6E-04 | C | 2.0E-02 | I | 9.0E-05 | A | | | 0.04 | | | 1.5E+03 | n | 2.0E+04 | n | 9.4E-03 | c* | 4.7E-02 | c** | 7.3E+02 | n | | | 4.8E+01 | |
| Nickel Subsulfide | 12035-72-2 | 1.7E+00 | C | 4.8E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | | 3.8E-01 | c | 1.7E+00 | c | 5.1E-03 | c* | 2.6E-02 | c** | 4.0E-02 | c | | | | |
| Nitrate | 14797-55-8 | | | | | 1.6E+00 | I | | | | | 1 | | | 1.3E+05 | nm | 1.6E+06 | nm | | | | | 5.8E+04 | n | 1.0E+04 | | | |
| Nitrite | 14797-65-0 | | | | | 1.0E-01 | I | | | | | 1 | | | 7.8E+03 | n | 1.0E+05 | nm | | | | | 3.7E+03 | n | 1.0E+03 | | | |
| Nitroaniline, 2- | 88-74-4 | | | | | 1.0E-02 | X | 5.0E-05 | X | | | 1 | 0.1 | | 6.1E+02 | n | 6.0E+03 | n | 5.2E-02 | n | 2.2E-01 | n | 3.7E+02 | n | | | 1.5E-01 | |
| Nitroaniline, 4- | 100-01-6 | 2.0E-02 | P | | | 4.0E-03 | P | 6.0E-03 | P | | | 1 | 0.1 | | 2.4E+01 | c* | 8.6E+01 | c* | 6.3E+00 | n | 2.6E+01 | n | 3.4E+00 | c* | | | 1.4E-03 | |
| Nitrobenzene | 98-95-3 | | | 4.0E-05 | I | 2.0E-03 | I | 9.0E-03 | I | V | | 1 | | 3.1E+03 | 4.8E+00 | c* | 2.4E+01 | c* | 6.1E-02 | c | 3.1E-01 | c | 1.2E-01 | c | | | 7.9E-05 | |
| Nitrocellulose | 9004-70-0 | | | | | 3.0E+03 | P | | | | | | | | 2.3E+08 | nm | 3.1E+09 | nm | | | | | 1.1E+08 | n | | | 2.4E+04 | |
| Nitrofurantoin | 67-20-9 | | | | | 7.0E-02 | H | | | | | 1 | 0.1 | | 4.3E+03 | n | 4.3E+04 | n | | | | | 2.6E+03 | n | | | 1.1E+00 | |
| Nitrofurazone | 59-87-0 | 1.3E+00 | C | 3.7E-04 | C | | | | | | | 1 | 0.1 | | 3.7E-01 | c | 1.3E+00 | c | 6.6E-03 | c | 3.3E-02 | c | 5.2E-02 | c | | | 4.7E-05 | |
| Nitroglycerin | 55-63-0 | 1.7E-02 | P | | | 1.0E-04 | P | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | | 1.6E-03 | |
| Nitroguanidine | 556-88-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | | 8.8E-01 | |
| Nitromethane | 75-52-5 | | | 9.0E-06 | P | | | 2.0E-02 | P | V | | 1 | | 1.8E+04 | 4.9E+00 | c* | 2.5E+01 | c* | 2.7E-01 | c* | 1.4E+00 | c* | 5.4E-01 | c* | | | 1.2E-04 | |
| Nitropropane, 2- | 79-46-9 | | | 2.7E-03 | H | | | 2.0E-02 | I | V | | 1 | | 4.9E+03 | 1.3E-02 | c | 6.4E-02 | c | 9.0E-04 | c | 4.5E-03 | c | 1.8E-03 | c | | | 4.7E-07 | |
| Nitroso-N-ethylurea, N- | 759-73-9 | 2.7E+01 | C | 7.7E-03 | C | | | | | | | 1 | 0.1 | | 1.8E-02 | c | 6.4E-02 | c | 3.2E-04 | c | 1.6E-03 | c | 2.5E-03 | c | | | 6.0E-07 | |
| Nitroso-N-methylurea, N- | 684-93-5 | 1.2E+02 | C | 3.4E-02 | C | | | | | | | 1 | 0.1 | | 4.0E-03 | c | 1.4E-02 | c | 7.2E-05 | c | 3.6E-04 | c | 5.6E-04 | c | | | 1.2E-07 | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 5.4E+00 | I | 1.6E-03 | I | | | | | V | | 1 | | 7.1E+03 | 8.7E-02 | c | 4.0E-01 | c | 1.5E-03 | c | 7.7E-03 | c | 2.4E-03 | c | | | 5.0E-06 | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 7.0E+00 | I | 2.0E-03 | C | | | | | | | 1 | 0.1 | | 6.9E-02 | c | 2.5E-01 | c | 1.2E-03 | c | 6.1E-03 | c | 9.6E-03 | c | | | 7.2E-06 | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 2.8E+00 | I | 8.0E-04 | C | | | | | | | 1 | 0.1 | | 1.7E-01 | c | 6.2E-01 | c | 3.0E-03 | c | 1.5E-02 | c | 2.4E-02 | c | | | 4.9E-06 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | mg/kg | mg/kg |
| Nitrosodiethylamine, N- | 55-18-5 | 1.5E+02 | I | 4.3E-02 | I | | | | | | M | 1 | 0.1 | | 7.7E-04 | c | 1.1E-02 | c | 2.2E-05 | c | 2.9E-04 | c | 1.4E-04 | c | | 5.3E-08 | |
| Nitrosodimethylamine, N- | 62-75-9 | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P | 4.0E-05 | X | | M | 1 | 0.1 | | 2.3E-03 | c | 3.4E-02 | c | 6.9E-05 | c | 8.8E-04 | c | 4.2E-04 | c | | 1.0E-07 | |
| Nitrosodiphenylamine, N- | 86-30-6 | 4.9E-03 | I | 2.6E-06 | C | | | | | | | 1 | 0.1 | | 9.9E+01 | c | 3.5E+02 | c | 9.4E-01 | c | 4.7E+00 | c | 1.4E+01 | c | | 7.5E-02 | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 2.2E+01 | I | 6.3E-03 | C | | | | | | | 1 | 0.1 | | 2.2E-02 | c | 7.8E-02 | c | 3.9E-04 | c | 1.9E-03 | c | 3.1E-03 | c | | 8.8E-07 | |
| Nitrosomorpholine [N-] | 59-89-2 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | | 7.2E-02 | c | 2.6E-01 | c | 1.3E-03 | c | 6.5E-03 | c | 1.0E-02 | c | | 2.5E-06 | |
| Nitrosopiperidine [N-] | 100-75-4 | 9.4E+00 | C | 2.7E-03 | C | | | | | | | 1 | 0.1 | | 5.2E-02 | c | 1.8E-01 | c | 9.0E-04 | c | 4.5E-03 | c | 7.2E-03 | c | | 3.8E-06 | |
| Nitrosopyrrolidine, N- | 930-55-2 | 2.1E+00 | I | 6.1E-04 | I | | | | | | | 1 | 0.1 | | 2.3E-01 | c | 8.2E-01 | c | 4.0E-03 | c | 2.0E-02 | c | 3.2E-02 | c | | 1.2E-05 | |
| Nitrotoluene, m- | 99-08-1 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 3.4E-03 | |
| Nitrotoluene, o- | 88-72-2 | 2.2E-01 | P | | | 9.0E-04 | P | | | V | | 1 | | 1.5E+03 | 2.9E+00 | c* | 1.3E+01 | c* | | | | | 3.1E-01 | c | | 2.9E-04 | |
| Nitrotoluene, p- | 99-99-0 | 1.6E-02 | P | | | 4.0E-03 | P | | | | | 1 | 0.1 | | 3.0E+01 | c** | 1.1E+02 | c* | | | | | 4.2E+00 | c* | | 3.9E-03 | |
| Nonane, n- | 111-84-2 | | | | | 3.0E-04 | X | 2.0E-01 | P | V | | | | 6.9E+00 | 2.1E+01 | ns | 2.3E+02 | ns | 2.1E+02 | n | 8.8E+02 | n | 1.1E+01 | n | | 1.5E-01 | |
| Norflurazon | 27314-13-2 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | | 2.4E+03 | n | 2.5E+04 | n | | | | | 1.5E+03 | n | | 9.4E+00 | |
| Nustar | 85509-19-9 | | | | | 7.0E-04 | I | | | | | 1 | 0.1 | | 4.3E+01 | n | 4.3E+02 | n | | | | | 2.6E+01 | n | | 4.1E+00 | |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 2.2E+01 | |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | 5.0E-02 | I | | | | | 1 | 0.006 | | 3.8E+03 | n | 4.9E+04 | n | | | | | 1.8E+03 | n | | 2.3E+00 | |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 1.8E-02 | |
| Oryzalin | 19044-88-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 3.4E+00 | |
| Oxadiazon | 19666-30-9 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 1.9E+00 | |
| Oxamyl | 23135-22-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | 2.0E+02 | 2.0E-01 | 4.4E-02 |
| Paclobutrazol | 76738-62-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 9.7E-01 | |
| Paraquat Dichloride | 1910-42-5 | | | | | 4.5E-03 | I | | | | | 1 | 0.1 | | 2.7E+02 | n | 2.8E+03 | n | | | | | 1.6E+02 | n | | 2.3E+00 | |
| Parathion | 56-38-2 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | | 3.7E+02 | n | 3.7E+03 | n | | | | | 2.2E+02 | n | | 1.1E+00 | |
| Pebulate | 1114-71-2 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 1.5E+00 | |
| Pendimethalin | 40487-42-1 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | | 2.4E+03 | n | 2.5E+04 | n | | | | | 1.5E+03 | n | | 1.7E+01 | |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | 3.2E+00 | |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | 1.0E-04 | I | | | | | | | | 7.8E+00 | n | 1.0E+02 | n | | | | | 3.7E+00 | n | | 1.6E-01 | |
| Pentachlorobenzene | 608-93-5 | | | | | 8.0E-04 | I | | | | | 1 | 0.1 | | 4.9E+01 | n | 4.9E+02 | n | | | | | 2.9E+01 | n | | 2.2E-01 | |
| Pentachloroethane | 76-01-7 | 9.0E-02 | P | | | | | | | | | 1 | 0.1 | | 5.4E+00 | c | 1.9E+01 | c | | | | | 7.5E-01 | c | | 3.6E-04 | |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | H | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.9E+00 | c* | 6.6E+00 | c | | | | | 2.6E-01 | c | | 3.2E-03 | |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | I | 5.1E-06 | C | 3.0E-02 | I | | | | | 1 | 0.25 | | 3.0E+00 | c | 9.0E+00 | c | 4.8E-01 | c | 2.4E+00 | c | 5.6E-01 | c | 1.0E+00 | 5.7E-03 | 1.0E-02 |
| Pentane, n- | 109-66-0 | | | | | | | 1.0E+00 | P | V | | | | 3.9E+02 | 8.7E+02 | ns | 3.7E+03 | ns | 1.0E+03 | n | 4.4E+03 | n | 2.1E+03 | n | | 1.0E+01 | |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | 7.0E-04 | I | | | | | 1 | | | 5.5E+01 | n | 7.2E+02 | n | | | | | 2.6E+01 | n | 15 (F) | | |
| Permethrin | 52645-53-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 4.3E+02 | |
| Phenacetin | 62-44-2 | 2.2E-03 | C | 6.3E-07 | C | | | | | | | 1 | 0.1 | | 2.2E+02 | c | 7.8E+02 | c | 3.9E+00 | c | 1.9E+01 | c | 3.1E+01 | c | | 8.6E-03 | |
| Phenmedipham | 13684-63-4 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | | 1.5E+04 | n | 1.5E+05 | nm | | | | | 9.1E+03 | n | | 4.9E+01 | |
| Phenol | 108-95-2 | | | | | 3.0E-01 | I | 2.0E-01 | C | | | 1 | 0.1 | | 1.8E+04 | n | 1.8E+05 | nm | 2.1E+02 | n | 8.8E+02 | n | 1.1E+04 | n | | 6.3E+00 | |
| Phenylenediamine, m- | 108-45-2 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | | 3.7E+02 | n | 3.7E+03 | n | | | | | 2.2E+02 | n | | 5.9E-02 | |
| Phenylenediamine, o- | 95-54-5 | 4.7E-02 | H | | | | | | | | | 1 | 0.1 | | 1.0E+01 | c | 3.7E+01 | c | | | | | 1.4E+00 | c | | 3.8E-04 | |
| Phenylenediamine, p- | 106-50-3 | | | | | 1.9E-01 | H | | | | | 1 | 0.1 | | 1.2E+04 | n | 1.2E+05 | nm | | | | | 6.9E+03 | n | | 1.9E+00 | |
| Phenylphenol, 2- | 90-43-7 | 1.9E-03 | H | | | | | | | | | 1 | 0.1 | | 2.5E+02 | c | 8.9E+02 | c | | | | | 3.5E+01 | c | | 4.7E-01 | |
| Phorate | 298-02-2 | | | | | 2.0E-04 | H | | | | | 1 | 0.1 | | 1.2E+01 | n | 1.2E+02 | n | | | | | 7.3E+00 | n | | 8.2E-03 | |
| Phosgene | 75-44-5 | | | | | | | 3.0E-04 | I | V | | 1 | | 1.6E+03 | 3.3E-01 | n | 1.4E+00 | n | 3.1E-01 | n | 1.3E+00 | n | | | | | |
| Phosmet | 732-11-6 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 1.6E-01 | |
| Phosphine | 7803-51-2 | | | | | 3.0E-04 | I | 3.0E-04 | I | | | 1 | | | 2.3E+01 | n | 3.1E+02 | n | 3.1E-01 | n | 1.3E+00 | n | 1.1E+01 | n | | | |
| Phosphoric Acid | 7664-38-2 | | | | | | | 1.0E-02 | I | | | 1 | | | 1.4E+07 | nm | 6.0E+07 | nm | 1.0E+01 | n | 4.4E+01 | n | | | | | |
| Phosphorus, White | 7723-14-0 | | | | | 2.0E-05 | I | | | | | 1 | | | 1.6E+00 | n | 2.0E+01 | n | | | | | 7.3E-01 | n | | 2.7E-03 | |
| Phthalic Acid, P- | 100-21-0 | | | | | 1.0E+00 | H | | | | | 1 | 0.1 | | 6.1E+04 | n | 6.2E+05 | nm | | | | | 3.7E+04 | n | | 1.3E+01 | |
| Phthalic Anhydride | 85-44-9 | | | | | 2.0E+00 | I | 2.0E-02 | C | | | 1 | 0.1 | | 1.2E+05 | nm | 1.2E+06 | nm | 2.1E+01 | n | 8.8E+01 | n | 7.3E+04 | n | | 1.6E+01 | |
| Picloram | 1918-02-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | | 4.3E+03 | n | 4.3E+04 | n | | | | | 2.6E+03 | n | 5.0E+02 | 7.1E-01 | 1.4E-01 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | | 6.1E+00 | n | 6.2E+01 | n | | | | | 3.7E+00 | n | | 2.4E-03 | |
| Pirimiphos, Methyl | 29232-93-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 3.5E-01 | |
| Polybrominated Biphenyls | 59536-65-1 | 3.0E+01 | C | 8.6E-03 | C | 7.0E-06 | H | | | | | 1 | 0.1 | | 1.6E-02 | c* | 5.7E-02 | c* | 2.8E-04 | c | 1.4E-03 | c | 2.2E-03 | c | | | |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 7.0E-02 | I | 2.0E-05 | I | 7.0E-05 | I | | | | | 1 | 0.14 | | 3.9E+00 | n | 2.1E+01 | c** | 1.2E-01 | c | 6.1E-01 | c | 9.6E-01 | c** | | 9.2E-02 | |
| ~Aroclor 1221 | 11104-28-2 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 7.6E+02 | 1.4E-01 | c | 5.4E-01 | c | 4.3E-03 | c | 2.1E-02 | c | 6.8E-03 | c | | 1.2E-04 | |
| ~Aroclor 1232 | 11141-16-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 7.3E+01 | 1.4E-01 | c | 5.4E-01 | c | 4.3E-03 | c | 2.1E-02 | c | 6.8E-03 | c | | 1.2E-04 | |
| ~Aroclor 1242 | 53469-21-9 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | | 2.2E-01 | c | 7.4E-01 | c | 4.3E-03 | c | 2.1E-02 | c | 3.4E-02 | c | | 5.3E-03 | |
| ~Aroclor 1248 | 12672-29-6 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | | 2.2E-01 | c | 7.4E-01 | c | 4.3E-03 | c | 2.1E-02 | c | 3.4E-02 | c | | 5.2E-03 | |
| ~Aroclor 1254 | 11097-69-1 | 2.0E+00 | I | 5.7E-04 | I | 2.0E-05 | I | | | | | 1 | 0.14 | | 2.2E-01 | c** | 7.4E-01 | c* | 4.3E-03 | c | 2.1E-02 | c | 3.4E-02 | c* | | 8.8E-03 | |
| ~Aroclor 1260 | 11096-82-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | | 2.2E-01 | c | 7.4E-01 | c | 4.3E-03 | c | 2.1E-02 | c | 3.4E-02 | c | | 2.4E-02 | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 3.6E-03 | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 1.3E+00 | C | 3.8E-04 | C | | | | | | | 1 | 0.14 | | 3.4E-01 | c | 1.1E+00 | c | 6.4E-03 | c | 3.2E-02 | c | 5.2E-02 | c | | 2.2E-02 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | | 6.8E-03 | c | 2.3E-02 | c | 1.3E-04 | c | 6.5E-04 | c | 1.0E-03 | c | | 4.4E-04 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | | 6.8E-03 | c | 2.3E-02 | c | 1.3E-04 | c | 6.5E-04 | c | 1.0E-03 | c | | 4.4E-04 | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 1.3E+03 | C | 3.8E-01 | C | | | | | | | 1 | 0.14 | | 3.4E-04 | c | 1.1E-03 | c | 6.4E-06 | c | 3.2E-05 | c | 5.2E-05 | c | | 2.2E-05 | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 1.4E-03 | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 1.3E-03 | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 1.4E-03 | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 6.5E+02 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | | 6.8E-04 | c | 2.3E-03 | c | 1.3E-04 | c | 6.5E-04 | c | 1.0E-04 | c | | 2.7E-05 | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 1.3E+04 | C | 3.8E+00 | C | | | | | | | 1 | 0.14 | | 3.4E-05 | c | 1.1E-04 | c | 6.4E-07 | c | 3.2E-06 | c | 5.2E-06 | c | | 1.3E-06 | |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 2.0E+00 | I | 5.7E-04 | C | | | | | | | 1 | 0.14 | | 2.2E-01 | c | 7.4E-01 | c | 4.3E-03 | c | 2.2E-02 | c | | | | | |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 4.0E-01 | I | 1.0E-04 | I | | | | | | | 1 | 0.14 | | | | | | 2.4E-02 | c | 1.2E-01 | c | 1.7E-01 | c | 5.0E-01 | 2.6E-02 | 7.8E-02 |
| ~Polychlorinated Biphenyls (lowest risk) | 1336-36-3 | 7.0E-02 | I | 2.0E-05 | C | | | | | | | 1 | 0.14 | | | | | | 1.2E-01 | c | 6.1E-01 | c | | | | | |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 8.1E-04 | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | | 3.4E-02 | c | 1.1E-01 | c | 6.4E-04 | c | 3.2E-03 | c | 5.2E-03 | c | | 8.1E-04 | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | | 8.5E+05 | nm | 3.6E+06 | nm | 6.3E-01 | n | 2.6E+00 | n | | | | | |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | 6.0E-02 | I | | | V | | 1 | 0.13 | | 3.4E+03 | n | 3.3E+04 | n | | | | | 2.2E+03 | n | | 2.2E+01 | |
| ~Anthracene | 120-12-7 | | | | | 3.0E-01 | I | | | V | | 1 | 0.13 | | 1.7E+04 | n | 1.7E+05 | nm | | | | | 1.1E+04 | n | | 3.6E+02 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | volc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | mg/kg | mg/kg |
| ~Benz[a]anthracene | 56-55-3 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | | 1.5E-01 | c | 2.1E+00 | c | 8.7E-03 | c | 1.1E-01 | c | 2.9E-02 | c | | | 1.0E-02 | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 1 | 0.13 | | 5.3E-01 | c | 2.4E+00 | c | 2.2E-02 | c | 1.1E-01 | c | 5.6E-02 | c | | | 6.7E-02 | |
| ~Benzo[a]pyrene | 50-32-8 | 7.3E+00 | I | 1.1E-03 | C | | | | | | M | 1 | 0.13 | | 1.5E-02 | c | 2.1E-01 | c | 8.7E-04 | c | 1.1E-02 | c | 2.9E-03 | c | 2.0E-01 | | 3.5E-03 | 2.4E-01 |
| ~Benzo[b]fluoranthene | 205-99-2 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | | 1.5E-01 | c | 2.1E+00 | c | 8.7E-03 | c | 1.1E-01 | c | 2.9E-02 | c | | | 3.5E-02 | |
| ~Benzo[k]fluoranthene | 207-08-9 | 7.3E-02 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | | 1.5E+00 | c | 2.1E+01 | c | 8.7E-03 | c | 1.1E-01 | c | 2.9E-01 | c | | | 3.5E-01 | |
| ~Chrysene | 218-01-9 | 7.3E-03 | E | 1.1E-05 | C | | | | | | M | 1 | 0.13 | | 1.5E+01 | c | 2.1E+02 | c | 8.7E-02 | c | 1.1E+00 | c | 2.9E+00 | c | | | 1.1E+00 | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 7.3E+00 | E | 1.2E-03 | C | | | | | | M | 1 | 0.13 | | 1.5E-02 | c | 2.1E-01 | c | 8.0E-04 | c | 1.0E-02 | c | 2.9E-03 | c | | | 1.1E-02 | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.2E+01 | C | 1.1E-03 | C | | | | | | | | | | 5.3E-02 | c | 2.4E-01 | c | 2.2E-03 | c | 1.1E-02 | c | 5.6E-03 | c | | | 7.3E-02 | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 2.5E+02 | C | 7.1E-02 | C | | | | | | | 1 | 0.13 | | 1.8E-03 | c | 6.2E-03 | c | 3.4E-05 | c | 1.7E-04 | c | 2.7E-04 | c | | | 2.7E-04 | |
| ~Fluoranthene | 206-44-0 | | | | | 4.0E-02 | I | | | | | 1 | 0.13 | | 2.3E+03 | n | 2.2E+04 | n | | | | | 1.5E+03 | n | | | 1.6E+02 | |
| ~Fluorene | 86-73-7 | | | | | 4.0E-02 | I | | | V | | 1 | 0.13 | | 2.3E+03 | n | 2.2E+04 | n | | | | | 1.5E+03 | n | | | 2.7E+01 | |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | | 1.5E-01 | c | 2.1E+00 | c | 8.7E-03 | c | 1.1E-01 | c | 2.9E-02 | c | | | 1.2E-01 | |
| ~Methylnaphthalene, 1- | 90-12-0 | 2.9E-02 | P | | | 7.0E-02 | A | | | V | | 1 | | 3.9E+02 | 2.2E+01 | c | 9.9E+01 | c | | | | | 2.3E+00 | c | | | 1.2E-02 | |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | 4.0E-03 | I | | | V | | 1 | | 3.7E+02 | 3.1E+02 | n | 4.1E+03 | ns | | | | | 1.5E+02 | n | | | 7.5E-01 | |
| ~Naphthalene | 91-20-3 | | | 3.4E-05 | C | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | 0.13 | | 3.6E+00 | c* | 1.8E+01 | c* | 7.2E-02 | c* | 3.6E-01 | c* | 1.4E-01 | c* | | | 4.7E-04 | |
| ~Nitropyrene, 4- | 57835-92-4 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | | | | 5.3E-01 | c | 2.4E+00 | c | 2.2E-02 | c | 1.1E-01 | c | 5.6E-02 | c | | | 9.7E-03 | |
| ~Pyrene | 129-00-0 | | | | | 3.0E-02 | I | | | V | | 1 | 0.13 | | 1.7E+03 | n | 1.7E+04 | n | | | | | 1.1E+03 | n | | | 1.2E+02 | |
| Potassium Perchlorate | 7778-74-7 | | | | | 7.0E-04 | I | | | | | 1 | | | 5.5E+01 | n | 7.2E+02 | n | | | | | 2.6E+01 | n | | | | |
| Prochloraz | 67747-09-5 | 1.5E-01 | I | | | 9.0E-03 | I | | | | | 1 | 0.1 | | 3.2E+00 | c | 1.1E+01 | c | | | | | 4.5E-01 | c | | | 2.3E-03 | |
| Profluralin | 26399-36-0 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | | 3.7E+02 | n | 3.7E+03 | n | | | | | 2.2E+02 | n | | | 1.3E+01 | |
| Prometon | 1610-18-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | | 9.2E+02 | n | 9.2E+03 | n | | | | | 5.5E+02 | n | | | 2.6E-01 | |
| Prometryn | 7287-19-6 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 2.4E+02 | n | 2.5E+03 | n | | | | | 1.5E+02 | n | | | 2.2E-01 | |
| Propachlor | 1918-16-7 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | | 2.9E-01 | |
| Propanil | 709-98-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | | 1.0E-01 | |
| Propargite | 2312-35-8 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | | 5.4E+01 | |
| Propargyl Alcohol | 107-19-7 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | | 1.2E+02 | n | 1.2E+03 | n | | | | | 7.3E+01 | n | | | 1.5E-02 | |
| Propazine | 139-40-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | | 6.5E-01 | |
| Propham | 122-42-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | | 4.7E-01 | |
| Propiconazole | 60207-90-1 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | | 1.6E+00 | |
| Propionaldehyde | 123-38-6 | | | | | | | 8.0E-03 | I | V | | | | 3.3E+04 | 8.0E+01 | n | 3.4E+02 | n | 8.3E+00 | n | 3.5E+01 | n | 1.7E+01 | n | | | 3.4E-03 | |
| Propyl benzene | 103-65-1 | | | | | 1.0E-01 | X | 1.0E+00 | X | V | | 1 | 0.1 | 2.6E+02 | 3.4E+03 | ns | 2.1E+04 | ns | 1.0E+03 | n | 4.4E+03 | n | 1.3E+03 | n | | | 2.5E+00 | |
| Propylene | 115-07-1 | | | | | | | 3.0E+00 | C | | | | | | 4.3E+09 | nm | 1.8E+10 | nm | 3.1E+03 | n | 1.3E+04 | n | | | | | | |
| Propylene Glycol | 57-55-6 | | | | | 2.0E+01 | P | | | | | 1 | 0.1 | | 1.2E+06 | nm | 1.2E+07 | nm | | | | | 7.3E+05 | n | | | 1.5E+02 | |
| Propylene Glycol Dinitrate | 6423-43-4 | | | | | | | 2.7E-04 | A | V | | 1 | | 1.5E+03 | 5.7E+01 | n | 2.4E+02 | n | 2.8E-01 | n | 1.2E+00 | n | 5.7E-01 | n | | | 1.8E-04 | |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | 7.0E-01 | H | | | | | 1 | 0.1 | | 4.3E+04 | n | 4.3E+05 | nm | | | | | 2.6E+04 | n | | | 5.2E+00 | |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | | | 7.0E-01 | H | 2.0E+00 | I | | | 1 | 0.1 | | 4.3E+04 | n | 4.3E+05 | nm | 2.1E+03 | n | 8.8E+03 | n | 2.6E+04 | n | | | 5.2E+00 | |
| Propylene Oxide | 75-56-9 | 2.4E-01 | I | 3.7E-06 | I | | | 3.0E-02 | I | V | | 1 | | 7.8E+04 | 1.9E+00 | c | 8.8E+00 | c | 6.6E-01 | c* | 3.3E+00 | c* | 2.3E-01 | c | | | 4.9E-05 | |
| Pursuit | 81335-77-5 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | | 1.5E+04 | n | 1.5E+05 | nm | | | | | 9.1E+03 | n | | | 8.0E+00 | |
| Pydrin | 51630-58-1 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | | 5.8E+02 | |
| Pyridine | 110-86-1 | | | | | 1.0E-03 | I | | | V | | 1 | | 5.3E+05 | 7.8E+01 | n | 1.0E+03 | n | | | | | 3.7E+01 | n | | | 1.3E-02 | |
| Quinalphos | 13593-03-8 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | | 3.1E+01 | n | 3.1E+02 | n | | | | | 1.8E+01 | n | | | 1.6E-01 | |
| Quinoline | 91-22-5 | 3.0E+00 | I | | | | | | | | | 1 | 0.1 | | 1.6E-01 | c | 5.7E-01 | c | | | | | 2.2E-02 | c | | | 7.4E-05 | |
| Refractory Ceramic Fibers | NA | | | | | | | 3.0E-02 | A | | | 1 | | | 4.3E+07 | nm | 1.8E+08 | nm | 3.1E+01 | n | 1.3E+02 | n | | | | | | |
| Resmethrin | 10453-86-8 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | | 6.8E+02 | |
| Ronnel | 299-84-3 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | | 1.7E+01 | |
| Rotenone | 83-79-4 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | | 2.4E+02 | n | 2.5E+03 | n | | | | | 1.5E+02 | n | | | 7.6E+01 | |
| Safrole | 94-59-7 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 1 | 0.1 | | 2.2E+00 | c | 7.8E+00 | c | 3.9E-02 | c | 1.9E-01 | c | 3.1E-01 | c | | | 1.9E-04 | |
| Savey | 78587-05-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | | 4.1E+00 | |
| Selenious Acid | 7783-00-8 | | | | | 5.0E-03 | I | | | | | 1 | | | 3.9E+02 | n | 5.1E+03 | n | | | | | 1.8E+02 | n | | | | |
| Selenium | 7782-49-2 | | | | | 5.0E-03 | I | 2.0E-02 | C | | | 1 | | | 3.9E+02 | n | 5.1E+03 | n | 2.1E+01 | n | 8.8E+01 | n | 1.8E+02 | n | 5.0E+01 | | 9.5E-01 | 2.6E-01 |
| Selenium Sulfide | 7446-34-6 | | | | | 5.0E-03 | C | 2.0E-02 | C | | | 1 | | | 3.9E+02 | n | 5.1E+03 | n | 2.1E+01 | n | 8.8E+01 | n | 1.8E+02 | n | | | | |
| Sethoxydim | 74051-80-2 | | | | | 9.0E-02 | I | | | | | 1 | 0.1 | | 5.5E+03 | n | 5.5E+04 | n | | | | | 3.3E+03 | n | | | 2.9E+01 | |
| Silica (crystalline, respirable) | 7631-86-9 | | | | | | | 3.0E-03 | C | | | | | | 4.3E+06 | nm | 1.8E+07 | nm | 3.1E+00 | n | 1.3E+01 | n | | | | | | |
| Silver | 7440-22-4 | | | | | 5.0E-03 | I | | | | | 0.04 | | | 3.9E+02 | n | 5.1E+03 | n | | | | | 1.8E+02 | n | | | 1.6E+00 | |
| Simazine | 122-34-9 | 1.2E-01 | H | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 4.0E+00 | c* | 1.4E+01 | c | | | | | 5.6E-01 | c | 4.0E+00 | | 2.8E-04 | 2.0E-03 |
| Sodium Acifluorfen | 62476-59-9 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | | 3.8E+00 | |
| Sodium Azide | 26628-22-8 | | | | | 4.0E-03 | I | | | | | 1 | | | 3.1E+02 | n | 4.1E+03 | n | | | | | 1.5E+02 | n | | | | |
| Sodium Diethyldithiocarbamate | 148-18-5 | 2.7E-01 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+00 | c | 6.4E+00 | c | | | | | 2.5E-01 | c | | | | |
| Sodium Fluoride | 7681-49-4 | | | | | 5.0E-02 | A | 1.3E-02 | C | | | 1 | | | 3.9E+03 | n | 5.1E+04 | n | 1.4E+01 | n | 5.7E+01 | n | 1.8E+03 | n | | | | |
| Sodium Fluoroacetate | 62-74-8 | | | | | 2.0E-05 | I | | | | | 1 | 0.1 | | 1.2E+00 | n | 1.2E+01 | n | | | | | 7.3E-01 | n | | | 1.5E-04 | |
| Sodium Metavanadate | 13718-26-8 | | | | | 1.0E-03 | H | | | | | 1 | | | 7.8E+01 | n | 1.0E+03 | n | | | | | 3.7E+01 | n | | | | |
| Sodium Perchlorate | 7601-89-0 | | | | | 7.0E-04 | I | | | | | 1 | | | 5.5E+01 | n | 7.2E+02 | n | | | | | 2.6E+01 | n | | | | |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 2.4E-02 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 2.0E+01 | c* | 7.2E+01 | c | | | | | 2.8E+00 | c | | | 8.3E-03 | |
| Strontium, Stable | 7440-24-6 | | | | | 6.0E-01 | I | | | | | 1 | | | 4.7E+04 | n | 6.1E+05 | nm | | | | | 2.2E+04 | n | | | 7.7E+02 | |
| Strychnine | 57-24-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | | 1.2E-01 | |
| Styrene | 100-42-5 | | | | | 2.0E-01 | I | 1.0E+00 | I | V | | 1 | | 8.7E+02 | 6.3E+03 | ns | 3.6E+04 | ns | 1.0E+03 | n | 4.4E+03 | n | 1.6E+03 | n | 1.0E+02 | | 1.8E+00 | 1.1E-01 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | 8.0E-04 | P | | | | | 1 | 0.1 | | 4.9E+01 | n | 4.9E+02 | n | | | | | 2.9E+01 | n | | | 1.7E-01 | |
| Sulfuric Acid | 7664-93-9 | | | | | | | 1.0E-03 | C | | | | | | 1.4E+06 | nm | 6.0E+06 | nm | 1.0E+00 | n | 4.4E+00 | n | | | | | | |
| Systhane | 88671-89-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | | 1.1E+01 | |
| TCMTB | 21564-17-0 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | | 7.6E+00 | |
| Tebuthiuron | 34014-18-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | | 4.3E+03 | n | 4.3E+04 | n | | | | | 2.6E+03 | n | | | 7.3E-01 | |
| Temephos | 3383-96-8 | | | | | 2.0E-02 | H | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | | 1.4E+02 | |
| Terbacil | 5902-51-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | | 1.4E-01 | |
| Terbufos | 13071-79-9 | | | | | 2.5E-05 | H | | | | | 1 | 0.1 | | 1.5E+00 | n | 1.5E+01 | n | | | | | 9.1E-01 | n | | | 2.0E-03 | |
| Terbutryn | 886-50-0 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | | 5.2E-02 | |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | 1.0E-04 | I | | | | | | | | 7.8E+00 | n | 1.0E+02 | n | | | | | 3.7E+00 | n | | | 9.7E-02 | |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | | 5.1E-02 | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 2.6E-02 | I | 7.4E-06 | I | 3.0E-02 | I | | | V | | 1 | | 6.8E+02 | 1.9E+00 | c | 9.3E+00 | c | 3.3E-01 | c | 1.7E+00 | c | 5.2E-01 | c | | | 2.0E-04 | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 2.0E-01 | I | 5.8E-05 | I | 4.0E-03 | P | | | V | | 1 | | 1.9E+03 | 5.6E-01 | c | 2.8E+00 | c | 4.2E-02 | c | 2.1E-01 | c | 6.7E-02 | c | | | 2.6E-05 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10 c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Screening Levels | | | | | | | | | | | | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | volc | muta-gen | GIABS | ABS | Csat | Residential Soil | | Industrial Soil | | Residential Air | | Industrial Air | | Tapwater | | MCL | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | mg/kg | mg/kg | key | mg/kg | key | ug/m$^3$ | key | ug/m$^3$ | key | ug/L | key | ug/L | mg/kg | mg/kg |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | C | 5.9E-06 | C | 1.0E-02 | I | 2.7E-01 | A | V | | 1 | | 1.7E+02 | 5.5E-01 | c | 2.6E+00 | c | 4.1E-01 | c | 2.1E+00 | c | 1.1E-01 | c | 5.0E+00 | 4.9E-05 | 2.3E-03 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | | 1.8E+03 | n | 1.8E+04 | n | | | | | 1.1E+03 | n | | 6.7E+00 | |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 2.0E+01 | H | | | | | | | | | 1 | 0.1 | | 2.4E-02 | c | 8.6E-02 | c | | | | | 3.4E-03 | c | | 1.1E-05 | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | | 3.1E+01 | n | 3.1E+02 | n | | | | | 1.8E+01 | n | | 1.3E-02 | |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | | | | | 8.0E+01 | I | V | | 1 | | 1.1E+03 | 1.1E+05 | nms | 4.6E+05 | nms | 8.3E+04 | n | 3.5E+05 | n | 1.7E+05 | n | | 9.3E+01 | |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | 4.0E-03 | P | | | | | 1 | 0.1 | | 2.4E+02 | n | 2.5E+03 | n | | | | | 1.5E+02 | n | | 1.4E+00 | |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | | | | 1 | | | | | | | | | | | | | 2.0E+00 | | 1.4E-01 |
| Thiobencarb | 28249-77-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 1.3E+00 | |
| Thiodiglycol | 111-48-8 | | | | | 7.0E-02 | X | | | | | 1 | 0.008 | | 5.4E+03 | n | 6.8E+04 | n | | | | | 2.6E+03 | n | | 5.2E-01 | |
| Thiofanox | 39196-18-4 | | | | | 3.0E-04 | H | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 3.8E-03 | |
| Thiophanate, Methyl | 23564-05-8 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | | 4.9E+03 | n | 4.9E+04 | n | | | | | 2.9E+03 | n | | 2.5E+00 | |
| Thiram | 137-26-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 2.6E-01 | |
| Tin | 7440-31-5 | | | | | 6.0E-01 | H | | | | | 1 | | | 4.7E+04 | n | 6.1E+05 | nm | | | | | 2.2E+04 | n | | 5.5E+03 | |
| Titanium Tetrachloride | 7550-45-0 | | | | | | | 1.0E-04 | A | | | 1 | | | 1.4E+05 | nm | 6.0E+05 | nm | 1.0E-01 | n | 4.4E-01 | n | | | | | |
| Toluene | 108-88-3 | | | | | 8.0E-02 | I | 5.0E+00 | I | V | | 1 | | 8.2E+02 | 5.0E+03 | ns | 4.5E+04 | ns | 5.2E+03 | n | 2.2E+04 | n | 2.3E+03 | n | 1.0E+03 | 1.6E+00 | 6.9E-01 |
| Toluidine, p- | 106-49-0 | 1.9E-01 | H | | | | | | | | | 1 | 0.1 | | 2.6E+00 | c | 9.1E+00 | c | | | | | 3.5E-01 | c | | 1.5E-04 | |
| Toxaphene | 8001-35-2 | 1.1E+00 | I | 3.2E-04 | I | | | | | | | 1 | 0.1 | | 4.4E-01 | c | 1.6E+00 | c | 7.6E-03 | c | 3.8E-02 | c | 6.1E-02 | c | 3.0E+00 | 9.4E-03 | 4.6E-01 |
| Tralomethrin | 66841-25-6 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | | 4.6E+02 | n | 4.6E+03 | n | | | | | 2.7E+02 | n | | 1.0E+02 | |
| Tri-n-butyltin | 688-73-3 | | | | | 3.0E-04 | A | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 2.4E-01 | |
| Triallate | 2303-17-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | | 7.9E+02 | n | 8.0E+03 | n | | | | | 4.7E+02 | n | | 1.1E+00 | |
| Triasulfuron | 82097-50-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 3.8E-01 | |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | | 3.1E+02 | n | 3.1E+03 | n | | | | | 1.8E+02 | n | | 2.6E-01 | |
| Tributyl Phosphate | 126-73-8 | 9.2E-03 | P | | | 2.0E-01 | P | | | | | 1 | 0.1 | | 5.3E+01 | c | 1.9E+02 | c | | | | | 7.3E+00 | c | | 3.6E-02 | |
| Tributyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | | |
| Tributyltin Oxide | 56-35-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 5.7E+02 | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | | | 3.0E+01 | I | 3.0E+01 | H | V | | 1 | | 9.1E+02 | 4.3E+04 | ns | 1.8E+05 | nms | 3.1E+04 | n | 1.3E+05 | n | 5.9E+04 | n | | 1.5E+02 | |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 2.9E-02 | H | | | | | | | | | 1 | 0.1 | | 1.7E+01 | c | 5.9E+01 | c | | | | | 2.3E+00 | c | | 6.4E-03 | |
| Trichloroaniline, 2,4,6- | 634-93-5 | 3.4E-02 | H | | | | | | | | | 1 | 0.1 | | 1.4E+01 | c | 5.1E+01 | c | | | | | 2.0E+00 | c | | 1.8E-02 | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | 8.0E-04 | X | | | V | | 1 | 0.1 | 1.5E+02 | 4.9E+01 | n | 4.9E+02 | ns | | | | | 2.9E+01 | n | | 8.7E-02 | |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 2.9E-02 | P | | | 1.0E-02 | I | 2.0E-03 | P | V | | 1 | | 4.0E+02 | 2.2E+01 | c** | 9.9E+01 | c** | 2.1E+00 | n | 8.8E+00 | n | 2.3E+00 | c** | 7.0E+01 | 6.8E-03 | 2.0E-01 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | | | 2.0E+00 | I | 5.0E+00 | I | V | | 1 | | 6.4E+02 | 8.7E+03 | ns | 3.8E+04 | ns | 5.2E+03 | n | 2.2E+04 | n | 9.1E+03 | n | 2.0E+02 | 3.2E+00 | 7.0E-02 |
| Trichloroethane, 1,1,2- | 79-00-5 | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I | | | V | | 1 | | 2.2E+03 | 1.1E+00 | c | 5.3E+00 | c | 1.5E-01 | c | 7.7E-01 | c | 2.4E-01 | c | 5.0E+00 | 7.8E-05 | 1.6E-03 |
| Trichloroethylene | 79-01-6 | 5.9E-03 | C | 2.0E-06 | C | | | | | V | | 1 | | 6.9E+02 | 2.8E+00 | c | 1.4E+01 | c | 1.2E+00 | c | 6.1E+00 | c | 2.0E+00 | c | 5.0E+00 | 7.2E-04 | 1.8E-03 |
| Trichlorofluoromethane | 75-69-4 | | | | | 3.0E-01 | I | 7.0E-01 | H | V | | 1 | | 1.2E+03 | 7.9E+02 | n | 3.4E+03 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.3E+03 | n | | 8.3E-01 | |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | | 6.1E+03 | n | 6.2E+04 | n | | | | | 3.7E+03 | n | | 1.4E+01 | |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P | | | | | 1 | 0.1 | | 4.4E+01 | c** | 1.6E+02 | c** | 7.8E-01 | c | 4.0E+00 | c | 6.1E+00 | c** | | 2.3E-02 | |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | | 6.1E+02 | n | 6.2E+03 | n | | | | | 3.7E+02 | n | | 1.5E-01 | |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | | 4.9E+02 | n | 4.9E+03 | n | | | | | 2.9E+02 | n | 5.0E+01 | 1.6E-01 | 2.8E-02 |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | 5.0E-03 | I | | | V | | 1 | | 1.3E+03 | 3.9E+02 | n | 5.1E+03 | ns | | | | | 1.8E+02 | n | | 7.1E-02 | |
| Trichloropropane, 1,2,3- | 96-18-4 | 3.0E+01 | I | | | 4.0E-03 | I | 3.0E-04 | I | V | M | 1 | | 1.4E+03 | 5.0E-03 | c | 9.5E-02 | c | 3.1E-01 | n | 1.3E+00 | n | 7.2E-04 | c | | 3.1E-07 | |
| Trichloropropene, 1,2,3- | 96-19-5 | | | | | 3.0E-03 | X | 3.0E-04 | P | V | | 1 | | 4.5E+02 | 7.8E-01 | n | 3.3E+00 | n | 3.1E-01 | n | 1.3E+00 | n | 6.2E-01 | n | | 3.1E-04 | |
| Tridiphane | 58138-08-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | | 1.8E+02 | n | 1.8E+03 | n | | | | | 1.1E+02 | n | | 7.8E-01 | |
| Triethylamine | 121-44-8 | | | | | | | 7.0E-03 | I | V | | 1 | | 2.8E+04 | 1.2E+02 | n | 5.2E+02 | n | 7.3E+00 | n | 3.1E+01 | n | 1.5E+01 | n | | 4.4E-03 | |
| Trifluralin | 1582-09-8 | 7.7E-03 | I | | | 7.5E-03 | I | | | | | 1 | 0.1 | | 6.3E+01 | c** | 2.2E+02 | c* | | | | | 8.7E+00 | c* | | 2.9E-01 | |
| Trimethyl Phosphate | 512-56-1 | 3.7E-02 | H | | | | | | | | | 1 | 0.1 | | 1.3E+01 | c | 4.7E+01 | c | | | | | 1.8E+00 | c | | 4.0E-04 | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | | | | | 7.0E-03 | P | V | | 1 | | 2.2E+02 | 6.2E+01 | n | 2.6E+02 | ns | 7.3E+00 | n | 3.1E+01 | n | 1.5E+01 | n | | 2.1E-02 | |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | 1.0E-02 | X | | | V | | 1 | | 1.8E+02 | 7.8E+02 | ns | 1.0E+04 | ns | | | | | 3.7E+02 | n | | 5.2E-01 | |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.019 | | 2.2E+03 | n | 2.7E+04 | n | | | | | 1.1E+03 | n | | 3.9E+00 | |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.0E-02 | I | | | 5.0E-04 | I | | | | | 1 | 0.032 | | 1.9E+01 | c** | 7.9E+01 | c** | | | | | 2.2E+00 | c** | | 1.3E-02 | |
| Triphenylphosphine Oxide | 791-28-6 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | | 1.2E+03 | n | 1.2E+04 | n | | | | | 7.3E+02 | n | | 3.0E+00 | |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 2.0E-02 | P | | | 7.0E-03 | P | | | | | 1 | 0.1 | | 2.4E+01 | c* | 8.6E+01 | c* | | | | | 3.4E+00 | c* | | 3.3E-03 | |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 3.2E-03 | P | | | 1.0E-01 | P | | | | | 1 | 0.1 | | 1.5E+02 | c* | 5.4E+02 | c | | | | | 2.1E+01 | c | | 1.0E+02 | |
| Uranium (Soluble Salts) | NA | | | | | 3.0E-03 | I | 3.0E-04 | A | | | 1 | | | 2.3E+02 | n | 3.1E+03 | n | 3.1E-01 | n | 1.3E+00 | n | 1.1E+02 | n | | 4.9E+01 | |
| Urethane | 51-79-6 | 1.0E+00 | C | 2.9E-04 | C | | | | | | | | | | 6.4E-01 | c | 2.9E+00 | c | 8.4E-03 | c | 4.2E-02 | c | 6.7E-02 | c | | 1.5E-05 | |
| Vanadium Pentoxide | 1314-62-1 | | | 8.3E-03 | P | 9.0E-03 | I | 7.0E-06 | P | | | 0.026 | | | 4.0E+02 | c** | 2.0E+03 | c** | 2.9E-04 | c* | 1.5E-03 | c* | 3.3E+02 | n | | | |
| Vanadium Sulfate | 36907-42-3 | | | | | 2.0E-02 | H | | | | | 0.026 | | | 1.6E+03 | n | 2.0E+04 | n | | | | | 7.3E+02 | n | | | |
| Vanadium and Compounds | NA | | | | | 5.0E-03 | S | | | | | 1 | | | 3.9E+02 | n | 5.2E+03 | n | | | | | 1.8E+02 | n | | 1.8E+02 | |
| Vanadium, Metallic | 7440-62-2 | | | | | 7.0E-05 | P | | | | | 0.026 | | | 5.5E+00 | n | 7.2E+01 | n | | | | | 2.6E+00 | n | | 2.6E+00 | |
| Vernolate | 1929-77-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | | 6.1E+01 | n | 6.2E+02 | n | | | | | 3.7E+01 | n | | 2.9E-02 | |
| Vinclozolin | 50471-44-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | | 1.5E+03 | n | 1.5E+04 | n | | | | | 9.1E+02 | n | | 7.0E-01 | |
| Vinyl Acetate | 108-05-4 | | | | | 1.0E+00 | H | 2.0E-01 | I | V | | 1 | | 2.8E+03 | 9.7E+02 | n | 4.1E+03 | ns | 2.1E+02 | n | 8.8E+02 | n | 4.1E+02 | n | | 8.8E-02 | |
| Vinyl Bromide | 593-60-2 | | | 3.2E-05 | H | | | 3.0E-03 | I | V | | 1 | | 3.4E+03 | 1.1E-01 | c* | 5.6E-01 | c* | 7.6E-02 | c* | 3.8E-01 | c* | 1.5E-01 | c* | | 4.4E-05 | |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I | 1.0E-01 | I | V | M | 1 | | 3.9E+03 | 6.0E-02 | c | 1.7E+00 | c | 1.6E-01 | c | 2.8E+00 | c | 1.6E-02 | c | 2.0E+00 | 5.6E-06 | 6.9E-04 |
| Warfarin | 81-81-2 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | | 1.8E+01 | n | 1.8E+02 | n | | | | | 1.1E+01 | n | | 1.2E-02 | |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | 1 | | 2.6E+02 | 6.3E+02 | ns | 2.7E+03 | ns | 1.0E+02 | n | 4.4E+02 | n | 2.0E+02 | n | 1.0E+04 | 2.0E-01 | 9.8E+00 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 3.9E+02 | 3.4E+03 | ns | 1.7E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 3.9E+02 | 3.4E+03 | ns | 1.7E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 4.3E+02 | 3.8E+03 | ns | 1.9E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | 1 | | | 2.3E+04 | n | 3.1E+05 | nm | | | | | 1.1E+04 | n | | 6.8E+02 | |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | 1 | | | 2.3E+01 | n | 3.1E+02 | n | | | | | 1.1E+01 | n | | | |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 5.3E+00 | |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | 1 | | 2.6E+02 | 6.3E+02 | ns | 2.7E+03 | ns | 1.0E+02 | n | 4.4E+02 | n | 2.0E+02 | n | 1.0E+04 | 2.0E-01 | 9.8E+00 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 3.9E+02 | 3.4E+03 | ns | 1.7E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 3.9E+02 | 3.4E+03 | ns | 1.7E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 4.3E+02 | 3.8E+03 | ns | 1.9E+04 | ns | 7.3E+02 | n | 3.1E+03 | n | 1.2E+03 | n | | 1.2E+00 | |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | 1 | | | 2.3E+04 | n | 3.1E+05 | nm | | | | | 1.1E+04 | n | | 6.8E+02 | |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | 1 | | | 2.3E+01 | n | 3.1E+02 | n | | | | | 1.1E+01 | n | | | |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | | 3.1E+03 | n | 3.1E+04 | n | | | | | 1.8E+03 | n | | 5.3E+00 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| ALAR | 1596-84-5 | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E+01 | 1.1E+02 | 6.5E+05 | 2.7E+01 | 1.2E+04 | 4.2E+04 | | 9.2E+03 |
| Acephate | 30560-19-1 | 8.7E-03 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 7.3E+01 | 2.3E+02 | | 5.6E+01 | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Acetaldehyde | 75-07-0 | | | 2.2E-06 | I | | | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 9.4E+03 | 1.1E+05 | | | 1.0E+01 | 1.0E+01 | | | 8.8E+01 | 8.8E+01 |
| Acetochlor | 34256-82-1 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Acetone | 67-64-1 | | | | | 9.0E-01 | I | 3.1E+01 | A | V | | 1 | | 1.4E+09 | 1.5E+04 | 1.1E+05 | | | | | 7.0E+04 | | 4.7E+05 | 6.1E+04 |
| Acetone Cyanohydrin | 75-86-5 | | | | | 3.0E-03 | P | 6.0E-02 | P | V | | 1 | | 1.4E+09 | 2.6E+04 | 1.1E+05 | | | | | 2.4E+02 | | 1.6E+03 | 2.1E+02 |
| Acetonitrile | 75-05-8 | | | | | | | 6.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 1.3E+05 | | | | | | | 8.7E+02 | 8.7E+02 |
| Acetophenone | 98-86-2 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 6.4E+04 | 2.5E+03 | | | | | 7.8E+03 | | | 7.8E+03 |
| Acetylaminofluorene, 2- | 53-96-3 | 3.8E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E-01 | 5.3E-01 | 2.5E+03 | 1.3E-01 | | | | |
| Acrolein | 107-02-8 | | | | | 5.0E-04 | I | 2.0E-05 | I | V | | 1 | | 1.4E+09 | 7.4E+03 | 2.3E+04 | | | | | 3.9E+01 | | 1.6E-01 | 1.6E-01 |
| Acrylamide | 79-06-1 | 4.5E+00 | I | 1.3E-03 | I | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E-01 | 4.5E-01 | 2.5E+03 | 1.1E-01 | 1.6E+01 | 5.6E+01 | | 1.2E+01 |
| Acrylic Acid | 79-10-7 | | | | | 5.0E-01 | I | 1.0E-03 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+04 | 1.4E+05 | 1.4E+06 | 3.0E+04 |
| Acrylonitrile | 107-13-1 | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A | 2.0E-03 | I | V | | 1 | | 1.4E+09 | 8.3E+03 | 1.1E+04 | 1.2E+00 | | 3.0E-01 | 2.4E-01 | 3.1E+03 | | 1.7E+01 | 1.7E+01 |
| Adiponitrile | 111-69-3 | | | | | | | 6.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 8.5E+06 | 8.5E+06 |
| Alachlor | 15972-60-8 | 5.6E-02 | C | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+01 | 3.6E+01 | | 8.7E+00 | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Aldicarb | 116-06-3 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Aldicarb Sulfone | 1646-88-4 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.8E-02 | 1.2E-01 | 6.8E+02 | 2.9E-02 | 2.4E+00 | 8.4E+00 | | 1.8E+00 |
| Ally | 74223-64-6 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 7.0E+04 | | 1.5E+04 |
| Allyl Alcohol | 107-18-6 | | | | | 5.0E-03 | I | 1.0E-04 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | 1.4E+05 | 3.1E+02 |
| Allyl Chloride | 107-05-1 | 2.1E-02 | C | 6.0E-06 | C | | | 1.0E-03 | I | V | | 1 | | 1.4E+09 | 1.7E+03 | 1.4E+03 | 3.0E+01 | | 6.9E-01 | 6.8E-01 | | | 1.8E+00 | 1.8E+00 |
| Aluminum | 7429-90-5 | | | | | 1.0E+00 | P | 5.0E-03 | P | | | 1 | | 1.4E+09 | | | | | | | 7.8E+04 | | 7.1E+06 | 7.7E+04 |
| Aluminum Phosphide | 20859-73-8 | | | | | 4.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+01 | | | 3.1E+01 |
| Amdro | 67485-29-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Ametryn | 834-12-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+02 | 2.5E+03 | | 5.5E+02 |
| Aminobiphenyl, 4- | 92-67-1 | 2.1E+01 | C | 6.0E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.0E-02 | 9.6E-02 | 5.5E+02 | 2.3E-02 | | | | |
| Aminophenol, m- | 591-27-5 | | | | | 8.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+03 | 2.2E+04 | | 4.9E+03 |
| Aminophenol, p- | 123-30-8 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Amitraz | 33089-61-1 | | | | | 2.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+02 | 7.0E+02 | | 1.5E+02 |
| Ammonium Perchlorate | 7790-98-9 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+01 | | | 5.5E+01 |
| Ammonium Sulfamate | 7773-06-0 | | | | | 2.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.6E+04 | | | 1.6E+04 |
| Aniline | 62-53-3 | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P | 1.0E-03 | I | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+02 | 3.6E+02 | 2.1E+06 | 8.5E+01 | 5.5E+02 | 2.0E+03 | 1.4E+06 | 4.3E+02 |
| Antimony (metallic) | 7440-36-0 | | | | | 4.0E-04 | I | | | | | 0.15 | | 1.4E+09 | | | | | | | 3.1E+01 | | | 3.1E+01 |
| Antimony Pentoxide | 1314-60-9 | | | | | 5.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 3.9E+01 | | | 3.9E+01 |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | 9.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 7.0E+01 | | | 7.0E+01 |
| Antimony Tetroxide | 1332-81-6 | | | | | 4.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 3.1E+01 | | | 3.1E+01 |
| Antimony Trioxide | 1309-64-4 | | | | | | | 2.0E-04 | I | | | 0.15 | | 1.4E+09 | | | | | | | | | 2.8E+05 | 2.8E+05 |
| Apollo | 74115-24-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Aramite | 140-57-8 | 2.5E-02 | I | 7.1E-06 | I | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 2.6E+01 | 8.1E+01 | 4.7E+05 | 1.9E+01 | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Arsenic, Inorganic | 7440-38-2 | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I | 1.5E-05 | C | | | 1 | 0.03 | 1.4E+09 | | | 4.3E-01 | 4.5E+00 | 7.7E+02 | 3.9E-01 | 2.4E+01 | 2.8E+02 | 2.1E+04 | 2.2E+01 |
| Arsine | 7784-42-1 | | | | | 3.5E-06 | C | 5.0E-05 | I | | | 1 | | 1.4E+09 | | | | | | | 2.7E-01 | | 7.1E+04 | 2.7E-01 |
| Assure | 76578-14-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+02 | 2.5E+03 | | 5.5E+02 |
| Asulam | 3337-71-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Atrazine | 1912-24-9 | 2.3E-01 | C | | | 3.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.8E+00 | 8.8E+00 | | 2.1E+00 | 2.7E+03 | 9.8E+03 | | 2.1E+03 |
| Auramine | 492-80-8 | 8.8E-01 | C | 2.5E-04 | C | | | | | | | | | 1.4E+09 | | | 7.3E-01 | | 1.3E+04 | 7.3E-01 | | | | |
| Avermectin B1 | 65195-55-3 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+01 | 1.1E+02 | | 2.4E+01 |
| Azobenzene | 103-33-3 | 1.1E-01 | I | 3.1E-05 | I | | | | | V | | 1 | | 1.4E+09 | 5.8E+05 | | 5.8E+00 | | 4.5E+01 | 5.2E+00 | | | | |
| Barium | 7440-39-3 | | | | | 2.0E-01 | I | 5.0E-04 | H | | | 0.07 | | 1.4E+09 | | | | | | | 1.6E+04 | | 7.1E+05 | 1.5E+04 |
| Baygon | 114-26-1 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Bayleton | 43121-43-3 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Baythroid | 68359-37-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Benefin | 1861-40-1 | | | | | 3.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+04 | 8.4E+04 | | 1.8E+04 |
| Benomyl | 17804-35-2 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Bentazon | 25057-89-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Benzaldehyde | 100-52-7 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 2.4E+04 | 1.2E+03 | | | | | 7.8E+03 | | | 7.8E+03 |
| Benzene | 71-43-2 | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 3.8E+03 | 1.8E+03 | 1.2E+01 | | 1.2E+00 | 1.1E+00 | 3.1E+02 | | 1.2E+02 | 8.6E+01 |
| Benzenethiol | 108-98-5 | | | | | 1.0E-05 | H | | | V | | 1 | | 1.4E+09 | 2.1E+04 | 1.3E+03 | | | | | 7.8E-01 | | | 7.8E-01 |
| Benzidine | 92-87-5 | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I | | | | M | 1 | 0.1 | 1.4E+09 | | | 6.5E-04 | 2.2E-03 | 2.0E+01 | 5.0E-04 | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Benzoic Acid | 65-85-0 | | | | | 4.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+05 | 1.1E+06 | | 2.4E+05 |
| Benzotrichloride | 98-07-7 | 1.3E+01 | I | | | | | | | V | | 1 | | 1.4E+09 | 7.3E+04 | 3.2E+02 | 4.9E-02 | | | 4.9E-02 | | | | |
| Benzyl Alcohol | 100-51-6 | | | | | 1.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Benzyl Chloride | 100-44-7 | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P | 1.0E-03 | P | V | | 1 | | 1.4E+09 | 2.7E+04 | 1.5E+03 | 3.8E+00 | | 1.4E+00 | 1.0E+00 | 1.6E+02 | | 2.9E+01 | 2.4E+01 |
| Beryllium and compounds | 7440-41-7 | | | 2.4E-03 | I | 2.0E-03 | I | 2.0E-05 | I | | | 0.007 | | 1.4E+09 | | | | | 1.4E+03 | 1.4E+03 | 1.6E+02 | | 2.8E+04 | 1.6E+02 |
| Bidrin | 141-66-2 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Bifenox | 42576-02-3 | | | | | 9.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+02 | 2.5E+03 | | 5.5E+02 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Biphenthrin | 82657-04-3 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.2E+03 | 4.2E+03 | | 9.2E+02 |
| Biphenyl, 1,1'- | 92-52-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 1.4E+09 | 1.2E+05 | 2.1E+02 | | | | | 3.9E+03 | | | 3.9E+03 |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 7.0E-02 | H | 1.0E-05 | H | 4.0E-02 | I | | | V | | 1 | | 1.4E+09 | 3.8E+04 | 1.0E+03 | 9.1E+00 | | 9.2E+00 | 4.6E+00 | 3.1E+03 | | | 3.1E+03 |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | 3.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | I | 3.3E-04 | I | | | | | V | | 1 | | 1.4E+09 | 4.6E+04 | 5.1E+03 | 5.8E-01 | | 3.4E-01 | 2.1E-01 | | | | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | I | 2.4E-06 | C | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.6E+01 | 1.5E+02 | 1.4E+06 | 3.5E+01 | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | I | 6.2E-02 | I | | | | | V | | 1 | | 1.4E+09 | 2.0E+03 | 4.2E+03 | 2.9E-03 | | 7.9E-05 | 7.7E-05 | | | | |
| Bisphenol A | 80-05-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Boron And Borates Only | 7440-42-8 | | | | | 2.0E-01 | I | 2.0E-02 | H | | | 1 | | 1.4E+09 | | | | | | | 1.6E+04 | | 2.8E+07 | 1.6E+04 |
| Boron Trifluoride | 7637-07-2 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | 1.8E+07 | 3.1E+03 |
| Bromate | 15541-45-4 | 7.0E-01 | I | | | 4.0E-03 | I | | | | | 1 | | 1.4E+09 | | | 9.1E-01 | | | 9.1E-01 | 3.1E+02 | | | 3.1E+02 |
| Bromo-2-chloroethane, 1- | 107-04-0 | 2.0E+00 | X | 6.0E-04 | X | | | | | V | | 1 | | 1.4E+09 | 6.4E+03 | 2.4E+03 | 3.2E-01 | | 2.6E-02 | 2.4E-02 | | | | |
| Bromobenzene | 108-86-1 | | | | | 8.0E-03 | I | 6.0E-02 | I | V | | 1 | | 1.4E+09 | 9.0E+03 | 6.8E+02 | | | | | 6.3E+02 | | 5.6E+02 | 3.0E+02 |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 4.3E+03 | 9.3E+02 | 1.0E+01 | | 2.8E-01 | 2.7E-01 | 1.6E+03 | | | 1.6E+03 |
| Bromoform | 75-25-2 | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 8.1E+01 | 2.6E+02 | 3.0E+06 | 6.2E+01 | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Bromomethane | 74-83-9 | | | | | 1.4E-03 | I | 5.0E-03 | I | V | | 1 | | 1.4E+09 | 1.5E+03 | 3.6E+03 | | | | | 1.1E+02 | | 7.9E+00 | 7.3E+00 |
| Bromophos | 2104-96-3 | | | | | 5.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Bromoxynil | 1689-84-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Bromoxynil Octanoate | 1689-99-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Butadiene, 1,3- | 106-99-0 | 3.4E+00 | C | 3.0E-05 | I | | | 2.0E-03 | I | V | | 1 | | 1.4E+09 | 9.3E+02 | 6.7E+02 | 1.9E-01 | | 7.6E-02 | 5.4E-02 | | | 1.9E+00 | 1.9E+00 |
| Butanol, N- | 71-36-3 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Butyl Benzyl Phthlate | 85-68-7 | 1.9E-03 | P | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.4E+02 | 1.1E+03 | | 2.6E+02 | 1.6E+04 | 5.6E+04 | | 1.2E+04 |
| Butyl alcohol, sec- | 78-92-2 | | | | | 2.0E+00 | P | 3.0E+01 | P | | | | | 1.4E+09 | | | | | | | 1.6E+05 | | 4.3E+10 | 1.6E+05 |
| Butylate | 2008-41-5 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Butylated hydroxyanisole | 25013-16-5 | 2.0E-04 | C | 5.7E-08 | C | | | | | | | | | 1.4E+09 | | | 3.2E+03 | | 5.8E+07 | 3.2E+03 | | | | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | 1.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+04 | 2.8E+05 | | 6.1E+04 |
| Cacodylic Acid | 75-60-5 | | | | | 2.0E-02 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Cadmium (Diet) | 7440-43-9 | | | 1.8E-03 | I | 1.0E-03 | I | 1.0E-05 | A | | | 0.025 | 0.001 | 1.4E+09 | | | | | 1.8E+03 | 1.8E+03 | 7.8E+01 | 7.0E+02 | 1.4E+04 | 7.0E+01 |
| Caprolactam | 105-60-2 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+04 | 1.4E+05 | | 3.1E+04 |
| Captafol | 2425-06-1 | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.3E+00 | 1.4E+01 | 7.7E+04 | 3.2E+00 | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Captan | 133-06-2 | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.8E+02 | 8.8E+02 | 5.0E+06 | 2.1E+02 | 1.0E+04 | 3.6E+04 | | 7.9E+03 |
| Carbaryl | 63-25-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Carbofuran | 1563-66-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Carbon Disulfide | 75-15-0 | | | | | 1.0E-01 | I | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 7.4E+02 | | | | | 7.8E+03 | | 9.2E+02 | 8.2E+02 |
| Carbon Tetrachloride | 56-23-5 | 1.3E-01 | I | 1.5E-05 | I | 7.0E-04 | I | 1.9E-01 | A | V | | 1 | | 1.4E+09 | 1.6E+03 | 4.6E+02 | 4.9E+00 | | 2.6E-01 | 2.5E-01 | 5.5E+01 | | 3.2E+02 | 4.7E+01 |
| Carbosulfan | 55285-14-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Carboxin | 5234-68-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Ceric oxide | 1306-38-3 | | | | | | | 9.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | | | 1.3E+06 | 1.3E+06 |
| Chloral Hydrate | 302-17-0 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Chloramben | 133-90-4 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.2E+03 | 4.2E+03 | | 9.2E+02 |
| Chloranil | 118-75-2 | 4.0E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E+00 | 5.0E+00 | | 1.2E+00 | | | | |
| Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I | 7.0E-04 | I | | | 1 | 0.04 | 1.4E+09 | | | 1.8E+00 | 1.5E+01 | 3.3E+04 | 1.6E+00 | 3.9E+01 | 3.5E+02 | 9.9E+05 | 3.5E+01 |
| Chlordecone (Kepone) | 143-50-0 | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 6.4E-02 | 2.0E-01 | 7.2E+02 | 4.9E-02 | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Chlorfenvinphos | 470-90-6 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+01 | 2.0E+02 | | 4.3E+01 |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Chlorine | 7782-50-5 | | | | | 1.0E-01 | I | 1.5E-04 | A | | | 1 | | 1.4E+09 | | | | | | | 7.8E+03 | | 2.1E+05 | 7.5E+03 |
| Chlorine Dioxide | 10049-04-4 | | | | | 3.0E-02 | I | 2.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | 2.4E+03 | | 2.8E+05 | 2.3E+03 |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | 3.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 2.4E+03 | | | 2.4E+03 |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+03 | | | | | | | 5.8E+04 | 5.8E+04 |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | | | 2.0E-02 | H | 7.0E-03 | H | V | | 1 | | 1.4E+09 | 1.2E+03 | 7.5E+02 | | | | | 1.6E+03 | | 8.5E+00 | 8.4E+00 |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 4.6E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+00 | 4.4E+00 | | 1.1E+00 | | | | |
| Chloroacetic Acid | 79-11-8 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Chloroacetophenone, 2- | 532-27-4 | | | | | | | 3.0E-05 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 4.3E+04 | 4.3E+04 |
| Chloroaniline, p- | 106-47-8 | 2.0E-01 | P | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.2E+00 | 1.0E+01 | | 2.4E+00 | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Chlorobenzene | 108-90-7 | | | | | 2.0E-02 | I | 5.0E-02 | P | V | | 1 | | 1.4E+09 | 6.9E+03 | 7.6E+02 | | | | | 1.6E+03 | | 3.6E+02 | 2.9E+02 |
| Chlorobenzilate | 510-15-6 | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E+00 | 1.8E+01 | 1.1E+05 | 4.4E+00 | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | 3.0E-02 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | | | 3.0E-03 | P | 3.0E-01 | P | V | | 1 | | 1.4E+09 | 7.3E+03 | 1.2E+02 | | | | | 2.4E+02 | | 2.3E+03 | 2.1E+02 |
| Chlorobutane, 1- | 109-69-3 | | | | | 4.0E-02 | P | | | V | | 1 | | 1.4E+09 | 1.9E+03 | 7.3E+02 | | | | | 3.1E+03 | | | 3.1E+03 |
| Chlorodifluoromethane | 75-45-6 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.4E+09 | 1.0E+03 | 1.7E+03 | | | | | | | 5.3E+04 | 5.3E+04 |
| Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I | 9.8E-02 | A | V | | 1 | | 1.4E+09 | 2.8E+03 | 2.5E+03 | 2.1E+01 | | 3.0E-01 | 3.0E-01 | 7.8E+02 | | 2.9E+02 | 2.1E+02 |
| Chloromethane | 74-87-3 | | | | | | | 9.0E-02 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.3E+03 | | | | | | | 1.2E+02 | 1.2E+02 |
| Chloromethyl Methyl Ether | 107-30-2 | 2.4E+00 | C | 6.9E-04 | C | | | | | V | | 1 | | 1.4E+09 | 5.7E+03 | 2.6E+04 | 2.7E-01 | | 2.0E-02 | 1.9E-02 | | | | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | 8.0E-02 | I | | | V | | 1 | | 1.4E+09 | 8.6E+04 | 1.8E+02 | | | | | 6.3E+03 | | | 6.3E+03 |
| Chloronitrobenzene, o- | 88-73-3 | 3.0E-01 | P | | | 3.0E-03 | P | 1.0E-05 | X | | | 1 | 0.1 | 1.4E+09 | | | 2.1E+00 | 6.7E+00 | | 1.6E+00 | 2.4E+02 | 8.4E+02 | 1.4E+04 | 1.8E+02 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Chloronitrobenzene, p- | 100-00-5 | 6.3E-03 | P | | | 1.0E-03 | P | 6.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | 1.0E+02 | 3.2E+02 | | 7.7E+01 | 7.8E+01 | 2.8E+02 | 8.5E+05 | 6.1E+01 |
| Chlorophenol, 2- | 95-57-8 | | | | | 5.0E-03 | I | | | V | | 1 | | 1.4E+09 | 1.3E+05 | 2.2E+04 | | | | | 3.9E+02 | | | 3.9E+02 |
| Chloropicrin | 76-06-2 | | | | | | | 4.0E-04 | C | | | | | 1.4E+09 | | | | | | | | | 5.7E+05 | 5.7E+05 |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.1E+02 | 6.5E+02 | 3.7E+06 | 1.6E+02 | 1.2E+03 | 4.2E+03 | | 9.2E+02 |
| Chlorotoluene, o- | 95-49-8 | | | | | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 8.7E+03 | 9.1E+02 | | | | | 1.6E+03 | | | 1.6E+03 |
| Chlorotoluene, p- | 106-43-4 | | | | | 7.0E-02 | P | | | V | | 1 | | 1.4E+09 | 7.9E+03 | 2.5E+02 | | | | | 5.5E+03 | | | 5.5E+03 |
| Chlorozotocin | 54749-90-5 | 2.4E+02 | C | 6.9E-02 | C | | | | | | | | | 1.4E+09 | | | 2.7E-03 | | 4.8E+01 | 2.7E-03 | | | | |
| Chlorpropham | 101-21-3 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+04 | 5.6E+04 | | 1.2E+04 |
| Chlorpyrifos | 2921-88-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | 1.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Chlorsulfuron | 64902-72-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Chlorthiophos | 60238-56-4 | | | | | 8.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | 1.5E+00 | I | | | | | 0.013 | | 1.4E+09 | | | | | | | 1.2E+05 | | | 1.2E+05 |
| Chromium(VI) | 18540-29-9 | 5.0E-01 | J | 8.4E-02 | I | 3.0E-03 | I | 1.0E-04 | I | | M | 0.025 | | 1.4E+09 | | | 3.0E-01 | | 1.6E+01 | 2.9E-01 | 2.4E+02 | | 1.4E+05 | 2.3E+02 |
| Chromium, Total | 7440-47-3 | | | | | | | | | | | 0.013 | | 1.4E+09 | | | | | | | | | | |
| Cobalt | 7440-48-4 | | | 9.0E-03 | P | 3.0E-04 | P | 6.0E-06 | P | | | 1 | | 1.4E+09 | | | | | 3.7E+02 | 3.7E+02 | 2.4E+01 | | 8.5E+03 | 2.3E+01 |
| Copper | 7440-50-8 | | | | | 4.0E-02 | H | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | | 3.1E+03 |
| Cresol, m- | 108-39-4 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | 8.5E+08 | 3.1E+03 |
| Cresol, o- | 95-48-7 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | 8.5E+08 | 3.1E+03 |
| Cresol, p- | 106-44-5 | | | | | 5.0E-03 | H | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | 8.5E+08 | 3.1E+02 |
| Cresol, p-chloro-m- | 59-50-7 | | | | | 1.0E-01 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Cresols | 1319-77-3 | | | | | 1.0E-01 | A | 6.0E-01 | C | V | | 1 | | 1.4E+09 | 3.3E+05 | 5.0E+04 | | | | | 7.8E+03 | | 2.0E+05 | 7.5E+03 |
| Crotonaldehyde, trans- | 123-73-9 | 1.9E+00 | H | | | | | | | V | | 1 | | 1.4E+09 | 2.0E+04 | 1.7E+04 | 3.4E-01 | | | 3.4E-01 | | | | |
| Cumene | 98-82-8 | | | | | 1.0E-01 | I | 4.0E-01 | I | V | | 1 | | 1.4E+09 | 6.7E+03 | 2.7E+02 | | | | | 7.8E+03 | | 2.8E+03 | 2.1E+03 |
| Cupferron | 135-20-6 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | | | 1.4E+09 | | | 2.9E+00 | | 5.3E+04 | 2.9E+00 | | | | |
| Cyanazine | 21725-46-2 | 8.4E-01 | H | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 7.6E-01 | 2.4E+00 | | 5.8E-01 | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| **Cyanides** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | 4.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | | 3.1E+03 |
| ~Copper Cyanide | 544-92-3 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | | 3.9E+02 |
| ~Cyanide (CN-) | 57-12-5 | | | | | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 5.0E+04 | 1.0E+07 | | | | | 1.6E+03 | | | 1.6E+03 |
| ~Cyanogen | 460-19-5 | | | | | 4.0E-02 | I | | | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.5E+03 | | | | | 3.1E+03 | | | 3.1E+03 |
| ~Cyanogen Bromide | 506-68-3 | | | | | 9.0E-02 | I | | | V | | 1 | | 1.4E+09 | 9.7E+02 | 1.0E+05 | | | | | 7.0E+03 | | | 7.0E+03 |
| ~Cyanogen Chloride | 506-77-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 1.4E+09 | 2.1E+03 | 4.3E+03 | | | | | 3.9E+03 | | | 3.9E+03 |
| ~Hydrogen Cyanide | 74-90-8 | | | | | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | | 1.4E+09 | 6.1E+03 | 1.2E+05 | | | | | 1.6E+03 | | 1.9E+01 | 1.9E+01 |
| ~Potassium Cyanide | 151-50-8 | | | | | 5.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+03 | | | 3.9E+03 |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | 2.0E-01 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 1.6E+04 | | | 1.6E+04 |
| ~Silver Cyanide | 506-64-9 | | | | | 1.0E-01 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 7.8E+03 | | | 7.8E+03 |
| ~Sodium Cyanide | 143-33-9 | | | | | 4.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | | 3.1E+03 |
| ~Thiocyanate | 463-56-9 | | | | | 2.0E-04 | P | | | V | | 1 | | 1.4E+09 | 7.1E+03 | 4.6E+03 | | | | | 1.6E+01 | | | 1.6E+01 |
| ~Zinc Cyanide | 557-21-1 | | | | | 5.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+03 | | | 3.9E+03 |
| Cyclohexane | 110-82-7 | | | | | | | 6.0E+00 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+02 | | | | | | | 7.0E+03 | 7.0E+03 |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 2.3E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.8E+01 | 8.8E+01 | | 2.1E+01 | | | | |
| Cyclohexanone | 108-94-1 | | | | | 5.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+05 | 1.4E+06 | | 3.1E+05 |
| Cyclohexylamine | 108-91-8 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+04 | 5.6E+04 | | 1.2E+04 |
| Cyhalothrin/karate | 68085-85-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Cypermethrin | 52315-07-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Cyromazine | 66215-27-8 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.9E+02 | 2.1E+03 | | 4.6E+02 |
| DDD | 72-54-8 | 2.4E-01 | I | 6.9E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.7E+00 | 8.4E+00 | 4.8E+04 | 2.0E+00 | | | | |
| DDE, p,p'- | 72-55-9 | 3.4E-01 | I | 9.7E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+00 | 6.0E+00 | 3.4E+04 | 1.4E+00 | | | | |
| DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I | | | | | 1 | 0.03 | 1.4E+09 | | | 1.9E+00 | 2.0E+01 | 3.4E+04 | 1.7E+00 | 3.9E+01 | 4.7E+02 | | 3.6E+01 |
| Dacthal | 1861-32-1 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Dalapon | 75-99-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 7.0E-04 | I | | | 7.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 9.1E+02 | 2.9E+03 | | 6.9E+02 | 5.5E+02 | 2.0E+03 | | 4.3E+02 |
| Demeton | 8065-48-3 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+00 | 1.1E+01 | | 2.4E+00 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | I | | | 6.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 5.3E+02 | 1.7E+03 | | 4.1E+02 | 4.7E+04 | 1.7E+05 | | 3.7E+04 |
| Diallate | 2303-16-4 | 6.1E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+01 | 3.3E+01 | | 8.0E+00 | | | | |
| Diazinon | 333-41-5 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+01 | 2.0E+02 | | 4.3E+01 |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P | 2.0E-04 | I | V | M | 1 | | 1.4E+09 | 3.4E+04 | 9.8E+02 | 1.9E-01 | | 5.5E-03 | 5.4E-03 | 1.6E+01 | | 7.2E+00 | 4.9E+00 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | I | 2.7E-05 | C | 2.0E-02 | I | | | V | | 1 | 0.1 | 1.4E+09 | 8.6E+03 | 8.0E+02 | 7.6E+00 | 2.4E+01 | 7.7E-01 | 6.8E-01 | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Dibromoethane, 1,2- | 106-93-4 | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 9.3E+03 | 1.3E+03 | 3.2E-01 | | 3.8E-02 | 3.4E-02 | 7.0E+02 | | 8.7E+01 | 7.8E+01 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | | | 1.0E-02 | H | 4.0E-03 | X | V | | 1 | | 1.4E+09 | 6.1E+03 | 2.8E+03 | | | | | 7.8E+02 | | 2.5E+01 | 2.5E+01 |
| Dibutyl Phthalate | 84-74-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Dibutyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Dicamba | 1918-00-9 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Dichloro-2-butene, 1,4- | 764-41-0 | | | 4.2E-03 | P | | | | | V | | 1 | | 1.4E+09 | 1.1E+04 | 5.2E+02 | | | 6.5E-03 | 6.5E-03 | | | | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 1.4E+09 | 1.2E+04 | 5.2E+02 | | | 6.9E-03 | 6.9E-03 | | | | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 1.4E+09 | 1.2E+04 | 7.6E+02 | | | 6.9E-03 | 6.9E-03 | | | | |
| Dichloroacetic Acid | 79-43-6 | 5.0E-02 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E+01 | 4.1E+01 | | 9.7E+00 | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Dichlorobenzene, 1,2- | 95-50-1 | | | | | 9.0E-02 | I | 2.0E-01 | H | V | | 1 | | 1.4E+09 | 1.3E+04 | 3.8E+02 | | | | | 7.0E+03 | | 2.6E+03 | 1.9E+03 |
| Dichlorobenzene, 1,4- | 106-46-7 | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A | 8.0E-01 | I | V | | 1 | | 1.4E+09 | 1.1E+04 | | 1.2E+02 | | 2.5E+00 | 2.4E+00 | 5.5E+03 | | 9.4E+03 | 3.5E+03 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 4.5E-01 | I | 3.4E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+00 | 4.5E+00 | 9.7E+03 | 1.1E+00 | | | | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | 9.0E-03 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+02 | 2.5E+03 | | 5.5E+02 |
| Dichlorodifluoromethane | 75-71-8 | | | | | 2.0E-01 | I | 2.0E-01 | H | V | | 1 | | 1.4E+09 | 9.0E+02 | 8.5E+02 | | | | | 1.6E+04 | | 1.9E+02 | 1.8E+02 |
| Dichloroethane, 1,1- | 75-34-3 | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P | | | V | | 1 | | 1.4E+09 | 2.2E+03 | 1.7E+03 | 1.1E+02 | | 3.4E+00 | 3.3E+00 | 1.6E+04 | | | 1.6E+04 |
| Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 2.0E-02 | P | 2.4E+00 | A | V | | 1 | | 1.4E+09 | 4.9E+03 | 3.0E+03 | 7.0E+00 | | 4.6E-01 | 4.3E-01 | 1.6E+03 | | 1.3E+04 | 1.4E+03 |
| Dichloroethylene, 1,1- | 75-35-4 | | | | | 5.0E-02 | I | 2.0E-01 | I | V | | 1 | | 1.4E+09 | 1.2E+03 | 1.2E+03 | | | | | 3.9E+03 | | 2.6E+02 | 2.4E+02 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | 9.0E-03 | H | | | V | | 1 | | 1.4E+09 | 2.7E+03 | 1.3E+03 | | | | | 7.0E+02 | | | 7.0E+02 |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 1.0E-02 | P | | | V | | 1 | | 1.4E+09 | 2.7E+03 | 2.4E+03 | | | | | 7.8E+02 | | | 7.8E+02 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | | | 2.0E-02 | I | 6.0E-02 | P | V | | 1 | | 1.4E+09 | 2.7E+03 | 1.7E+03 | | | | | 1.6E+03 | | 1.7E+02 | 1.5E+02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.05 | 1.4E+09 | | | | | | | 7.8E+02 | 5.6E+03 | | 6.9E+02 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+02 | 2.2E+03 | | 4.9E+02 |
| Dichloropropane, 1,2- | 78-87-5 | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A | 4.0E-03 | I | V | | 1 | | 1.4E+09 | 3.9E+03 | 1.4E+03 | 1.8E+01 | | 9.4E-01 | 9.0E-01 | 7.0E+03 | | 1.6E+01 | 1.6E+01 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | 2.0E-02 | P | | | V | | 1 | | 1.4E+09 | 7.3E+03 | 1.5E+03 | | | | | 1.6E+03 | | | 1.6E+03 |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Dichloropropene, 1,3- | 542-75-6 | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 3.7E+03 | 1.6E+03 | 6.4E+00 | | 2.2E+00 | 1.7E+00 | 2.4E+03 | | 7.7E+01 | 7.4E+01 |
| Dichlorvos | 62-73-7 | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I | 5.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | 2.2E+00 | 7.0E+00 | 4.0E+04 | 1.7E+00 | 3.9E+01 | 1.4E+02 | 7.1E+05 | 3.1E+01 |
| Dicyclopentadiene | 77-73-6 | | | | | 8.0E-03 | P | 7.0E-03 | P | V | | 1 | | 1.4E+09 | 3.9E+03 | 1.3E+02 | | | | | 6.3E+02 | | 2.8E+01 | 2.7E+01 |
| Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.0E-02 | 1.3E-01 | 7.2E+02 | 3.0E-02 | 3.9E+00 | 1.4E+01 | | 3.1E+00 |
| Diethanolamine | 111-42-2 | | | | | | | 3.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 4.3E+06 | 4.3E+06 |
| Diethyl Phthalate | 84-66-2 | | | | | 8.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+04 | 2.2E+05 | | 4.9E+04 |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | | | 3.0E-02 | P | 1.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | 1.4E+05 | 1.8E+03 |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | | | 6.0E-02 | P | 3.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+03 | 1.7E+04 | 4.3E+05 | 3.6E+03 |
| Diethylformamide | 617-84-5 | | | | | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Diethylstilbestrol | 56-53-1 | 3.5E+02 | C | 1.0E-01 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.8E-03 | 5.8E-03 | 3.3E+01 | 1.4E-03 | | | | |
| Difenzoquat | 43222-48-6 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+03 | 2.2E+04 | | 4.9E+03 |
| Diflubenzuron | 35367-38-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Difluoroethane, 1,1- | 75-37-6 | | | | | | | 4.0E+01 | I | V | | 1 | | 1.4E+09 | 1.2E+03 | 1.4E+03 | | | | | | | 5.2E+04 | 5.2E+04 |
| Dihydrosafrole | 94-58-6 | 4.4E-02 | C | 1.3E-05 | C | | | | | | | | | 1.4E+09 | | | 1.5E+01 | | 2.5E+05 | 1.5E+01 | | | | |
| Diisopropyl Ether | 108-20-3 | | | | | | | 4.0E-01 | P | V | | 1 | | 1.4E+09 | 3.3E+03 | 2.3E+03 | | | | | | | 1.4E+03 | 1.4E+03 |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | 8.0E-02 | I | | | V | | 1 | | 1.4E+09 | 3.1E+04 | 5.3E+02 | | | | | 6.3E+03 | | | 6.3E+03 |
| Dimethipin | 55290-64-7 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Dimethoate | 60-51-5 | | | | | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+01 | 5.6E+01 | | 1.2E+01 |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 1.4E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.6E+01 | 1.5E+02 | | 3.5E+01 | | | | |
| Dimethyl methylphosphonate | 756-79-6 | 1.7E-03 | P | | | 6.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 3.8E+02 | 1.2E+03 | | 2.9E+02 | 4.7E+03 | 1.7E+04 | | 3.7E+03 |
| Dimethylamino azobenzene [p-] | 60-11-7 | 4.6E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E-01 | 4.4E-01 | 2.5E+03 | 1.1E-01 | | | | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 5.8E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+00 | 3.5E+00 | | 8.4E-01 | | | | |
| Dimethylaniline, 2,4- | 95-68-1 | 7.5E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.5E-01 | 2.7E+00 | | 6.5E-01 | | | | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | 2.0E-03 | I | | | V | | 1 | | 1.4E+09 | 3.4E+04 | 8.3E+02 | | | | | 1.6E+02 | | | 1.6E+02 |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 1.1E+01 | P | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E-02 | 1.8E-01 | | 4.4E-02 | | | | |
| Dimethylformamide | 68-12-2 | | | | | 1.0E-01 | P | 3.0E-02 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | 4.3E+07 | 6.1E+03 |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | | | 1.0E-04 | X | 2.0E-06 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | 2.8E+03 | 6.1E+00 |
| Dimethylhydrazine, 1,2- | 540-73-8 | 5.5E+02 | C | 1.6E-01 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E-03 | 3.7E-03 | 2.1E+01 | 8.8E-04 | | | | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | 6.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+01 | 1.7E+02 | | 3.7E+01 |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Dimethylterephthalate | 120-61-6 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 2.3E+04 | 5.5E+00 | | | | | 7.8E+03 | | | 7.8E+03 |
| Dimethylvinylchloride | 513-37-1 | 4.5E-02 | C | 1.3E-05 | C | | | | | | | | | 1.4E+09 | | | 1.4E+01 | | 2.5E+05 | 1.4E+01 | | | | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 6.8E-01 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.4E-01 | 3.0E+00 | | 7.1E-01 | | | | |
| Dinitrotoluene, 2,4- | 121-14-2 | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I | | | | | 1 | 0.102 | 1.4E+09 | | | 2.1E+00 | 6.4E+00 | 3.7E+04 | 1.6E+00 | 1.6E+02 | 5.5E+02 | | 1.2E+02 |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | 1.0E-03 | P | | | | | 1 | 0.099 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | 2.0E-03 | S | | | | | 1 | 0.006 | 1.4E+09 | | | | | | | 1.6E+02 | 9.3E+03 | | 1.5E+02 |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | 2.0E-03 | S | | | | | 1 | 0.009 | 1.4E+09 | | | | | | | 1.6E+02 | 6.2E+03 | | 1.5E+02 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Dinoseb | 88-85-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Dioxane, 1,4- | 123-91-1 | 1.1E-02 | I | 7.7E-06 | C | 1.0E-01 | A | 3.6E+00 | A | | | 1 | 0.1 | 1.4E+09 | | | 5.8E+01 | 1.8E+02 | 4.3E+05 | 4.4E+01 | 7.8E+03 | 2.8E+04 | 5.1E+09 | 6.1E+03 |
| **Dioxins** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 6.2E+03 | I | 1.3E+00 | I | | | | | | | 1 | 0.03 | 1.4E+09 | | | 1.0E-04 | 1.1E-03 | 2.5E+00 | 9.4E-05 | | | | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 1.0E-09 | A | 4.0E-08 | C | | | 1 | 0.03 | 1.4E+09 | | | 4.9E-06 | 5.2E-05 | 8.7E-02 | 4.5E-06 | 7.8E-05 | 9.3E-04 | 5.7E+01 | 7.2E-05 |
| Diphenamid | 957-51-7 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Diphenyl Sulfone | 127-63-9 | | | | | 8.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Diphenylamine | 122-39-4 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Diphenylhydrazine, 1,2- | 122-66-7 | 8.0E-01 | I | 2.2E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.0E-01 | 2.5E+00 | 1.5E+04 | 6.1E-01 | | | | |
| Diquat | 85-00-7 | | | | | 2.2E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.7E+02 | 6.2E+02 | | 1.3E+02 |
| Direct Black 38 | 1937-37-7 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.6E-02 | 2.7E-01 | 1.6E+03 | 6.6E-02 | | | | |
| Direct Blue 6 | 2602-46-2 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.6E-02 | 2.7E-01 | 1.6E+03 | 6.6E-02 | | | | |
| Direct Brown 95 | 16071-86-6 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.5E-02 | 3.0E-01 | 1.7E+03 | 7.3E-02 | | | | |
| Disulfoton | 298-04-4 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+00 | 1.1E+01 | | 2.4E+00 |
| Dithiane, 1,4- | 505-29-3 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Diuron | 330-54-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Dodine | 2439-10-3 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| EPTC | 759-94-4 | | | | | 2.5E-02 | I | | | V | | 1 | | 1.4E+09 | 1.3E+05 | 4.1E+02 | | | | | 2.0E+03 | | | 2.0E+03 |
| Endosulfan | 115-29-7 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+02 | 1.7E+03 | | 3.7E+02 |
| Endothall | 145-73-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Endrin | 72-20-8 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Epichlorohydrin | 106-89-8 | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P | 1.0E-03 | I | V | | 1 | | 1.4E+09 | 2.0E+04 | 1.1E+04 | 6.5E+01 | | 4.1E+01 | 2.5E+01 | 4.7E+02 | | 2.1E+01 | 2.0E+01 |
| Epoxybutane, 1,2- | 106-88-7 | | | | | | | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 8.2E+03 | 1.5E+04 | | | | | | | 1.7E+02 | 1.7E+02 |
| Ethephon | 16672-87-0 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Ethion | 563-12-2 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+01 | 1.4E+02 | | 3.1E+01 |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | | | 3.0E-01 | H | 3.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+04 | 8.4E+04 | 4.3E+08 | 1.8E+04 |
| Ethoxyethanol, 2- | 110-80-5 | | | | | 4.0E-01 | H | 2.0E-01 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 1.1E+05 | 2.8E+08 | 2.4E+04 |
| Ethyl Acetate | 141-78-6 | | | | | 9.0E-01 | I | | | V | | 1 | | 1.4E+09 | 9.3E+03 | 1.1E+04 | | | | | 7.0E+04 | | | 7.0E+04 |
| Ethyl Acrylate | 140-88-5 | 4.8E-02 | H | | | | | | | V | | 1 | | 1.4E+09 | 6.8E+03 | 2.5E+03 | 1.3E+01 | | | 1.3E+01 | | | | |
| Ethyl Chloride | 75-00-3 | | | | | | | 1.0E+01 | I | V | | 1 | | 1.4E+09 | 1.4E+03 | 2.1E+03 | | | | | | | 1.5E+04 | 1.5E+04 |
| Ethyl Ether | 60-29-7 | | | | | 2.0E-01 | I | | | V | | 1 | | 1.4E+09 | 3.4E+03 | 1.0E+04 | | | | | 1.6E+04 | | | 1.6E+04 |
| Ethyl Methacrylate | 97-63-2 | | | | | 9.0E-02 | H | | | V | | 1 | | 1.4E+09 | 6.2E+03 | 1.1E+03 | | | | | 7.0E+03 | | | 7.0E+03 |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | 1.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E-01 | 2.8E+00 | | 6.1E-01 |
| Ethylbenzene | 100-41-4 | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I | 1.0E+00 | I | V | | 1 | | 1.4E+09 | 6.1E+03 | 4.8E+02 | 5.8E+01 | | 5.9E+00 | 5.4E+00 | 7.8E+03 | | 6.4E+03 | 3.5E+03 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | 3.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Ethylene Diamine | 107-15-3 | | | | | 9.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+03 | 2.5E+04 | | 5.5E+03 |
| Ethylene Glycol | 107-21-1 | | | | | 2.0E+00 | I | 4.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+05 | 5.6E+05 | 5.7E+08 | 1.2E+05 |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | | | 5.0E-01 | I | 1.3E+01 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+04 | 1.4E+05 | 1.8E+10 | 3.1E+04 |
| Ethylene Oxide | 75-21-8 | 3.1E-01 | C | 8.8E-05 | C | | | 3.0E-02 | C | V | | 1 | | 1.4E+09 | 6.6E+03 | 1.2E+05 | 2.1E+00 | | 1.8E-01 | 1.7E-01 | | | 2.1E+02 | 2.1E+02 |
| Ethylene Thiourea | 96-45-7 | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+01 | 4.5E+01 | 2.5E+05 | 1.1E+01 | 6.3E+00 | 2.2E+01 | | 4.9E+00 |
| Ethyleneimine | 151-56-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | | | 1.4E+09 | | | 9.8E-03 | | 1.7E+02 | 9.8E-03 | | | | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+05 | 8.4E+05 | | 1.8E+05 |
| Express | 101200-48-0 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+02 | 2.2E+03 | | 4.9E+02 |
| Fenamiphos | 22224-92-6 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+01 | 7.0E+01 | | 1.5E+01 |
| Fenpropathrin | 39515-41-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Fluometuron | 2164-17-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Fluoride | 16984-48-8 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | 1.4E+09 | | | | | | | 3.1E+03 | | 1.8E+07 | 3.1E+03 |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | | | 6.0E-02 | I | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 4.7E+03 | | 1.8E+07 | 4.7E+03 |
| Fluridone | 59756-60-4 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+03 | 2.2E+04 | | 4.9E+03 |
| Flurprimidol | 56425-91-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Flutolanil | 66332-96-5 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+03 | 1.7E+04 | | 3.7E+03 |
| Fluvalinate | 69409-94-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Folpet | 133-07-3 | 3.5E-03 | I | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.8E+02 | 5.8E+02 | | 1.4E+02 | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Fomesafen | 72178-02-0 | 1.9E-01 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.4E+00 | 1.1E+01 | | 2.6E+00 | | | | |
| Fonofos | 944-22-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Formaldehyde | 50-00-0 | | | 1.3E-05 | I | 2.0E-01 | I | 9.8E-03 | A | | | 1 | 0.1 | 1.4E+09 | | | | | 2.5E+05 | 2.5E+05 | 1.6E+04 | 5.6E+04 | 1.4E+07 | 1.2E+04 |
| Formic Acid | 64-18-6 | | | | | 2.0E+00 | H | 3.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+05 | 5.6E+05 | 4.3E+06 | 1.2E+05 |
| Fosetyl-AL | 39148-24-8 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+05 | 8.4E+05 | | 1.8E+05 |
| **Furans** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | 1.0E-03 | X | | | V | | 1 | | 1.4E+09 | 2.1E+05 | 1.7E+02 | | | | | 7.8E+01 | | | 7.8E+01 |
| ~Furan | 110-00-9 | | | | | 1.0E-03 | I | | | V | | 1 | | 1.4E+09 | 2.8E+03 | 6.2E+03 | | | | | 7.8E+01 | | | 7.8E+01 |
| Furazolidone | 67-45-8 | 3.8E+00 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E-01 | 5.3E-01 | | 1.3E-01 | | | | |
| Furfural | 98-01-1 | | | | | 3.0E-03 | I | 5.0E-02 | H | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | 7.1E+07 | 1.8E+02 |
| Furium | 531-82-8 | 1.5E+00 | C | 4.3E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.3E-01 | 1.4E+00 | 7.7E+03 | 3.2E-01 | | | | |
| Furmecyclox | 60568-05-0 | 3.0E-02 | I | 8.6E-06 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.1E+01 | 6.7E+01 | 3.9E+05 | 1.6E+01 | | | | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Glufosinate, Ammonium | 77182-82-2 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+01 | 1.1E+02 | | 2.4E+01 |
| Glutaraldehyde | 111-30-8 | | | | | | | 8.0E-05 | C | | | | | 1.4E+09 | | | | | | | | | 1.1E+05 | 1.1E+05 |
| Glycidyl | 765-34-4 | | | | | 4.0E-04 | I | 1.0E-03 | H | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+01 | 1.1E+02 | 1.4E+06 | 2.4E+01 |
| Glyphosate | 1071-83-6 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Goal | 42874-03-3 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Guthion | 86-50-0 | | | | | 3.0E-03 | A | 1.0E-02 | A | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | 1.4E+07 | 1.8E+02 |
| Haloxyfop, Methyl | 69806-40-2 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+00 | 1.4E+01 | | 3.1E+00 |
| Harmony | 79277-27-3 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Heptachlor | 76-44-8 | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E-01 | 4.5E-01 | 2.5E+03 | 1.1E-01 | 3.9E+01 | 1.4E+02 | | 3.1E+01 |
| Heptachlor Epoxide | 1024-57-3 | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 7.0E-02 | 2.2E-01 | 1.3E+03 | 5.3E-02 | 1.0E+00 | 3.6E+00 | | 7.9E-01 |
| Hexabromobenzene | 87-82-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | 2.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 1.6E+01 | | | 1.6E+01 |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.0E-01 | 1.3E+00 | 7.2E+03 | 3.0E-01 | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 8.2E+00 | 2.6E+01 | 1.5E+05 | 6.2E+00 | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A | | | | | 1 | 0.1 | 1.4E+09 | | | 1.0E-01 | 3.2E-01 | 1.8E+03 | 7.7E-02 | 6.3E+02 | 2.2E+03 | | 4.9E+02 |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 1.8E+00 | I | 5.3E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E-01 | 1.1E+00 | 6.2E+03 | 2.7E-01 | | | | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I | | | | | 1 | 0.04 | 1.4E+09 | | | 5.8E-01 | 4.6E+00 | 1.1E+04 | 5.2E-01 | 2.4E+01 | 2.1E+02 | | 2.1E+01 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.8E+00 | I | 5.1E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E-01 | 1.1E+00 | 6.5E+03 | 2.7E-01 | | | | |
| Hexachlorocyclopentadiene | 77-47-4 | | | | | 6.0E-03 | I | 2.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+02 | 1.7E+03 | 2.8E+05 | 3.7E+02 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | I | 4.0E-06 | I | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.6E+01 | 1.5E+02 | 8.3E+05 | 3.5E+01 | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Hexachlorophene | 70-30-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 1.1E-01 | I | | | 3.0E-03 | I | | | | | 1 | 0.015 | 1.4E+09 | | | 5.8E+00 | 1.2E+02 | | 5.5E+00 | 2.4E+02 | 5.6E+03 | | 2.3E+02 |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | | | | | 1.0E-05 | I | V | | 1 | | 1.4E+09 | 3.2E+05 | 5.2E+03 | | | | | | | 3.4E+00 | 3.4E+00 |
| Hexane, N- | 110-54-3 | | | | | 6.0E-02 | H | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 8.9E+02 | 1.4E+02 | | | | | 4.7E+03 | | 6.5E+02 | 5.7E+02 |
| Hexanedioic Acid | 124-04-9 | | | | | 2.0E+00 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+05 | 5.6E+05 | | 1.2E+05 |
| Hexanone, 2- | 591-78-6 | | | | | 5.0E-03 | I | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 3.3E+03 | | | | | 3.9E+02 | | 4.5E+02 | 2.1E+02 |
| Hexazinone | 51235-04-2 | | | | | 3.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+03 | 9.2E+03 | | 2.0E+03 |
| Hydrazine | 302-01-2 | 3.0E+00 | I | 4.9E-03 | I | | | 3.0E-05 | P | | | 1 | | 1.4E+09 | | | 2.1E-01 | | 6.8E+02 | 2.1E-01 | | | 4.3E+04 | 4.3E+04 |
| Hydrazine Sulfate | 10034-93-2 | 3.0E+00 | I | 4.9E-03 | I | | | | | | | 1 | | 1.4E+09 | | | 2.1E-01 | | 6.8E+02 | 2.1E-01 | | | | |
| Hydrogen Chloride | 7647-01-0 | | | | | | | 2.0E-02 | I | | | 1 | | 1.4E+09 | | | | | | | | | 2.8E+07 | 2.8E+07 |
| Hydrogen Fluoride | 7664-39-3 | | | | | 4.0E-02 | C | 1.4E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | 2.0E+07 | 3.1E+03 |
| Hydrogen Sulfide | 7783-06-4 | | | | | | | 2.0E-03 | I | | | 1 | | 1.4E+09 | | | | | | | | | 2.8E+06 | 2.8E+06 |
| Hydroquinone | 123-31-9 | 6.0E-02 | P | | | 4.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+01 | 3.4E+01 | | 8.1E+00 | 3.1E+03 | 1.1E+04 | | 2.4E+03 |
| Imazalil | 35554-44-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Imazaquin | 81335-37-7 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 7.0E+04 | | 1.5E+04 |
| Iodine | 7553-56-2 | | | | | 1.0E-02 | A | | | | | | | 1.4E+09 | | | | | | | 7.8E+02 | | | 7.8E+02 |
| Iprodione | 36734-19-7 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 1.1E+04 | | 2.4E+03 |
| Iron | 7439-89-6 | | | | | 7.0E-01 | P | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+04 | | | 5.5E+04 |
| Isobutyl Alcohol | 78-83-1 | | | | | 3.0E-01 | I | | | V | | 1 | | 1.4E+09 | 3.0E+04 | 1.0E+04 | | | | | 2.4E+04 | | | 2.4E+04 |
| Isophorone | 78-59-1 | 9.5E-04 | I | | | 2.0E-01 | I | 2.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | 6.7E+02 | 2.1E+03 | | 5.1E+02 | 1.6E+04 | 5.6E+04 | 2.8E+09 | 1.2E+04 |
| Isopropalin | 33820-53-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.2E+03 | 4.2E+03 | | 9.2E+02 |
| Isopropanol | 67-63-0 | | | | | | | 7.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 9.9E+09 | 9.9E+09 |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Isoxaben | 82558-50-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| JP-7 | NA | | | | | | | 3.0E-01 | A | V | | 1 | | 1.4E+09 | | | | | | | | | 4.3E+08 | 4.3E+08 |
| Kerb | 23950-58-5 | | | | | 7.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.9E+03 | 2.1E+04 | | 4.6E+03 |
| Lactofen | 77501-63-4 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| **Lead Compounds** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | | | | 1 | | 1.4E+09 | | | | | | | | | | 4.0E+02 |
| ~Tetraethyl Lead | 78-00-2 | | | | | 1.0E-07 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E-03 | 2.8E-02 | | 6.1E-03 |
| Lead acetate | 301-04-2 | 2.8E-01 | C | 8.0E-05 | C | | | | | | | | | 1.4E+09 | | | 2.3E+00 | | 4.1E+04 | 2.3E+00 | | | | |
| Lead subacetate | 1335-32-6 | 3.8E-02 | C | 1.1E-05 | C | | | | | | | | | 1.4E+09 | | | 1.7E+01 | | 3.0E+05 | 1.7E+01 | | | | |
| Linuron | 330-55-2 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Lithium | 7439-93-2 | | | | | 2.0E-03 | P | | | | | 1 | | 1.4E+09 | | | | | | | 1.6E+02 | | | 1.6E+02 |
| Lithium Perchlorate | 7791-03-9 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+01 | | | 5.5E+01 |
| Londax | 83055-99-6 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+04 | 5.6E+04 | | 1.2E+04 |
| MCPA | 94-74-6 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+01 | 1.4E+02 | | 3.1E+01 |
| MCPB | 94-81-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| MCPP | 93-65-2 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Malathion | 121-75-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Maleic Anhydride | 108-31-6 | | | | | 1.0E-01 | I | 7.0E-04 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | 9.9E+05 | 6.1E+03 |
| Maleic Hydrazide | 123-33-1 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+04 | 1.4E+05 | | 3.1E+04 |
| Malononitrile | 109-77-3 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Mancozeb | 8018-01-7 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Maneb | 12427-38-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Manganese (Water) | 7439-96-5 | | | | | 2.4E-02 | I | 5.0E-05 | I | | | 0.04 | | 1.4E+09 | | | | | | | 1.9E+03 | | 7.1E+04 | 1.8E+03 |
| Mephosfolan | 950-10-7 | | | | | 9.0E-05 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+00 | 2.5E+01 | | 5.5E+00 |
| Mepiquat Chloride | 24307-26-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| **Mercury Compounds** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | | | 3.0E-04 | I | 3.0E-05 | C | | | 0.07 | | 1.4E+09 | | | | | | | 2.4E+01 | | 4.3E+04 | 2.4E+01 |
| ~Mercuric Sulfide | 1344-48-5 | | | | | 3.0E-04 | S | | | | | 1 | | 1.4E+09 | | | | | | | 2.4E+01 | | | 2.4E+01 |
| ~Mercury (elemental) | 7439-97-6 | | | | | 1.6E-04 | C | 3.0E-04 | I | V | | 1 | | 1.4E+09 | 3.2E+04 | 3.1E+00 | | | | | 1.3E+01 | | 1.0E+01 | 5.6E+00 |
| ~Mercury, Inorganic Salts | NA | | | | | 3.0E-04 | S | | | | | 0.07 | | 1.4E+09 | | | | | | | 2.4E+01 | | | 2.4E+01 |
| ~Methyl Mercury | 22967-92-6 | | | | | 1.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.8E+00 | | | 7.8E+00 |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | 8.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+00 | 2.2E+01 | | 4.9E+00 |
| Merphos | 150-50-5 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+00 | 8.4E+00 | | 1.8E+00 |
| Merphos Oxide | 78-48-8 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+00 | 8.4E+00 | | 1.8E+00 |
| Metalaxyl | 57837-19-1 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+03 | 1.7E+04 | | 3.7E+03 |
| Methacrylonitrile | 126-98-7 | | | | | 1.0E-04 | I | 7.0E-04 | H | V | | 1 | | 1.4E+09 | 7.3E+03 | 4.6E+03 | | | | | 7.8E+00 | | 5.3E+00 | 3.2E+00 |
| Methamidophos | 10265-92-6 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+00 | 1.4E+01 | | 3.1E+00 |
| Methanol | 67-56-1 | | | | | 5.0E-01 | I | 4.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+04 | 1.4E+05 | 5.7E+09 | 3.1E+04 |
| Methidathion | 950-37-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Methomyl | 16752-77-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 4.9E-02 | C | 1.4E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E+01 | 4.1E+01 | 2.4E+05 | 9.9E+00 | | | | |
| Methoxychlor | 72-43-5 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | | | 2.0E-03 | H | 9.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | 1.3E+08 | 1.2E+02 |
| Methoxyethanol, 2- | 109-86-4 | | | | | 3.0E-03 | P | 2.0E-02 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | 2.8E+07 | 1.8E+02 |
| Methyl Acetate | 79-20-9 | | | | | 1.0E+00 | H | | | V | | 1 | | 1.4E+09 | 8.7E+03 | 2.9E+04 | | | | | 7.8E+04 | | | 7.8E+04 |
| Methyl Acrylate | 96-33-3 | | | | | 3.0E-02 | H | | | V | | 1 | | 1.4E+09 | 7.5E+03 | 6.8E+03 | | | | | 2.4E+03 | | | 2.4E+03 |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | | | 6.0E-01 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 1.3E+04 | 2.8E+04 | | | | | 4.7E+04 | | 6.9E+04 | 2.8E+04 |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | | | 8.0E-02 | H | 3.0E+00 | I | V | | 1 | | 1.4E+09 | 1.1E+04 | 3.4E+03 | | | | | 6.3E+03 | | 3.6E+04 | 5.3E+03 |
| Methyl Isocyanate | 624-83-9 | | | | | | | 1.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 1.4E+06 | 1.4E+06 |
| Methyl Methacrylate | 80-62-6 | | | | | 1.4E+00 | I | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 6.8E+03 | 2.4E+03 | | | | | 1.1E+05 | | 5.0E+03 | 4.8E+03 |
| Methyl Parathion | 298-00-0 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+01 | 7.0E+01 | | 1.5E+01 |
| Methyl Phosphonic Acid | 993-13-5 | | | | | 6.0E-02 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+03 | 1.7E+04 | | 3.7E+03 |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | | | 6.0E-03 | H | 4.0E-02 | H | V | | 1 | | 1.4E+09 | 1.2E+04 | 3.8E+02 | | | | | 4.7E+02 | | 5.1E+02 | 2.5E+02 |
| Methyl methanesulfonate | 66-27-3 | 9.9E-02 | C | 2.8E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.5E+00 | 2.0E+01 | 1.2E+05 | 4.9E+00 | | | | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 1.8E-03 | C | 2.6E-07 | C | | | 3.0E+00 | I | V | | 1 | | 1.4E+09 | 5.3E+03 | 8.9E+03 | 3.6E+02 | | 4.9E+01 | 4.3E+01 | | | 1.7E+04 | 1.7E+04 |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 3.3E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+01 | 6.1E+01 | | 1.5E+01 | | | | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 8.3E+00 | C | 2.4E-03 | C | | | | | | | | | 1.4E+09 | | | 7.7E-02 | | 1.4E+03 | 7.7E-02 | | | | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 1.3E-01 | C | 3.7E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.9E+00 | 1.6E+01 | 8.9E+04 | 3.7E+00 | | | | |
| Methylarsonic acid | 124-58-3 | | | | | 1.0E-02 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Methylcholanthrene, 3- | 56-49-5 | 2.2E+01 | C | 6.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E-02 | 9.2E-02 | 5.3E+02 | 2.2E-02 | | | | |
| Methylene Chloride | 75-09-2 | 7.5E-03 | I | 4.7E-07 | I | 6.0E-02 | I | 1.0E+00 | A | V | | 1 | | 1.4E+09 | 2.4E+03 | 3.3E+03 | 8.5E+01 | | 1.2E+01 | 1.1E+01 | 4.7E+03 | | 2.6E+03 | 1.7E+03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P | | | | M | 1 | 0.1 | 1.4E+09 | | | 1.5E+00 | 5.1E+00 | 3.0E+03 | 1.2E+00 | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 4.6E-02 | I | 1.3E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+01 | 4.4E+01 | 2.5E+05 | 1.1E+01 | | | | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 1.6E+00 | C | 4.6E-04 | C | | | 2.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | 4.0E-01 | 1.3E+00 | 7.2E+03 | 3.0E-01 | | | 2.8E+07 | 2.8E+07 |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 8.5E+05 | 8.5E+05 |
| Methylstyrene, Alpha- | 98-83-9 | | | | | 7.0E-02 | H | | | V | | 1 | | 1.4E+09 | 1.4E+04 | 5.0E+02 | | | | | 5.5E+03 | | | 5.5E+03 |
| Metolachlor | 51218-45-2 | | | | | 1.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.2E+04 | 4.2E+04 | | 9.2E+03 |
| Metribuzin | 21087-64-9 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Mineral oils | 8012-95-1 | | | | | 3.0E+00 | P | | | | | | | 1.4E+09 | | | | | | | 2.4E+05 | | | 2.4E+05 |
| Mirex | 2385-85-5 | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E-02 | 1.1E-01 | 6.5E+02 | 2.7E-02 | 1.6E+01 | 5.6E+01 | | 1.2E+01 |
| Molinate | 2212-67-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Molybdenum | 7439-98-7 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | | 3.9E+02 |
| Monochloramine | 10599-90-3 | | | | | 1.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.8E+03 | | | 7.8E+03 |
| Monomethylaniline | 100-61-8 | | | | | 2.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | 3.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Naled | 300-76-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | 3.0E-02 | X | 1.0E-01 | P | V | | | | 1.4E+09 | | | | | | | 2.4E+03 | | 1.4E+08 | 2.4E+03 |
| Naphthylamine, 2- | 91-59-8 | 1.8E+00 | C | 0.0E+00 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E-01 | 1.1E+00 | | 2.7E-01 | | | | |
| Napropamide | 15299-99-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Nickel Carbonyl | 13463-39-3 | | | | | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | | | | | 3.9E+03 | | 7.1E+04 | 3.7E+03 |
| Nickel Oxide | 1313-99-1 | | | | | 5.0E-02 | C | 1.0E-04 | C | | | | | 1.4E+09 | | | | | | | 3.9E+03 | | 1.4E+05 | 3.8E+03 |
| Nickel Refinery Dust | NA | | | 2.4E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | | | 1.4E+04 | 1.4E+04 | 3.9E+03 | | 7.1E+04 | 3.7E+03 |
| Nickel Soluble Salts | 7440-02-0 | | | 2.6E-04 | C | 2.0E-02 | I | 9.0E-05 | A | | | 0.04 | | 1.4E+09 | | | | | 1.3E+04 | 1.3E+04 | 1.6E+03 | | 1.3E+05 | 1.6E+03 |
| Nickel Subsulfide | 12035-72-2 | 1.7E+00 | C | 4.8E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | 3.8E-01 | | 6.9E+03 | 3.8E-01 | 3.9E+03 | | 7.1E+04 | 3.7E+03 |
| Nitrate | 14797-55-8 | | | | | 1.6E+00 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.3E+05 | | | 1.3E+05 |
| Nitrite | 14797-65-0 | | | | | 1.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.8E+03 | | | 7.8E+03 |
| Nitroaniline, 2- | 88-74-4 | | | | | 1.0E-02 | X | 5.0E-05 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | 7.1E+04 | 6.1E+02 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Nitroaniline, 4- | 100-01-6 | 2.0E-02 | P | | | 4.0E-03 | P | 6.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | 3.2E+01 | 1.0E+02 | | 2.4E+01 | 3.1E+02 | 1.1E+03 | 8.5E+06 | 2.4E+02 |
| Nitrobenzene | 98-95-3 | | | 4.0E-05 | I | 2.0E-03 | I | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 7.9E+04 | 3.1E+03 | | | 4.8E+00 | 4.8E+00 | 1.6E+02 | | 7.4E+02 | 1.3E+02 |
| Nitrocellulose | 9004-70-0 | | | | | 3.0E+03 | P | | | | | | | 1.4E+09 | | | | | | | 2.4E+08 | | | 2.4E+08 |
| Nitrofurantoin | 67-20-9 | | | | | 7.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+03 | 2.0E+04 | | 4.3E+03 |
| Nitrofurazone | 59-87-0 | 1.3E+00 | C | 3.7E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.9E-01 | 1.6E+00 | 8.9E+03 | 3.7E-01 | | | | |
| Nitroglycerin | 55-63-0 | 1.7E-02 | P | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 3.8E+01 | 1.2E+02 | | 2.9E+01 | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Nitroguanidine | 556-88-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Nitromethane | 75-52-5 | | | 9.0E-06 | P | | | 2.0E-02 | P | V | | 1 | | 1.4E+09 | 1.8E+04 | 1.8E+04 | | | 4.9E+00 | 4.9E+00 | | | 3.8E+02 | 3.8E+02 |
| Nitropropane, 2- | 79-46-9 | | | 2.7E-03 | H | | | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 4.9E+03 | | | 1.3E-02 | 1.3E-02 | | | 3.0E+02 | 3.0E+02 |
| Nitroso-N-ethylurea, N- | 759-73-9 | 2.7E+01 | C | 7.7E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.4E-02 | 7.5E-02 | 4.3E+02 | 1.8E-02 | | | | |
| Nitroso-N-methylurea, N- | 684-93-5 | 1.2E+02 | C | 3.4E-02 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.3E-03 | 1.7E-02 | 9.7E+01 | 4.1E-03 | | | | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 5.4E+00 | I | 1.6E-03 | I | | | | | V | | 1 | | 1.4E+09 | 2.1E+05 | 7.1E+03 | 1.2E-01 | | 3.2E-01 | 8.7E-02 | | | | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 7.0E+00 | I | 2.0E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.1E-02 | 2.9E-01 | 1.7E+03 | 6.9E-02 | | | | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 2.8E+00 | I | 8.0E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.3E-01 | 7.2E-01 | 4.1E+03 | 1.7E-01 | | | | |
| Nitrosodiethylamine, N- | 55-18-5 | 1.5E+02 | I | 4.3E-02 | I | | | | | | M | 1 | 0.1 | 1.4E+09 | | | 9.9E-04 | 3.4E-03 | 3.0E+01 | 7.7E-04 | | | | |
| Nitrosodimethylamine, N- | 62-75-9 | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P | 4.0E-05 | X | | M | 1 | 0.1 | 1.4E+09 | | | 2.9E-03 | 9.9E-03 | 9.3E+01 | 2.3E-03 | 6.3E-01 | 2.2E+00 | 5.7E+04 | 4.9E-01 |
| Nitrosodiphenylamine, N- | 86-30-6 | 4.9E-03 | I | 2.6E-06 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E+02 | 4.1E+02 | 1.3E+06 | 9.9E+01 | | | | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 2.2E+01 | I | 6.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E-02 | 9.2E-02 | 5.3E+02 | 2.2E-02 | | | | |
| Nitrosomorpholine [N-] | 59-89-2 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.5E-02 | 3.0E-01 | 1.7E+03 | 7.3E-02 | | | | |
| Nitrosopiperidine [N-] | 100-75-4 | 9.4E+00 | C | 2.7E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.8E-02 | 2.2E-01 | 1.2E+03 | 5.2E-02 | | | | |
| Nitrosopyrrolidine, N- | 930-55-2 | 2.1E+00 | I | 6.1E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.0E-01 | 9.6E-01 | 5.4E+03 | 2.3E-01 | | | | |
| Nitrotoluene, m- | 99-08-1 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Nitrotoluene, o- | 88-72-2 | 2.2E-01 | P | | | 9.0E-04 | P | | | V | | 1 | | 1.4E+09 | 1.5E+05 | 1.5E+03 | 2.9E+00 | | | 2.9E+00 | 7.0E+01 | | | 7.0E+01 |
| Nitrotoluene, p- | 99-99-0 | 1.6E-02 | P | | | 4.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 4.0E+01 | 1.3E+02 | | 3.0E+01 | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Nonane, n- | 111-84-2 | | | | | 3.0E-04 | X | 2.0E-01 | P | V | | | | 1.4E+09 | 1.1E+03 | 6.9E+00 | | | | | 2.4E+01 | | 2.3E+02 | 2.1E+01 |
| Norflurazon | 27314-13-2 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 1.1E+04 | | 2.4E+03 |
| Nustar | 85509-19-9 | | | | | 7.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+01 | 2.0E+02 | | 4.3E+01 |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | 5.0E-02 | I | | | | | 1 | 0.006 | 1.4E+09 | | | | | | | 3.9E+03 | 2.3E+05 | | 3.9E+03 |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Oryzalin | 19044-88-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Oxadiazon | 19666-30-9 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Oxamyl | 23135-22-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Paclobutrazol | 76738-62-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Paraquat Dichloride | 1910-42-5 | | | | | 4.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.5E+02 | 1.3E+03 | | 2.8E+02 |
| Parathion | 56-38-2 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+02 | 1.7E+03 | | 3.7E+02 |
| Pebulate | 1114-71-2 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Pendimethalin | 40487-42-1 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 1.1E+04 | | 2.4E+03 |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | 1.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 7.8E+00 | | | 7.8E+00 |
| Pentachlorobenzene | 608-93-5 | | | | | 8.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Pentachloroethane | 76-01-7 | 9.0E-02 | P | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 7.1E+00 | 2.3E+01 | | 5.4E+00 | | | | |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | H | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.5E+00 | 7.8E+00 | | 1.9E+00 | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | I | 5.1E-06 | C | 3.0E-02 | I | | | | | 1 | 0.25 | 1.4E+09 | | | 5.3E+00 | 6.7E+00 | 6.5E+05 | 3.0E+00 | 2.4E+03 | 3.4E+03 | | 1.4E+03 |
| Pentane, n- | 109-66-0 | | | | | | | 1.0E+00 | P | V | | | | 1.4E+09 | 8.4E+02 | 3.9E+02 | | | | | | | 8.8E+02 | 8.8E+02 |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+01 | | | 5.5E+01 |
| Permethrin | 52645-53-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Phenacetin | 62-44-2 | 2.2E-03 | C | 6.3E-07 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E+02 | 9.2E+02 | 5.3E+06 | 2.2E+02 | | | | |
| Phenmedipham | 13684-63-4 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 7.0E+04 | | 1.5E+04 |
| Phenol | 108-95-2 | | | | | 3.0E-01 | I | 2.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+04 | 8.4E+04 | 2.8E+08 | 1.8E+04 |
| Phenylenediamine, m- | 108-45-2 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+02 | 1.7E+03 | | 3.7E+02 |
| Phenylenediamine, o- | 95-54-5 | 4.7E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+01 | 4.3E+01 | | 1.0E+01 | | | | |
| Phenylenediamine, p- | 106-50-3 | | | | | 1.9E-01 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+04 | 5.3E+04 | | 1.2E+04 |
| Phenylphenol, 2- | 90-43-7 | 1.9E-03 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.3E+02 | 1.0E+03 | | 2.5E+02 | | | | |
| Phorate | 298-02-2 | | | | | 2.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+01 | 5.6E+01 | | 1.2E+01 |
| Phosgene | 75-44-5 | | | | | | | 3.0E-04 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.6E+03 | | | | | | | 3.3E-01 | 3.3E-01 |
| Phosmet | 732-11-6 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Phosphine | 7803-51-2 | | | | | 3.0E-04 | I | 3.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | 2.4E+01 | | 4.3E+05 | 2.4E+01 |
| Phosphoric Acid | 7664-38-2 | | | | | | | 1.0E-02 | I | | | 1 | | 1.4E+09 | | | | | | | | | 1.4E+07 | 1.4E+07 |
| Phosphorus, White | 7723-14-0 | | | | | 2.0E-05 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.6E+00 | | | 1.6E+00 |
| Phthalic Acid, P- | 100-21-0 | | | | | 1.0E+00 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+04 | 2.8E+05 | | 6.1E+04 |
| Phthalic Anhydride | 85-44-9 | | | | | 2.0E+00 | I | 2.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+05 | 5.6E+05 | 2.8E+07 | 1.2E+05 |
| Picloram | 1918-02-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+03 | 2.0E+04 | | 4.3E+03 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+00 | 2.8E+01 | | 6.1E+00 |
| Pirimiphos, Methyl | 29232-93-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Polybrominated Biphenyls | 59536-65-1 | 3.0E+01 | C | 8.6E-03 | C | 7.0E-06 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 2.1E-02 | 6.7E-02 | 3.9E+02 | 1.6E-02 | 5.5E-01 | 2.0E+00 | | 4.3E-01 |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 7.0E-02 | I | 2.0E-05 | I | 7.0E-05 | I | | | | | 1 | 0.14 | 1.4E+09 | | | 9.1E+00 | 2.1E+01 | 1.7E+05 | 6.3E+00 | 5.5E+00 | 1.4E+01 | | 3.9E+00 |
| ~Aroclor 1221 | 11104-28-2 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 1.4E+09 | 9.2E+04 | 7.6E+02 | 3.2E-01 | 7.2E-01 | 3.9E-01 | 1.4E-01 | | | | |
| ~Aroclor 1232 | 11141-16-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 1.4E+09 | 9.2E+04 | 7.3E+01 | 3.2E-01 | 7.2E-01 | 3.9E-01 | 1.4E-01 | | | | |
| ~Aroclor 1242 | 53469-21-9 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 3.2E-01 | 7.2E-01 | 5.8E+03 | 2.2E-01 | | | | |
| ~Aroclor 1248 | 12672-29-6 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 3.2E-01 | 7.2E-01 | 5.8E+03 | 2.2E-01 | | | | |
| ~Aroclor 1254 | 11097-69-1 | 2.0E+00 | I | 5.7E-04 | I | 2.0E-05 | I | | | | | 1 | 0.14 | 1.4E+09 | | | 3.2E-01 | 7.2E-01 | 5.8E+03 | 2.2E-01 | 1.6E+00 | 4.0E+00 | | 1.1E+00 |
| ~Aroclor 1260 | 11096-82-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 3.2E-01 | 7.2E-01 | 5.8E+03 | 2.2E-01 | | | | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 1.3E+00 | C | 3.8E-04 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-01 | 1.1E+00 | 8.7E+03 | 3.4E-01 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 9.8E-03 | 2.2E-02 | 1.7E+02 | 6.8E-03 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 9.8E-03 | 2.2E-02 | 1.7E+02 | 6.8E-03 | | | | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 1.3E+03 | C | 3.8E-01 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-04 | 1.1E-03 | 8.7E+00 | 3.4E-04 | | | | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 6.5E+02 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 9.8E-04 | 2.2E-03 | 1.7E+02 | 6.8E-04 | | | | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 1.3E+04 | C | 3.8E+00 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-05 | 1.1E-04 | 8.7E-01 | 3.4E-05 | | | | |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 2.0E+00 | I | 5.7E-04 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 3.2E-01 | 7.2E-01 | 5.8E+03 | 2.2E-01 | | | | |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.9E-02 | 1.1E-01 | 8.7E+02 | 3.4E-02 | | | | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 8.5E+05 | 8.5E+05 |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | 6.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 1.5E+05 | | | | | | 4.7E+03 | 1.3E+04 | | 3.4E+03 |
| ~Anthracene | 120-12-7 | | | | | 3.0E-01 | I | | | V | | 1 | 0.13 | 1.4E+09 | 5.6E+05 | | | | | | 2.4E+04 | 6.5E+04 | | 1.7E+04 |
| ~Benz[a]anthracene | 56-55-3 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E-01 | 5.3E-01 | 1.2E+04 | 1.5E-01 | | | | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 1 | | 1.4E+09 | | | 5.3E-01 | | 3.0E+04 | 5.3E-01 | | | | |
| ~Benzo[a]pyrene | 50-32-8 | 7.3E+00 | I | 1.1E-03 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E-02 | 5.3E-02 | 1.2E+03 | 1.5E-02 | | | | |
| ~Benzo[b]fluoranthene | 205-99-2 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E-01 | 5.3E-01 | 1.2E+04 | 1.5E-01 | | | | |
| ~Benzo[k]fluoranthene | 207-08-9 | 7.3E-02 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E+00 | 5.3E+00 | 1.2E+04 | 1.5E+00 | | | | |
| ~Chrysene | 218-01-9 | 7.3E-03 | E | 1.1E-05 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E+01 | 5.3E+01 | 1.2E+05 | 1.5E+01 | | | | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 7.3E+00 | E | 1.2E-03 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E-02 | 5.3E-02 | 1.1E+03 | 1.5E-02 | | | | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.2E+01 | C | 1.1E-03 | C | | | | | | | | | 1.4E+09 | | | 5.3E-02 | | 3.0E+03 | 5.3E-02 | | | | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 2.5E+02 | C | 7.1E-02 | C | | | | | | | 1 | 0.13 | 1.4E+09 | | | 2.6E-03 | 6.2E-03 | 4.7E+01 | 1.8E-03 | | | | |
| ~Fluoranthene | 206-44-0 | | | | | 4.0E-02 | I | | | | | 1 | 0.13 | 1.4E+09 | | | | | | | 3.1E+03 | 8.6E+03 | | 2.3E+03 |
| ~Fluorene | 86-73-7 | | | | | 4.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 3.0E+05 | | | | | | 3.1E+03 | 8.6E+03 | | 2.3E+03 |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 2.0E-01 | 5.3E-01 | 1.2E+04 | 1.5E-01 | | | | |
| ~Methylnaphthalene, 1- | 90-12-0 | 2.9E-02 | P | | | 7.0E-02 | A | | | V | | 1 | | 1.4E+09 | 6.3E+04 | 3.9E+02 | 2.2E+01 | | | 2.2E+01 | 5.5E+03 | | | 5.5E+03 |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | 4.0E-03 | I | | | V | | 1 | | 1.4E+09 | 6.2E+04 | 3.7E+02 | | | | | 3.1E+02 | | | 3.1E+02 |
| ~Naphthalene | 91-20-3 | | | 3.4E-05 | C | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | 0.13 | 1.4E+09 | 5.0E+04 | | | | 3.6E+00 | 3.6E+00 | 1.6E+03 | 4.3E+03 | 1.6E+02 | 1.4E+02 |
| ~Nitropyrene, 4- | 57835-92-4 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | | | 1.4E+09 | | | 5.3E-01 | | 3.0E+04 | 5.3E-01 | | | | |
| ~Pyrene | 129-00-0 | | | | | 3.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 2.6E+06 | | | | | | 2.4E+03 | 6.5E+03 | | 1.7E+03 |
| Potassium Perchlorate | 7778-74-7 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+01 | | | 5.5E+01 |
| Prochloraz | 67747-09-5 | 1.5E-01 | I | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.3E+00 | 1.4E+01 | | 3.2E+00 | 7.0E+02 | 2.5E+03 | | 5.5E+02 |
| Profluralin | 26399-36-0 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.7E+02 | 1.7E+03 | | 3.7E+02 |
| Prometon | 1610-18-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.2E+03 | 4.2E+03 | | 9.2E+02 |
| Prometryn | 7287-19-6 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Propachlor | 1918-16-7 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Propanil | 709-98-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Propargite | 2312-35-8 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Propargyl Alcohol | 107-19-7 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+02 | 5.6E+02 | | 1.2E+02 |
| Propazine | 139-40-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Propham | 122-42-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Propiconazole | 60207-90-1 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Propionaldehyde | 123-38-6 | | | | | | | 8.0E-03 | I | V | | | | 1.4E+09 | 9.6E+03 | 3.3E+04 | | | | | | | 8.0E+01 | 8.0E+01 |
| Propyl benzene | 103-65-1 | | | | | 1.0E-01 | X | 1.0E+00 | X | V | | 1 | 0.1 | 1.4E+09 | 7.5E+03 | 2.6E+02 | | | | | 7.8E+03 | 2.8E+04 | 7.9E+03 | 3.4E+03 |
| Propylene | 115-07-1 | | | | | | | 3.0E+00 | C | | | | | 1.4E+09 | | | | | | | | | 4.3E+09 | 4.3E+09 |
| Propylene Glycol | 57-55-6 | | | | | 2.0E+01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+06 | 5.6E+06 | | 1.2E+06 |
| Propylene Glycol Dinitrate | 6423-43-4 | | | | | | | 2.7E-04 | A | V | | 1 | | 1.4E+09 | 2.0E+05 | 1.5E+03 | | | | | | | 5.7E+01 | 5.7E+01 |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | 7.0E-01 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+04 | 2.0E+05 | | 4.3E+04 |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | | | 7.0E-01 | H | 2.0E+00 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+04 | 2.0E+05 | 2.8E+09 | 4.3E+04 |
| Propylene Oxide | 75-56-9 | 2.4E-01 | I | 3.7E-06 | I | | | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 1.0E+04 | 7.8E+04 | 2.7E+00 | | 6.7E+00 | 1.9E+00 | | | 3.2E+02 | 3.2E+02 |
| Pursuit | 81335-77-5 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 7.0E+04 | | 1.5E+04 |
| Pydrin | 51630-58-1 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Pyridine | 110-86-1 | | | | | 1.0E-03 | I | | | V | | 1 | | 1.4E+09 | 6.0E+04 | 5.3E+05 | | | | | 7.8E+01 | | | 7.8E+01 |
| Quinalphos | 13593-03-8 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+01 | 1.4E+02 | | 3.1E+01 |
| Quinoline | 91-22-5 | 3.0E+00 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.1E-01 | 6.7E-01 | | 1.6E-01 | | | | |
| Refractory Ceramic Fibers | NA | | | | | | | 3.0E-02 | A | | | 1 | | 1.4E+09 | | | | | | | | | 4.3E+07 | 4.3E+07 |
| Resmethrin | 10453-86-8 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Ronnel | 299-84-3 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |
| Rotenone | 83-79-4 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Safrole | 94-59-7 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E+00 | 9.2E+00 | 5.3E+04 | 2.2E+00 | | | | |
| Savey | 78587-05-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Selenious Acid | 7783-00-8 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | | 3.9E+02 |
| Selenium | 7782-49-2 | | | | | 5.0E-03 | I | 2.0E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | 2.8E+07 | 3.9E+02 |
| Selenium Sulfide | 7446-34-6 | | | | | 5.0E-03 | C | 2.0E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | 2.8E+07 | 3.9E+02 |
| Sethoxydim | 74051-80-2 | | | | | 9.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.0E+03 | 2.5E+04 | | 5.5E+03 |
| Silica (crystalline, respirable) | 7631-86-9 | | | | | | | 3.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 4.3E+06 | 4.3E+06 |
| Silver | 7440-22-4 | | | | | 5.0E-03 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 3.9E+02 | | | 3.9E+02 |
| Simazine | 122-34-9 | 1.2E-01 | H | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 5.3E+00 | 1.7E+01 | | 4.1E+00 | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Sodium Acifluorfen | 62476-59-9 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Sodium Azide | 26628-22-8 | | | | | 4.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+02 | | | 3.1E+02 |
| Sodium Diethyldithiocarbamate | 148-18-5 | 2.7E-01 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.4E+00 | 7.5E+00 | | 1.8E+00 | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Sodium Fluoride | 7681-49-4 | | | | | 5.0E-02 | A | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 3.9E+03 | | 1.8E+07 | 3.9E+03 |
| Sodium Fluoroacetate | 62-74-8 | | | | | 2.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+00 | 5.6E+00 | | 1.2E+00 |
| Sodium Metavanadate | 13718-26-8 | | | | | 1.0E-03 | H | | | | | 1 | | 1.4E+09 | | | | | | | 7.8E+01 | | | 7.8E+01 |
| Sodium Perchlorate | 7601-89-0 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.5E+01 | | | 5.5E+01 |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 2.4E-02 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.7E+01 | 8.4E+01 | | 2.0E+01 | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Strontium, Stable | 7440-24-6 | | | | | 6.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 4.7E+04 | | | 4.7E+04 |
| Strychnine | 57-24-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Styrene | 100-42-5 | | | | | 2.0E-01 | I | 1.0E+00 | I | V | | 1 | | 1.4E+09 | 1.0E+04 | 8.7E+02 | | | | | 1.6E+04 | | 1.1E+04 | 6.3E+03 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | 8.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Sulfuric Acid | 7664-93-9 | | | | | | | 1.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 1.4E+06 | 1.4E+06 |
| Systhane | 88671-89-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| TCMTB | 21564-17-0 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Tebuthiuron | 34014-18-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.5E+03 | 2.0E+04 | | 4.3E+03 |
| Temephos | 3383-96-8 | | | | | 2.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Terbacil | 5902-51-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Terbufos | 13071-79-9 | | | | | 2.5E-05 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+00 | 7.0E+00 | | 1.5E+00 |
| Terbutryn | 886-50-0 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | 1.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 7.8E+00 | | | 7.8E+00 |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 2.6E-02 | I | 7.4E-06 | I | 3.0E-02 | I | | | V | | 1 | | 1.4E+09 | 6.1E+03 | 6.8E+02 | 2.5E+01 | | 2.0E+00 | 1.9E+00 | 2.4E+03 | | | 2.4E+03 |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 2.0E-01 | I | 5.8E-05 | I | 4.0E-03 | P | | | V | | 1 | | 1.4E+09 | 1.6E+04 | 1.9E+03 | 3.2E+00 | | 6.8E-01 | 5.6E-01 | 3.1E+02 | | | 3.1E+02 |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | C | 5.9E-06 | C | 1.0E-02 | I | 2.7E-01 | A | V | | 1 | | 1.4E+09 | 2.5E+03 | 1.7E+02 | 1.2E+00 | | 1.0E+00 | 5.5E-01 | 7.8E+02 | | 7.2E+02 | 3.7E+02 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+03 | 8.4E+03 | | 1.8E+03 |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 2.0E+01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.2E-02 | 1.0E-01 | | 2.4E-02 | | | | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+01 | 1.4E+02 | | 3.1E+01 |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | | | | | 8.0E+01 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.1E+03 | | | | | | | 1.1E+05 | 1.1E+05 |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | 4.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 1.1E+03 | | 2.4E+02 |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | | | | 1 | | 1.4E+09 | | | | | | | | | | |
| Thiobencarb | 28249-77-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Thiodiglycol | 111-48-8 | | | | | 7.0E-02 | X | | | | | 1 | 0.008 | 1.4E+09 | | | | | | | 5.5E+03 | 2.6E+05 | | 5.4E+03 |
| Thiofanox | 39196-18-4 | | | | | 3.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Thiophanate, Methyl | 23564-05-8 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+03 | 2.2E+04 | | 4.9E+03 |
| Thiram | 137-26-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Tin | 7440-31-5 | | | | | 6.0E-01 | H | | | | | 1 | | 1.4E+09 | | | | | | | 4.7E+04 | | | 4.7E+04 |
| Titanium Tetrachloride | 7550-45-0 | | | | | | | 1.0E-04 | A | | | 1 | | 1.4E+09 | | | | | | | | | 1.4E+05 | 1.4E+05 |
| Toluene | 108-88-3 | | | | | 8.0E-02 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 4.6E+03 | 8.2E+02 | | | | | 6.3E+03 | | 2.4E+04 | 5.0E+03 |
| Toluidine, p- | 106-49-0 | 1.9E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.4E+00 | 1.1E+01 | | 2.6E+00 | | | | |
| Toxaphene | 8001-35-2 | 1.1E+00 | I | 3.2E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E-01 | 1.8E+00 | 1.0E+04 | 4.4E-01 | | | | |
| Tralomethrin | 66841-25-6 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.9E+02 | 2.1E+03 | | 4.6E+02 |
| Tri-n-butyltin | 688-73-3 | | | | | 3.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Triallate | 2303-17-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 3.6E+03 | | 7.9E+02 |
| Triasulfuron | 82097-50-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+02 | 1.4E+03 | | 3.1E+02 |
| Tributyl Phosphate | 126-73-8 | 9.2E-03 | P | | | 2.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 6.9E+01 | 2.2E+02 | | 5.3E+01 | 1.6E+04 | 5.6E+04 | | 1.2E+04 |
| Tributyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Tributyltin Oxide | 56-35-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | | | 3.0E+01 | I | 3.0E+01 | H | V | | 1 | | 1.4E+09 | 1.4E+03 | 9.1E+02 | | | | | 2.4E+06 | | 4.3E+04 | 4.3E+04 |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 2.9E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.2E+01 | 7.0E+01 | | 1.7E+01 | | | | |
| Trichloroaniline, 2,4,6- | 634-93-5 | 3.4E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+01 | 6.0E+01 | | 1.4E+01 | | | | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | 8.0E-04 | X | | | V | | 1 | 0.1 | 1.4E+09 | 3.5E+04 | 1.5E+02 | | | | | 6.3E+01 | 2.2E+02 | | 4.9E+01 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 2.9E-02 | P | | | 1.0E-02 | I | 2.0E-03 | P | V | | 1 | | 1.4E+09 | 3.2E+04 | 4.0E+02 | 2.2E+01 | | | 2.2E+01 | 7.8E+02 | | 6.7E+01 | 6.2E+01 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | | | 2.0E+00 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 1.8E+03 | 6.4E+02 | | | | | 1.6E+05 | | 9.3E+03 | 8.7E+03 |
| Trichloroethane, 1,1,2- | 79-00-5 | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I | | | V | | 1 | | 1.4E+09 | 7.8E+03 | 2.2E+03 | 1.1E+01 | | 1.2E+00 | 1.1E+00 | 3.1E+02 | | | 3.1E+02 |
| Trichloroethylene | 79-01-6 | 5.9E-03 | C | 2.0E-06 | C | | | | | V | | 1 | | 1.4E+09 | 2.4E+03 | 6.9E+02 | 1.1E+02 | | 2.9E+00 | 2.8E+00 | | | | |
| Trichlorofluoromethane | 75-69-4 | | | | | 3.0E-01 | I | 7.0E-01 | H | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+03 | | | | | 2.4E+04 | | 8.1E+02 | 7.9E+02 |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E+01 | 1.8E+02 | 1.1E+06 | 4.4E+01 | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+02 | 2.8E+03 | | 6.1E+02 |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.3E+02 | 2.2E+03 | | 4.9E+02 |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | 5.0E-03 | I | | | V | | 1 | | 1.4E+09 | 1.6E+04 | 1.3E+03 | | | | | 3.9E+02 | | | 3.9E+02 |
| Trichloropropane, 1,2,3- | 96-18-4 | 3.0E+01 | I | | | 4.0E-03 | I | 3.0E-04 | I | V | M | 1 | | 1.4E+09 | 1.7E+04 | 1.4E+03 | 5.0E-03 | | | 5.0E-03 | 3.1E+02 | | 5.3E+00 | 5.2E+00 |
| Trichloropropene, 1,2,3- | 96-19-5 | | | | | 3.0E-03 | X | 3.0E-04 | P | V | | 1 | | 1.4E+09 | 2.5E+03 | 4.5E+02 | | | | | 2.4E+02 | | 7.9E-01 | 7.9E-01 |
| Tridiphane | 58138-08-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+02 | 8.4E+02 | | 1.8E+02 |
| Triethylamine | 121-44-8 | | | | | | | 7.0E-03 | I | V | | 1 | | 1.4E+09 | 1.7E+04 | 2.8E+04 | | | | | | | 1.2E+02 | 1.2E+02 |
| Trifluralin | 1582-09-8 | 7.7E-03 | I | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 8.3E+01 | 2.6E+02 | | 6.3E+01 | 5.9E+02 | 2.1E+03 | | 4.6E+02 |
| Trimethyl Phosphate | 512-56-1 | 3.7E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E+01 | 5.5E+01 | | 1.3E+01 | | | | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | | | | | 7.0E-03 | P | V | | 1 | | 1.4E+09 | 8.5E+03 | 2.2E+02 | | | | | | | 6.2E+01 | 6.2E+01 |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | 1.0E-02 | X | | | V | | 1 | | 1.4E+09 | 7.1E+03 | 1.8E+02 | | | | | 7.8E+02 | | | 7.8E+02 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.019 | 1.4E+09 | | | | | | | 2.4E+03 | 4.4E+04 | | 2.2E+03 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.0E-02 | I | | | 5.0E-04 | I | | | | | 1 | 0.032 | 1.4E+09 | | | 2.1E+01 | 2.1E+02 | | 1.9E+01 | 3.9E+01 | 4.4E+02 | | 3.6E+01 |
| Triphenylphosphine Oxide | 791-28-6 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.6E+03 | 5.6E+03 | | 1.2E+03 |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 2.0E-02 | P | | | 7.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 3.2E+01 | 1.0E+02 | | 2.4E+01 | 5.5E+02 | 2.0E+03 | | 4.3E+02 |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 3.2E-03 | P | | | 1.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 2.0E+02 | 6.3E+02 | | 1.5E+02 | 7.8E+03 | 2.8E+04 | | 6.1E+03 |
| Uranium (Soluble Salts) | NA | | | | | 3.0E-03 | I | 3.0E-04 | A | | | 1 | | 1.4E+09 | | | | | | | 2.4E+02 | | 4.3E+05 | 2.4E+02 |
| Urethane | 51-79-6 | 1.0E+00 | C | 2.9E-04 | C | | | | | | | | | 1.4E+09 | | | 6.4E-01 | | 1.1E+04 | 6.4E-01 | | | | |
| Vanadium Pentoxide | 1314-62-1 | | | 8.3E-03 | P | 9.0E-03 | I | 7.0E-06 | P | | | 0.026 | | 1.4E+09 | | | | | 4.0E+02 | 4.0E+02 | 7.0E+02 | | 9.9E+03 | 6.6E+02 |
| Vanadium Sulfate | 36907-42-3 | | | | | 2.0E-02 | H | | | | | 0.026 | | 1.4E+09 | | | | | | | 1.6E+03 | | | 1.6E+03 |
| Vanadium and Compounds | NA | | | | | 5.0E-03 | S | | | | | 1 | | 1.4E+09 | | | | | | | 3.9E+02 | | | 3.9E+02 |
| Vanadium, Metallic | 7440-62-2 | | | | | 7.0E-05 | P | | | | | 0.026 | | 1.4E+09 | | | | | | | 5.5E+00 | | | 5.5E+00 |
| Vernolate | 1929-77-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.8E+01 | 2.8E+02 | | 6.1E+01 |
| Vinclozolin | 50471-44-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 7.0E+03 | | 1.5E+03 |
| Vinyl Acetate | 108-05-4 | | | | | 1.0E+00 | H | 2.0E-01 | I | V | | 1 | | 1.4E+09 | 4.7E+03 | 2.8E+03 | | | | | 7.8E+04 | | 9.9E+02 | 9.8E+02 |
| Vinyl Bromide | 593-60-2 | | | 3.2E-05 | H | | | 3.0E-03 | I | V | | 1 | | 1.4E+09 | 1.5E+03 | 3.4E+03 | | | 1.1E-01 | 1.1E-01 | | | 4.6E+00 | 4.6E+00 |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I | 1.0E-01 | I | V | M | 1 | | 1.4E+09 | 1.0E+03 | 3.9E+03 | 9.3E-02 | | 1.7E-01 | 6.0E-02 | 2.4E+02 | | 1.1E+02 | 7.4E+01 |
| Warfarin | 81-81-2 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.4E+01 | 8.4E+01 | | 1.8E+01 |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | 1 | | 1.4E+09 | 6.3E+03 | 2.6E+02 | | | | | 1.6E+04 | | 6.5E+02 | 6.3E+02 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 6.0E+03 | 3.9E+02 | | | | | 1.6E+04 | | 4.4E+03 | 3.4E+03 |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 5.9E+03 | 3.9E+02 | | | | | 1.6E+04 | | 4.3E+03 | 3.4E+03 |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 7.0E+03 | 4.3E+02 | | | | | 1.6E+04 | | 5.1E+03 | 3.8E+03 |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 2.4E+04 | | | 2.4E+04 |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 2.4E+01 | | | 2.4E+01 |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.9E+03 | 1.4E+04 | | 3.1E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| ALAR | 1596-84-5 | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E+02 | 2.4E+02 | 3.3E+06 | 9.6E+01 | 1.5E+05 | 2.3E+05 | | 9.2E+04 |
| Acephate | 30560-19-1 | 8.7E-03 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.3E+02 | 5.0E+02 | | 2.0E+02 | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Acetaldehyde | 75-07-0 | | | 2.2E-06 | I | | | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 9.4E+03 | 1.1E+05 | | | 5.2E+01 | 5.2E+01 | | | 3.7E+02 | 3.7E+02 |
| Acetochlor | 34256-82-1 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Acetone | 67-64-1 | | | | | 9.0E-01 | I | 3.1E+01 | A | V | | 1 | | 1.4E+09 | 1.5E+04 | 1.1E+05 | | | | | 9.2E+05 | | 2.0E+06 | 6.3E+05 |
| Acetone Cyanohydrin | 75-86-5 | | | | | 3.0E-03 | P | 6.0E-02 | P | V | | 1 | | 1.4E+09 | 2.6E+04 | 1.1E+05 | | | | | 3.1E+03 | | 6.7E+03 | 2.1E+03 |
| Acetonitrile | 75-05-8 | | | | | | | 6.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 1.3E+05 | | | | | | | 3.7E+03 | 3.7E+03 |
| Acetophenone | 98-86-2 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 6.4E+04 | 2.5E+03 | | | | | 1.0E+05 | | | 1.0E+05 |
| Acetylaminofluorene, 2- | 53-96-3 | 3.8E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 7.5E-01 | 1.1E+00 | 1.3E+04 | 4.5E-01 | | | | |
| Acrolein | 107-02-8 | | | | | 5.0E-04 | I | 2.0E-05 | I | V | | 1 | | 1.4E+09 | 7.4E+03 | 2.3E+04 | | | | | 5.1E+02 | | 6.5E-01 | 6.5E-01 |
| Acrylamide | 79-06-1 | 4.5E+00 | I | 1.3E-03 | I | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 6.4E-01 | 9.6E-01 | 1.3E+04 | 3.8E-01 | 2.0E+02 | 3.1E+02 | | 1.2E+02 |
| Acrylic Acid | 79-10-7 | | | | | 5.0E-01 | I | 1.0E-03 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+05 | 7.7E+05 | 6.0E+06 | 2.9E+05 |
| Acrylonitrile | 107-13-1 | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A | 2.0E-03 | I | V | | 1 | | 1.4E+09 | 8.3E+03 | 1.1E+04 | 5.3E+00 | | 1.5E+00 | 1.2E+00 | 4.1E+04 | | 7.3E+01 | 7.2E+01 |
| Adiponitrile | 111-69-3 | | | | | | | 6.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 3.6E+07 | 3.6E+07 |
| Alachlor | 15972-60-8 | 5.6E-02 | C | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 5.1E+01 | 7.7E+01 | | 3.1E+01 | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Aldicarb | 116-06-3 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Aldicarb Sulfone | 1646-88-4 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E-01 | 2.6E-01 | 3.4E+03 | 1.0E-01 | 3.1E+01 | 4.7E+01 | | 1.9E+01 |
| Ally | 74223-64-6 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+05 | 3.9E+05 | | 1.5E+05 |
| Allyl Alcohol | 107-18-6 | | | | | 5.0E-03 | I | 1.0E-04 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | 6.0E+05 | 3.1E+03 |
| Allyl Chloride | 107-05-1 | 2.1E-02 | C | 6.0E-06 | C | | | 1.0E-03 | I | V | | 1 | | 1.4E+09 | 1.7E+03 | 1.4E+03 | 1.4E+02 | | 3.5E+00 | 3.4E+00 | | | 7.5E+00 | 7.5E+00 |
| Aluminum | 7429-90-5 | | | | | 1.0E+00 | P | 5.0E-03 | P | | | 1 | | 1.4E+09 | | | | | | | 1.0E+06 | | 3.0E+07 | 9.9E+05 |
| Aluminum Phosphide | 20859-73-8 | | | | | 4.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 4.1E+02 | | | 4.1E+02 |
| Amdro | 67485-29-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Ametryn | 834-12-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+03 | 1.4E+04 | | 5.5E+03 |
| Aminobiphenyl, 4- | 92-67-1 | 2.1E+01 | C | 6.0E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E-01 | 2.1E-01 | 2.8E+03 | 8.2E-02 | | | | |
| Aminophenol, m- | 591-27-5 | | | | | 8.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+04 | 1.2E+05 | | 4.9E+04 |
| Aminophenol, p- | 123-30-8 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Amitraz | 33089-61-1 | | | | | 2.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+03 | 3.9E+03 | | 1.5E+03 |
| Ammonium Perchlorate | 7790-98-9 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+02 | | | 7.2E+02 |
| Ammonium Sulfamate | 7773-06-0 | | | | | 2.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 2.0E+05 | | | 2.0E+05 |
| Aniline | 62-53-3 | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P | 1.0E-03 | I | | | 1 | 0.1 | 1.4E+09 | | | 5.0E+02 | 7.6E+02 | 1.0E+07 | 3.0E+02 | 7.2E+03 | 1.1E+04 | 6.0E+06 | 4.3E+03 |
| Antimony (metallic) | 7440-36-0 | | | | | 4.0E-04 | I | | | | | 0.15 | | 1.4E+09 | | | | | | | 4.1E+02 | | | 4.1E+02 |
| Antimony Pentoxide | 1314-60-9 | | | | | 5.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 5.1E+02 | | | 5.1E+02 |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | 9.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 9.2E+02 | | | 9.2E+02 |
| Antimony Tetroxide | 1332-81-6 | | | | | 4.0E-04 | H | | | | | 0.15 | | 1.4E+09 | | | | | | | 4.1E+02 | | | 4.1E+02 |
| Antimony Trioxide | 1309-64-4 | | | | | | | 2.0E-04 | I | | | 0.15 | | 1.4E+09 | | | | | | | | | 1.2E+06 | 1.2E+06 |
| Apollo | 74115-24-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Aramite | 140-57-8 | 2.5E-02 | I | 7.1E-06 | I | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+02 | 1.7E+02 | 2.4E+06 | 6.9E+01 | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Arsenic, Inorganic | 7440-38-2 | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I | 1.5E-05 | C | | | 1 | 0.03 | 1.4E+09 | | | 1.9E+00 | 9.6E+00 | 3.9E+03 | 1.6E+00 | 3.1E+02 | 1.6E+03 | 8.9E+04 | 2.6E+02 |
| Arsine | 7784-42-1 | | | | | 3.5E-06 | C | 5.0E-05 | I | | | 1 | | 1.4E+09 | | | | | | | 3.6E+00 | | 3.0E+05 | 3.6E+00 |
| Assure | 76578-14-8 | | | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+03 | 1.4E+04 | | 5.5E+03 |
| Asulam | 3337-71-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Atrazine | 1912-24-9 | 2.3E-01 | C | | | 3.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E+01 | 1.9E+01 | | 7.5E+00 | 3.6E+04 | 5.4E+04 | | 2.2E+04 |
| Auramine | 492-80-8 | 8.8E-01 | C | 2.5E-04 | C | | | | | | | | | 1.4E+09 | | | 3.3E+00 | | 6.7E+04 | 3.3E+00 | | | | |
| Avermectin B1 | 65195-55-3 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+02 | 6.2E+02 | | 2.5E+02 |
| Azobenzene | 103-33-3 | 1.1E-01 | I | 3.1E-05 | I | | | | | V | | 1 | | 1.4E+09 | 5.8E+05 | | 2.6E+01 | | 2.3E+02 | 2.3E+01 | | | | |
| Barium | 7440-39-3 | | | | | 2.0E-01 | I | 5.0E-04 | H | | | 0.07 | | 1.4E+09 | | | | | | | 2.0E+05 | | 3.0E+06 | 1.9E+05 |
| Baygon | 114-26-1 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Bayleton | 43121-43-3 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Baythroid | 68359-37-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Benefin | 1861-40-1 | | | | | 3.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+05 | 4.7E+05 | | 1.9E+05 |
| Benomyl | 17804-35-2 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Bentazon | 25057-89-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Benzaldehyde | 100-52-7 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 2.4E+04 | 1.2E+03 | | | | | 1.0E+05 | | | 1.0E+05 |
| Benzene | 71-43-2 | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 3.8E+03 | 1.8E+03 | 5.2E+01 | | 6.0E+00 | 5.4E+00 | 4.1E+03 | | 5.0E+02 | 4.5E+02 |
| Benzenethiol | 108-98-5 | | | | | 1.0E-05 | H | | | V | | 1 | | 1.4E+09 | 2.1E+04 | 1.3E+03 | | | | | 1.0E+01 | | | 1.0E+01 |
| Benzidine | 92-87-5 | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I | | | | M | 1 | 0.1 | 1.4E+09 | | | 1.2E-02 | 1.9E-02 | 2.5E+02 | 7.5E-03 | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Benzoic Acid | 65-85-0 | | | | | 4.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+06 | 6.2E+06 | | 2.5E+06 |
| Benzotrichloride | 98-07-7 | 1.3E+01 | I | | | | | | | V | | 1 | | 1.4E+09 | 7.3E+04 | 3.2E+02 | 2.2E-01 | | | 2.2E-01 | | | | |
| Benzyl Alcohol | 100-51-6 | | | | | 1.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Benzyl Chloride | 100-44-7 | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P | 1.0E-03 | P | V | | 1 | | 1.4E+09 | 2.7E+04 | 1.5E+03 | 1.7E+01 | | 6.9E+00 | 4.9E+00 | 2.0E+03 | | 1.2E+02 | 1.1E+02 |
| Beryllium and compounds | 7440-41-7 | | | 2.4E-03 | I | 2.0E-03 | I | 2.0E-05 | I | | | 0.007 | | 1.4E+09 | | | | | 7.0E+03 | 7.0E+03 | 2.0E+03 | | 1.2E+05 | 2.0E+03 |
| Bidrin | 141-66-2 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Bifenox | 42576-02-3 | | | | | 9.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+03 | 1.4E+04 | | 5.5E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Biphenthrin | 82657-04-3 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+04 | 2.3E+04 | | 9.2E+03 |
| Biphenyl, 1,1'- | 92-52-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 1.4E+09 | 1.2E+05 | 2.1E+02 | | | | | 5.1E+04 | | | 5.1E+04 |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 7.0E-02 | H | 1.0E-05 | H | 4.0E-02 | I | | | V | | 1 | | 1.4E+09 | 3.8E+04 | 1.0E+03 | 4.1E+01 | | 4.6E+01 | 2.2E+01 | 4.1E+04 | | | 4.1E+04 |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | 3.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | I | 3.3E-04 | I | | | | | V | | 1 | | 1.4E+09 | 4.6E+04 | 5.1E+03 | 2.6E+00 | | 1.7E+00 | 1.0E+00 | | | | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | I | 2.4E-06 | C | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.0E+02 | 3.1E+02 | 7.0E+06 | 1.2E+02 | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | I | 6.2E-02 | I | | | | | V | | 1 | | 1.4E+09 | 2.0E+03 | 4.2E+03 | 1.3E-02 | | 4.0E-04 | 3.9E-04 | | | | |
| Bisphenol A | 80-05-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Boron And Borates Only | 7440-42-8 | | | | | 2.0E-01 | I | 2.0E-02 | H | | | 1 | | 1.4E+09 | | | | | | | 2.0E+05 | | 1.2E+08 | 2.0E+05 |
| Boron Trifluoride | 7637-07-2 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 4.1E+04 | | 7.7E+07 | 4.1E+04 |
| Bromate | 15541-45-4 | 7.0E-01 | I | | | 4.0E-03 | I | | | | | 1 | | 1.4E+09 | | | 4.1E+00 | | | 4.1E+00 | 4.1E+03 | | | 4.1E+03 |
| Bromo-2-chloroethane, 1- | 107-04-0 | 2.0E+00 | X | 6.0E-04 | X | | | | | V | | 1 | | 1.4E+09 | 6.4E+03 | 2.4E+03 | 1.4E+00 | | 1.3E-01 | 1.2E-01 | | | | |
| Bromobenzene | 108-86-1 | | | | | 8.0E-03 | I | 6.0E-02 | I | V | | 1 | | 1.4E+09 | 9.0E+03 | 6.8E+02 | | | | | 8.2E+03 | | 2.4E+03 | 1.8E+03 |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 4.3E+03 | 9.3E+02 | 4.6E+01 | | 1.4E+00 | 1.4E+00 | 2.0E+04 | | | 2.0E+04 |
| Bromoform | 75-25-2 | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E+02 | 5.5E+02 | 1.5E+07 | 2.2E+02 | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Bromomethane | 74-83-9 | | | | | 1.4E-03 | I | 5.0E-03 | I | V | | 1 | | 1.4E+09 | 1.5E+03 | 3.6E+03 | | | | | 1.4E+03 | | 3.3E+01 | 3.2E+01 |
| Bromophos | 2104-96-3 | | | | | 5.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Bromoxynil | 1689-84-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Bromoxynil Octanoate | 1689-99-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Butadiene, 1,3- | 106-99-0 | 3.4E+00 | C | 3.0E-05 | I | | | 2.0E-03 | I | V | | 1 | | 1.4E+09 | 9.3E+02 | 6.7E+02 | 8.4E-01 | | 3.8E-01 | 2.6E-01 | | | 8.2E+00 | 8.2E+00 |
| Butanol, N- | 71-36-3 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Butyl Benzyl Phthlate | 85-68-7 | 1.9E-03 | P | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.5E+03 | 2.3E+03 | | 9.1E+02 | 2.0E+05 | 3.1E+05 | | 1.2E+05 |
| Butyl alcohol, sec- | 78-92-2 | | | | | 2.0E+00 | P | 3.0E+01 | P | | | | | 1.4E+09 | | | | | | | 2.0E+06 | | 1.8E+11 | 2.0E+06 |
| Butylate | 2008-41-5 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Butylated hydroxyanisole | 25013-16-5 | 2.0E-04 | C | 5.7E-08 | C | | | | | | | | | 1.4E+09 | | | 1.4E+04 | | 2.9E+08 | 1.4E+04 | | | | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | 1.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+06 | 1.6E+06 | | 6.2E+05 |
| Cacodylic Acid | 75-60-5 | | | | | 2.0E-02 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Cadmium (Diet) | 7440-43-9 | | | 1.8E-03 | I | 1.0E-03 | I | 1.0E-05 | A | | | 0.025 | 0.001 | 1.4E+09 | | | | | 9.3E+03 | 9.3E+03 | 1.0E+03 | 3.9E+03 | 6.0E+04 | 8.0E+02 |
| Caprolactam | 105-60-2 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+05 | 7.7E+05 | | 3.1E+05 |
| Captafol | 2425-06-1 | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+01 | 2.9E+01 | 3.9E+05 | 1.2E+01 | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Captan | 133-06-2 | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E+03 | 1.9E+03 | 2.5E+07 | 7.5E+02 | 1.3E+05 | 2.0E+05 | | 8.0E+04 |
| Carbaryl | 63-25-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Carbofuran | 1563-66-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Carbon Disulfide | 75-15-0 | | | | | 1.0E-01 | I | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 7.4E+02 | | | | | 1.0E+05 | | 3.9E+03 | 3.7E+03 |
| Carbon Tetrachloride | 56-23-5 | 1.3E-01 | I | 1.5E-05 | I | 7.0E-04 | I | 1.9E-01 | A | V | | 1 | | 1.4E+09 | 1.6E+03 | 4.6E+02 | 2.2E+01 | | 1.3E+00 | 1.2E+00 | 7.2E+02 | | 1.3E+03 | 4.7E+02 |
| Carbosulfan | 55285-14-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Carboxin | 5234-68-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Ceric oxide | 1306-38-3 | | | | | | | 9.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | | | 5.4E+06 | 5.4E+06 |
| Chloral Hydrate | 302-17-0 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Chloramben | 133-90-4 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+04 | 2.3E+04 | | 9.2E+03 |
| Chloranil | 118-75-2 | 4.0E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 7.1E+00 | 1.1E+01 | | 4.3E+00 | | | | |
| Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I | 7.0E-04 | I | | | 1 | 0.04 | 1.4E+09 | | | 8.2E+00 | 3.1E+01 | 1.7E+05 | 6.5E+00 | 5.1E+02 | 1.9E+03 | 4.2E+06 | 4.0E+02 |
| Chlordecone (Kepone) | 143-50-0 | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E-01 | 4.3E-01 | 3.6E+03 | 1.7E-01 | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Chlorfenvinphos | 470-90-6 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+02 | 1.1E+03 | | 4.3E+02 |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Chlorine | 7782-50-5 | | | | | 1.0E-01 | I | 1.5E-04 | A | | | 1 | | 1.4E+09 | | | | | | | 1.0E+05 | | 8.6E+05 | 9.1E+04 |
| Chlorine Dioxide | 10049-04-4 | | | | | 3.0E-02 | I | 2.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | 3.1E+04 | | 1.2E+06 | 3.0E+04 |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | 3.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+04 | | | 3.1E+04 |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+03 | | | | | | | 2.4E+05 | 2.4E+05 |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | | | 2.0E-02 | H | 7.0E-03 | H | V | | 1 | | 1.4E+09 | 1.2E+03 | 7.5E+02 | | | | | 2.0E+04 | | 3.6E+01 | 3.6E+01 |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 4.6E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.2E+00 | 9.4E+00 | | 3.8E+00 | | | | |
| Chloroacetic Acid | 79-11-8 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Chloroacetophenone, 2- | 532-27-4 | | | | | | | 3.0E-05 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 1.8E+05 | 1.8E+05 |
| Chloroaniline, p- | 106-47-8 | 2.0E-01 | P | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+01 | 2.2E+01 | | 8.6E+00 | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Chlorobenzene | 108-90-7 | | | | | 2.0E-02 | I | 5.0E-02 | P | V | | 1 | | 1.4E+09 | 6.9E+03 | 7.6E+02 | | | | | 2.0E+04 | | 1.5E+03 | 1.4E+03 |
| Chlorobenzilate | 510-15-6 | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.6E+01 | 3.9E+01 | 5.4E+05 | 1.6E+01 | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | 3.0E-02 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | | | 3.0E-03 | P | 3.0E-01 | P | V | | 1 | | 1.4E+09 | 7.3E+03 | 1.2E+02 | | | | | 3.1E+03 | | 9.6E+03 | 2.3E+03 |
| Chlorobutane, 1- | 109-69-3 | | | | | 4.0E-02 | P | | | V | | 1 | | 1.4E+09 | 1.9E+03 | 7.3E+02 | | | | | 4.1E+04 | | | 4.1E+04 |
| Chlorodifluoromethane | 75-45-6 | | | | | | | 5.0E+01 | I | V | | 1 | | 1.4E+09 | 1.0E+03 | 1.7E+03 | | | | | | | 2.2E+05 | 2.2E+05 |
| Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I | 9.8E-02 | A | V | | 1 | | 1.4E+09 | 2.8E+03 | 2.5E+03 | 9.2E+01 | | 1.5E+00 | 1.5E+00 | 1.0E+04 | | 1.2E+03 | 1.1E+03 |
| Chloromethane | 74-87-3 | | | | | | | 9.0E-02 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.3E+03 | | | | | | | 5.0E+02 | 5.0E+02 |
| Chloromethyl Methyl Ether | 107-30-2 | 2.4E+00 | C | 6.9E-04 | C | | | | | V | | 1 | | 1.4E+09 | 5.7E+03 | 2.6E+04 | 1.2E+00 | | 1.0E-01 | 9.4E-02 | | | | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | 8.0E-02 | I | | | V | | 1 | | 1.4E+09 | 8.6E+04 | 1.8E+02 | | | | | 8.2E+04 | | | 8.2E+04 |
| Chloronitrobenzene, o- | 88-73-3 | 3.0E-01 | P | | | 3.0E-03 | P | 1.0E-05 | X | | | 1 | 0.1 | 1.4E+09 | | | 9.5E+00 | 1.5E+01 | | 5.8E+00 | 3.1E+03 | 4.7E+03 | 6.0E+04 | 1.8E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Chloronitrobenzene, p- | 100-00-5 | 6.3E-03 | P | | | 1.0E-03 | P | 6.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | 4.5E+02 | 6.9E+02 | | 2.7E+02 | 1.0E+03 | 1.6E+03 | 3.6E+06 | 6.2E+02 |
| Chlorophenol, 2- | 95-57-8 | | | | | 5.0E-03 | I | | | V | | 1 | | 1.4E+09 | 1.3E+05 | 2.2E+04 | | | | | 5.1E+03 | | | 5.1E+03 |
| Chloropicrin | 76-06-2 | | | | | | | 4.0E-04 | C | | | | | 1.4E+09 | | | | | | | | | 2.4E+06 | 2.4E+06 |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 9.2E+02 | 1.4E+03 | 1.9E+07 | 5.6E+02 | 1.5E+04 | 2.3E+04 | | 9.2E+03 |
| Chlorotoluene, o- | 95-49-8 | | | | | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 8.7E+03 | 9.1E+02 | | | | | 2.0E+04 | | | 2.0E+04 |
| Chlorotoluene, p- | 106-43-4 | | | | | 7.0E-02 | P | | | V | | 1 | | 1.4E+09 | 7.9E+03 | 2.5E+02 | | | | | 7.2E+04 | | | 7.2E+04 |
| Chlorozotocin | 54749-90-5 | 2.4E+02 | C | 6.9E-02 | C | | | | | | | | | 1.4E+09 | | | 1.2E-02 | | 2.4E+02 | 1.2E-02 | | | | |
| Chlorpropham | 101-21-3 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+05 | 3.1E+05 | | 1.2E+05 |
| Chlorpyrifos | 2921-88-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | 1.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Chlorsulfuron | 64902-72-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Chlorthiophos | 60238-56-4 | | | | | 8.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | 1.5E+00 | I | | | | | 0.013 | | 1.4E+09 | | | | | | | 1.5E+06 | | | 1.5E+06 |
| Chromium(VI) | 18540-29-9 | 5.0E-01 | J | 8.4E-02 | I | 3.0E-03 | I | 1.0E-04 | I | | M | 0.025 | | 1.4E+09 | | | 5.7E+00 | | 2.0E+02 | 5.6E+00 | 3.1E+03 | | 6.0E+05 | 3.1E+03 |
| Chromium, Total | 7440-47-3 | | | | | | | | | | | 0.013 | | 1.4E+09 | | | | | | | | | | |
| Cobalt | 7440-48-4 | | | 9.0E-03 | P | 3.0E-04 | P | 6.0E-06 | P | | | 1 | | 1.4E+09 | | | | | 1.9E+03 | 1.9E+03 | 3.1E+02 | | 3.6E+04 | 3.0E+02 |
| Copper | 7440-50-8 | | | | | 4.0E-02 | H | | | | | 1 | | 1.4E+09 | | | | | | | 4.1E+04 | | | 4.1E+04 |
| Cresol, m- | 108-39-4 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | 3.6E+09 | 3.1E+04 |
| Cresol, o- | 95-48-7 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | 3.6E+09 | 3.1E+04 |
| Cresol, p- | 106-44-5 | | | | | 5.0E-03 | H | 6.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | 3.6E+09 | 3.1E+03 |
| Cresol, p-chloro-m- | 59-50-7 | | | | | 1.0E-01 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Cresols | 1319-77-3 | | | | | 1.0E-01 | A | 6.0E-01 | C | V | | 1 | | 1.4E+09 | 3.3E+05 | 5.0E+04 | | | | | 1.0E+05 | | 8.6E+05 | 9.1E+04 |
| Crotonaldehyde, trans- | 123-73-9 | 1.9E+00 | H | | | | | | | V | | 1 | | 1.4E+09 | 2.0E+04 | 1.7E+04 | 1.5E+00 | | | 1.5E+00 | | | | |
| Cumene | 98-82-8 | | | | | 1.0E-01 | I | 4.0E-01 | I | V | | 1 | | 1.4E+09 | 6.7E+03 | 2.7E+02 | | | | | 1.0E+05 | | 1.2E+04 | 1.1E+04 |
| Cupferron | 135-20-6 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | | | 1.4E+09 | | | 1.3E+01 | | 2.7E+05 | 1.3E+01 | | | | |
| Cyanazine | 21725-46-2 | 8.4E-01 | H | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 3.4E+00 | 5.2E+00 | | 2.1E+00 | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| **Cyanides** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | 4.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 4.1E+04 | | | 4.1E+04 |
| ~Copper Cyanide | 544-92-3 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.1E+03 | | | 5.1E+03 |
| ~Cyanide (CN-) | 57-12-5 | | | | | 2.0E-02 | I | | | V | | 1 | | 1.4E+09 | 5.0E+04 | 1.0E+07 | | | | | 2.0E+04 | | | 2.0E+04 |
| ~Cyanogen | 460-19-5 | | | | | 4.0E-02 | I | | | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.5E+03 | | | | | 4.1E+04 | | | 4.1E+04 |
| ~Cyanogen Bromide | 506-68-3 | | | | | 9.0E-02 | I | | | V | | 1 | | 1.4E+09 | 9.7E+02 | 1.0E+05 | | | | | 9.2E+04 | | | 9.2E+04 |
| ~Cyanogen Chloride | 506-77-4 | | | | | 5.0E-02 | I | | | V | | 1 | | 1.4E+09 | 2.1E+03 | 4.3E+03 | | | | | 5.1E+04 | | | 5.1E+04 |
| ~Hydrogen Cyanide | 74-90-8 | | | | | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | | 1.4E+09 | 6.1E+03 | 1.2E+05 | | | | | 2.0E+04 | | 8.0E+01 | 8.0E+01 |
| ~Potassium Cyanide | 151-50-8 | | | | | 5.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.1E+04 | | | 5.1E+04 |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | 2.0E-01 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 2.0E+05 | | | 2.0E+05 |
| ~Silver Cyanide | 506-64-9 | | | | | 1.0E-01 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 1.0E+05 | | | 1.0E+05 |
| ~Sodium Cyanide | 143-33-9 | | | | | 4.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 4.1E+04 | | | 4.1E+04 |
| ~Thiocyanate | 463-56-9 | | | | | 2.0E-04 | P | | | V | | 1 | | 1.4E+09 | 7.1E+03 | 4.6E+03 | | | | | 2.0E+02 | | | 2.0E+02 |
| ~Zinc Cyanide | 557-21-1 | | | | | 5.0E-02 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.1E+04 | | | 5.1E+04 |
| Cyclohexane | 110-82-7 | | | | | | | 6.0E+00 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+02 | | | | | | | 3.0E+04 | 3.0E+04 |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 2.3E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E+02 | 1.9E+02 | | 7.5E+01 | | | | |
| Cyclohexanone | 108-94-1 | | | | | 5.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+06 | 7.7E+06 | | 3.1E+06 |
| Cyclohexylamine | 108-91-8 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+05 | 3.1E+05 | | 1.2E+05 |
| Cyhalothrin/karate | 68085-85-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Cypermethrin | 52315-07-8 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Cyromazine | 66215-27-8 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.7E+03 | 1.2E+04 | | 4.6E+03 |
| DDD | 72-54-8 | 2.4E-01 | I | 6.9E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E+01 | 1.8E+01 | 2.4E+05 | 7.2E+00 | | | | |
| DDE, p,p'- | 72-55-9 | 3.4E-01 | I | 9.7E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.4E+00 | 1.3E+01 | 1.7E+05 | 5.1E+00 | | | | |
| DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I | | | | | 1 | 0.03 | 1.4E+09 | | | 8.4E+00 | 4.3E+01 | 1.7E+05 | 7.0E+00 | 5.1E+02 | 2.6E+03 | | 4.3E+02 |
| Dacthal | 1861-32-1 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Dalapon | 75-99-0 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 7.0E-04 | I | | | 7.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 | 7.2E+03 | 1.1E+04 | | 4.3E+03 |
| Demeton | 8065-48-3 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+01 | 6.2E+01 | | 2.5E+01 |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | I | | | 6.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.4E+03 | 3.6E+03 | | 1.4E+03 | 6.1E+05 | 9.3E+05 | | 3.7E+05 |
| Diallate | 2303-16-4 | 6.1E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.7E+01 | 7.1E+01 | | 2.8E+01 | | | | |
| Diazinon | 333-41-5 | | | | | 7.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+02 | 1.1E+03 | | 4.3E+02 |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P | 2.0E-04 | I | V | M | 1 | | 1.4E+09 | 3.4E+04 | 9.8E+02 | 3.6E+00 | | 7.0E-02 | 6.9E-02 | 2.0E+02 | | 3.0E+01 | 2.6E+01 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | I | 2.7E-05 | C | 2.0E-02 | I | | | V | | 1 | 0.1 | 1.4E+09 | 8.6E+03 | 8.0E+02 | 3.4E+01 | 5.2E+01 | 3.9E+00 | 3.3E+00 | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Dibromoethane, 1,2- | 106-93-4 | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 9.3E+03 | 1.3E+03 | 1.4E+00 | | 1.9E-01 | 1.7E-01 | 9.2E+03 | | 3.7E+02 | 3.5E+02 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | | | 1.0E-02 | H | 4.0E-03 | X | V | | 1 | | 1.4E+09 | 6.1E+03 | 2.8E+03 | | | | | 1.0E+04 | | 1.1E+02 | 1.1E+02 |
| Dibutyl Phthalate | 84-74-2 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Dibutyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Dicamba | 1918-00-9 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Dichloro-2-butene, 1,4- | 764-41-0 | | | 4.2E-03 | P | | | | | V | | 1 | | 1.4E+09 | 1.1E+04 | 5.2E+02 | | | 3.3E-02 | 3.3E-02 | | | | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 1.4E+09 | 1.2E+04 | 5.2E+02 | | | 3.5E-02 | 3.5E-02 | | | | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | | | 4.2E-03 | P | | | | | V | | 1 | 0.1 | 1.4E+09 | 1.2E+04 | 7.6E+02 | | | 3.5E-02 | 3.5E-02 | | | | |
| Dichloroacetic Acid | 79-43-6 | 5.0E-02 | I | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 5.7E+01 | 8.7E+01 | | 3.5E+01 | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Dichlorobenzene, 1,2- | 95-50-1 | | | | | 9.0E-02 | I | 2.0E-01 | H | V | | 1 | | 1.4E+09 | 1.3E+04 | 3.8E+02 | | | | | 9.2E+04 | | 1.1E+04 | 9.8E+03 |
| Dichlorobenzene, 1,4- | 106-46-7 | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A | 8.0E-01 | I | V | | 1 | | 1.4E+09 | 1.1E+04 | | 5.3E+02 | | 1.3E+01 | 1.2E+01 | 7.2E+04 | | 3.9E+04 | 2.5E+04 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 4.5E-01 | I | 3.4E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.4E+00 | 9.6E+00 | 4.9E+04 | 3.8E+00 | | | | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | 9.0E-03 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+03 | 1.4E+04 | | 5.5E+03 |
| Dichlorodifluoromethane | 75-71-8 | | | | | 2.0E-01 | I | 2.0E-01 | H | V | | 1 | | 1.4E+09 | 9.0E+02 | 8.5E+02 | | | | | 2.0E+05 | | 7.8E+02 | 7.8E+02 |
| Dichloroethane, 1,1- | 75-34-3 | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P | | | V | | 1 | | 1.4E+09 | 2.2E+03 | 1.7E+03 | 5.0E+02 | | 1.7E+01 | 1.7E+01 | 2.0E+05 | | | 2.0E+05 |
| Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 2.0E-02 | P | 2.4E+00 | A | V | | 1 | | 1.4E+09 | 4.9E+03 | 3.0E+03 | 3.1E+01 | | 2.3E+00 | 2.2E+00 | 2.0E+04 | | 5.2E+04 | 1.5E+04 |
| Dichloroethylene, 1,1- | 75-35-4 | | | | | 5.0E-02 | I | 2.0E-01 | I | V | | 1 | | 1.4E+09 | 1.2E+03 | 1.2E+03 | | | | | 5.1E+04 | | 1.1E+03 | 1.1E+03 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | 9.0E-03 | H | | | V | | 1 | | 1.4E+09 | 2.7E+03 | 1.3E+03 | | | | | 9.2E+03 | | | 9.2E+03 |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 1.0E-02 | P | | | V | | 1 | | 1.4E+09 | 2.7E+03 | 2.4E+03 | | | | | 1.0E+04 | | | 1.0E+04 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | | | 2.0E-02 | I | 6.0E-02 | P | V | | 1 | | 1.4E+09 | 2.7E+03 | 1.7E+03 | | | | | 2.0E+04 | | 7.1E+02 | 6.9E+02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.05 | 1.4E+09 | | | | | | | 1.0E+04 | 3.1E+04 | | 7.7E+03 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+03 | 1.2E+04 | | 4.9E+03 |
| Dichloropropane, 1,2- | 78-87-5 | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A | 4.0E-03 | I | V | | 1 | | 1.4E+09 | 3.9E+03 | 1.4E+03 | 8.0E+01 | | 4.8E+00 | 4.5E+00 | 9.2E+04 | | 6.8E+01 | 6.8E+01 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | 2.0E-02 | P | | | V | | 1 | | 1.4E+09 | 7.3E+03 | 1.5E+03 | | | | | 2.0E+04 | | | 2.0E+04 |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Dichloropropene, 1,3- | 542-75-6 | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 3.7E+03 | 1.6E+03 | 2.9E+01 | | 1.1E+01 | 8.1E+00 | 3.1E+04 | | 3.2E+02 | 3.2E+02 |
| Dichlorvos | 62-73-7 | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I | 5.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | 9.9E+00 | 1.5E+01 | 2.0E+05 | 5.9E+00 | 5.1E+02 | 7.7E+02 | 3.0E+06 | 3.1E+02 |
| Dicyclopentadiene | 77-73-6 | | | | | 8.0E-03 | P | 7.0E-03 | P | V | | 1 | | 1.4E+09 | 3.9E+03 | 1.3E+02 | | | | | 8.2E+03 | | 1.2E+02 | 1.2E+02 |
| Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.8E-01 | 2.7E-01 | 3.6E+03 | 1.1E-01 | 5.1E+01 | 7.7E+01 | | 3.1E+01 |
| Diethanolamine | 111-42-2 | | | | | | | 3.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 1.8E+07 | 1.8E+07 |
| Diethyl Phthalate | 84-66-2 | | | | | 8.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+05 | 1.2E+06 | | 4.9E+05 |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | | | 3.0E-02 | P | 1.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | 6.0E+05 | 1.8E+04 |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | | | 6.0E-02 | P | 3.0E-04 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+04 | 9.3E+04 | 1.8E+06 | 3.6E+04 |
| Diethylformamide | 617-84-5 | | | | | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Diethylstilbestrol | 56-53-1 | 3.5E+02 | C | 1.0E-01 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.2E-03 | 1.2E-02 | 1.7E+02 | 4.9E-03 | | | | |
| Difenzoquat | 43222-48-6 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+04 | 1.2E+05 | | 4.9E+04 |
| Diflubenzuron | 35367-38-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Difluoroethane, 1,1- | 75-37-6 | | | | | | | 4.0E+01 | I | V | | 1 | | 1.4E+09 | 1.2E+03 | 1.4E+03 | | | | | | | 2.2E+05 | 2.2E+05 |
| Dihydrosafrole | 94-58-6 | 4.4E-02 | C | 1.3E-05 | C | | | | | | | | | 1.4E+09 | | | 6.5E+01 | | 1.3E+06 | 6.5E+01 | | | | |
| Diisopropyl Ether | 108-20-3 | | | | | | | 4.0E-01 | P | V | | 1 | | 1.4E+09 | 3.3E+03 | 2.3E+03 | | | | | | | 5.8E+03 | 5.8E+03 |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | 8.0E-02 | I | | | V | | 1 | | 1.4E+09 | 3.1E+04 | 5.3E+02 | | | | | 8.2E+04 | | | 8.2E+04 |
| Dimethipin | 55290-64-7 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Dimethoate | 60-51-5 | | | | | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+02 | 3.1E+02 | | 1.2E+02 |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 1.4E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.0E+02 | 3.1E+02 | | 1.2E+02 | | | | |
| Dimethyl methylphosphonate | 756-79-6 | 1.7E-03 | P | | | 6.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E+03 | 2.6E+03 | | 1.0E+03 | 6.1E+04 | 9.3E+04 | | 3.7E+04 |
| Dimethylamino azobenzene [p-] | 60-11-7 | 4.6E+00 | C | 1.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.2E-01 | 9.4E-01 | 1.3E+04 | 3.8E-01 | | | | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 5.8E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.9E+00 | 7.5E+00 | | 3.0E+00 | | | | |
| Dimethylaniline, 2,4- | 95-68-1 | 7.5E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.8E+00 | 5.8E+00 | | 2.3E+00 | | | | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | 2.0E-03 | I | | | V | | 1 | | 1.4E+09 | 3.4E+04 | 8.3E+02 | | | | | 2.0E+03 | | | 2.0E+03 |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 1.1E+01 | P | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.6E-01 | 3.9E-01 | | 1.6E-01 | | | | |
| Dimethylformamide | 68-12-2 | | | | | 1.0E-01 | P | 3.0E-02 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | 1.8E+08 | 6.2E+04 |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | | | 1.0E-04 | X | 2.0E-06 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | 1.2E+04 | 6.1E+01 |
| Dimethylhydrazine, 1,2- | 540-73-8 | 5.5E+02 | C | 1.6E-01 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.2E-03 | 7.9E-03 | 1.0E+02 | 3.1E-03 | | | | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | 6.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+02 | 9.3E+02 | | 3.7E+02 |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Dimethylterephthalate | 120-61-6 | | | | | 1.0E-01 | I | | | V | | 1 | | 1.4E+09 | 2.3E+04 | 5.5E+00 | | | | | 1.0E+05 | | | 1.0E+05 |
| Dimethylvinylchloride | 513-37-1 | 4.5E-02 | C | 1.3E-05 | C | | | | | | | | | 1.4E+09 | | | 6.4E+01 | | 1.3E+06 | 6.4E+01 | | | | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | 1.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 6.8E-01 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.2E+00 | 6.4E+00 | | 2.5E+00 | | | | |
| Dinitrotoluene, 2,4- | 121-14-2 | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I | | | | | 1 | 0.102 | 1.4E+09 | | | 9.2E+00 | 1.4E+01 | 1.9E+05 | 5.5E+00 | 2.0E+03 | 3.0E+03 | | 1.2E+03 |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | 1.0E-03 | P | | | | | 1 | 0.099 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | 2.0E-03 | S | | | | | 1 | 0.006 | 1.4E+09 | | | | | | | 2.0E+03 | 5.2E+04 | | 2.0E+03 |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | 2.0E-03 | S | | | | | 1 | 0.009 | 1.4E+09 | | | | | | | 2.0E+03 | 3.4E+04 | | 1.9E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Dinoseb | 88-85-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Dioxane, 1,4- | 123-91-1 | 1.1E-02 | I | 7.7E-06 | C | 1.0E-01 | A | 3.6E+00 | A | | | 1 | 0.1 | 1.4E+09 | | | 2.6E+02 | 3.9E+02 | 2.2E+06 | 1.6E+02 | 1.0E+05 | 1.6E+05 | 2.2E+10 | 6.2E+04 |
| **Dioxins** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 6.2E+03 | I | 1.3E+00 | I | | | | | | | 1 | 0.03 | 1.4E+09 | | | 4.6E-04 | 2.3E-03 | 1.3E+01 | 3.9E-04 | | | | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 1.0E-09 | A | 4.0E-08 | C | | | 1 | 0.03 | 1.4E+09 | | | 2.2E-05 | 1.1E-04 | 4.4E-01 | 1.8E-05 | 1.0E-03 | 5.2E-03 | 2.4E+02 | 8.5E-04 |
| Diphenamid | 957-51-7 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Diphenyl Sulfone | 127-63-9 | | | | | 8.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Diphenylamine | 122-39-4 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Diphenylhydrazine, 1,2- | 122-66-7 | 8.0E-01 | I | 2.2E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.6E+00 | 5.4E+00 | 7.6E+04 | 2.2E+00 | | | | |
| Diquat | 85-00-7 | | | | | 2.2E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.3E+03 | 3.4E+03 | | 1.4E+03 |
| Direct Black 38 | 1937-37-7 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.9E-01 | 5.9E-01 | 7.9E+03 | 2.3E-01 | | | | |
| Direct Blue 6 | 2602-46-2 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.9E-01 | 5.9E-01 | 7.9E+03 | 2.3E-01 | | | | |
| Direct Brown 95 | 16071-86-6 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.3E-01 | 6.5E-01 | 8.8E+03 | 2.6E-01 | | | | |
| Disulfoton | 298-04-4 | | | | | 4.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+01 | 6.2E+01 | | 2.5E+01 |
| Dithiane, 1,4- | 505-29-3 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Diuron | 330-54-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Dodine | 2439-10-3 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| EPTC | 759-94-4 | | | | | 2.5E-02 | I | | | V | | 1 | | 1.4E+09 | 1.3E+05 | 4.1E+02 | | | | | 2.6E+04 | | | 2.6E+04 |
| Endosulfan | 115-29-7 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+03 | 9.3E+03 | | 3.7E+03 |
| Endothall | 145-73-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Endrin | 72-20-8 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Epichlorohydrin | 106-89-8 | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P | 1.0E-03 | I | V | | 1 | | 1.4E+09 | 2.0E+04 | 1.1E+04 | 2.9E+02 | | 2.1E+02 | 1.2E+02 | 6.1E+03 | | 8.9E+01 | 8.8E+01 |
| Epoxybutane, 1,2- | 106-88-7 | | | | | | | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 8.2E+03 | 1.5E+04 | | | | | | | 7.2E+02 | 7.2E+02 |
| Ethephon | 16672-87-0 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Ethion | 563-12-2 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+02 | 7.7E+02 | | 3.1E+02 |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | | | 3.0E-01 | H | 3.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+05 | 4.7E+05 | 1.8E+09 | 1.9E+05 |
| Ethoxyethanol, 2- | 110-80-5 | | | | | 4.0E-01 | H | 2.0E-01 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+05 | 6.2E+05 | 1.2E+09 | 2.5E+05 |
| Ethyl Acetate | 141-78-6 | | | | | 9.0E-01 | I | | | V | | 1 | | 1.4E+09 | 9.3E+03 | 1.1E+04 | | | | | 9.2E+05 | | | 9.2E+05 |
| Ethyl Acrylate | 140-88-5 | 4.8E-02 | H | | | | | | | V | | 1 | | 1.4E+09 | 6.8E+03 | 2.5E+03 | 6.0E+01 | | | 6.0E+01 | | | | |
| Ethyl Chloride | 75-00-3 | | | | | | | 1.0E+01 | I | V | | 1 | | 1.4E+09 | 1.4E+03 | 2.1E+03 | | | | | | | 6.1E+04 | 6.1E+04 |
| Ethyl Ether | 60-29-7 | | | | | 2.0E-01 | I | | | V | | 1 | | 1.4E+09 | 3.4E+03 | 1.0E+04 | | | | | 2.0E+05 | | | 2.0E+05 |
| Ethyl Methacrylate | 97-63-2 | | | | | 9.0E-02 | H | | | V | | 1 | | 1.4E+09 | 6.2E+03 | 1.1E+03 | | | | | 9.2E+04 | | | 9.2E+04 |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | 1.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+01 | 1.6E+01 | | 6.2E+00 |
| Ethylbenzene | 100-41-4 | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I | 1.0E+00 | I | V | | 1 | | 1.4E+09 | 6.1E+03 | 4.8E+02 | 2.6E+02 | | 3.0E+01 | 2.7E+01 | 1.0E+05 | | 2.7E+04 | 2.1E+04 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | 3.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Ethylene Diamine | 107-15-3 | | | | | 9.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+04 | 1.4E+05 | | 5.5E+04 |
| Ethylene Glycol | 107-21-1 | | | | | 2.0E+00 | I | 4.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+06 | 3.1E+06 | 2.4E+09 | 1.2E+06 |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | | | 5.0E-01 | I | 1.3E+01 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+05 | 7.7E+05 | 7.7E+10 | 3.1E+05 |
| Ethylene Oxide | 75-21-8 | 3.1E-01 | C | 8.8E-05 | C | | | 3.0E-02 | C | V | | 1 | | 1.4E+09 | 6.6E+03 | 1.2E+05 | 9.2E+00 | | 9.1E-01 | 8.3E-01 | | | 8.6E+02 | 8.6E+02 |
| Ethylene Thiourea | 96-45-7 | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 6.4E+01 | 9.6E+01 | 1.3E+06 | 3.8E+01 | 8.2E+01 | 1.2E+02 | | 4.9E+01 |
| Ethyleneimine | 151-56-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | | | 1.4E+09 | | | 4.4E-02 | | 8.8E+02 | 4.4E-02 | | | | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+06 | 4.7E+06 | | 1.9E+06 |
| Express | 101200-48-0 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+03 | 1.2E+04 | | 4.9E+03 |
| Fenamiphos | 22224-92-6 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+02 | 3.9E+02 | | 1.5E+02 |
| Fenpropathrin | 39515-41-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Fluometuron | 2164-17-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Fluoride | 16984-48-8 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | 1.4E+09 | | | | | | | 4.1E+04 | | 7.7E+07 | 4.1E+04 |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | | | 6.0E-02 | I | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 6.1E+04 | | 7.7E+07 | 6.1E+04 |
| Fluridone | 59756-60-4 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+04 | 1.2E+05 | | 4.9E+04 |
| Flurprimidol | 56425-91-3 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Flutolanil | 66332-96-5 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+04 | 9.3E+04 | | 3.7E+04 |
| Fluvalinate | 69409-94-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Folpet | 133-07-3 | 3.5E-03 | I | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Fomesafen | 72178-02-0 | 1.9E-01 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.5E+01 | 2.3E+01 | | 9.1E+00 | | | | |
| Fonofos | 944-22-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Formaldehyde | 50-00-0 | | | 1.3E-05 | I | 2.0E-01 | I | 9.8E-03 | A | | | 1 | 0.1 | 1.4E+09 | | | | | 1.3E+06 | 1.3E+06 | 2.0E+05 | 3.1E+05 | 5.9E+07 | 1.2E+05 |
| Formic Acid | 64-18-6 | | | | | 2.0E+00 | H | 3.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+06 | 3.1E+06 | 1.8E+07 | 1.2E+06 |
| Fosetyl-AL | 39148-24-8 | | | | | 3.0E+00 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+06 | 4.7E+06 | | 1.9E+06 |
| **Furans** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | 1.0E-03 | X | | | V | | 1 | | 1.4E+09 | 2.1E+05 | 1.7E+02 | | | | | 1.0E+03 | | | 1.0E+03 |
| ~Furan | 110-00-9 | | | | | 1.0E-03 | I | | | V | | 1 | | 1.4E+09 | 2.8E+03 | 6.2E+03 | | | | | 1.0E+03 | | | 1.0E+03 |
| Furazolidone | 67-45-8 | 3.8E+00 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 7.5E-01 | 1.1E+00 | | 4.5E-01 | | | | |
| Furfural | 98-01-1 | | | | | 3.0E-03 | I | 5.0E-02 | H | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | 3.0E+08 | 1.9E+03 |
| Furium | 531-82-8 | 1.5E+00 | C | 4.3E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+00 | 2.9E+00 | 3.9E+04 | 1.2E+00 | | | | |
| Furmecyclox | 60568-05-0 | 3.0E-02 | I | 8.6E-06 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.5E+01 | 1.5E+02 | 1.9E+06 | 5.8E+01 | | | | |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Glufosinate, Ammonium | 77182-82-2 | | | | | 4.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+02 | 6.2E+02 | | 2.5E+02 |
| Glutaraldehyde | 111-30-8 | | | | | | | 8.0E-05 | C | | | | | 1.4E+09 | | | | | | | | | 4.8E+05 | 4.8E+05 |
| Glycidyl | 765-34-4 | | | | | 4.0E-04 | I | 1.0E-03 | H | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+02 | 6.2E+02 | 6.0E+06 | 2.5E+02 |
| Glyphosate | 1071-83-6 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Goal | 42874-03-3 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Guthion | 86-50-0 | | | | | 3.0E-03 | A | 1.0E-02 | A | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | 6.0E+07 | 1.9E+03 |
| Haloxyfop, Methyl | 69806-40-2 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+01 | 7.7E+01 | | 3.1E+01 |
| Harmony | 79277-27-3 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Heptachlor | 76-44-8 | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 6.4E-01 | 9.6E-01 | 1.3E+04 | 3.8E-01 | 5.1E+02 | 7.7E+02 | | 3.1E+02 |
| Heptachlor Epoxide | 1024-57-3 | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.1E-01 | 4.8E-01 | 6.4E+03 | 1.9E-01 | 1.3E+01 | 2.0E+01 | | 8.0E+00 |
| Hexabromobenzene | 87-82-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | 2.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 2.0E+02 | | | 2.0E+02 |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.8E+00 | 2.7E+00 | 3.6E+04 | 1.1E+00 | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 3.7E+01 | 5.6E+01 | 7.6E+05 | 2.2E+01 | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A | | | | | 1 | 0.1 | 1.4E+09 | | | 4.5E-01 | 6.9E-01 | 9.3E+03 | 2.7E-01 | 8.2E+03 | 1.2E+04 | | 4.9E+03 |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 1.8E+00 | I | 5.3E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E+00 | 2.4E+00 | 3.2E+04 | 9.6E-01 | | | | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I | | | | | 1 | 0.04 | 1.4E+09 | | | 2.6E+00 | 9.9E+00 | 5.4E+04 | 2.1E+00 | 3.1E+02 | 1.2E+03 | | 2.4E+02 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.8E+00 | I | 5.1E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E+00 | 2.4E+00 | 3.3E+04 | 9.6E-01 | | | | |
| Hexachlorocyclopentadiene | 77-47-4 | | | | | 6.0E-03 | I | 2.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+03 | 9.3E+03 | 1.2E+06 | 3.7E+03 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | I | 4.0E-06 | I | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.0E+02 | 3.1E+02 | 4.2E+06 | 1.2E+02 | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Hexachlorophene | 70-30-4 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 1.1E-01 | I | | | 3.0E-03 | I | | | | | 1 | 0.015 | 1.4E+09 | | | 2.6E+01 | 2.6E+02 | | 2.4E+01 | 3.1E+03 | 3.1E+04 | | 2.8E+03 |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | | | | | 1.0E-05 | I | V | | 1 | | 1.4E+09 | 3.2E+05 | 5.2E+03 | | | | | | | 1.4E+01 | 1.4E+01 |
| Hexane, N- | 110-54-3 | | | | | 6.0E-02 | H | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 8.9E+02 | 1.4E+02 | | | | | 6.1E+04 | | 2.7E+03 | 2.6E+03 |
| Hexanedioic Acid | 124-04-9 | | | | | 2.0E+00 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+06 | 3.1E+06 | | 1.2E+06 |
| Hexanone, 2- | 591-78-6 | | | | | 5.0E-03 | I | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 3.3E+03 | | | | | 5.1E+03 | | 1.9E+03 | 1.4E+03 |
| Hexazinone | 51235-04-2 | | | | | 3.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.4E+04 | 5.1E+04 | | 2.0E+04 |
| Hydrazine | 302-01-2 | 3.0E+00 | I | 4.9E-03 | I | | | 3.0E-05 | P | | | 1 | | 1.4E+09 | | | 9.5E-01 | | 3.4E+03 | 9.5E-01 | | | 1.8E+05 | 1.8E+05 |
| Hydrazine Sulfate | 10034-93-2 | 3.0E+00 | I | 4.9E-03 | I | | | | | | | 1 | | 1.4E+09 | | | 9.5E-01 | | 3.4E+03 | 9.5E-01 | | | | |
| Hydrogen Chloride | 7647-01-0 | | | | | | | 2.0E-02 | I | | | 1 | | 1.4E+09 | | | | | | | | | 1.2E+08 | 1.2E+08 |
| Hydrogen Fluoride | 7664-39-3 | | | | | 4.0E-02 | C | 1.4E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 4.1E+04 | | 8.3E+07 | 4.1E+04 |
| Hydrogen Sulfide | 7783-06-4 | | | | | | | 2.0E-03 | I | | | 1 | | 1.4E+09 | | | | | | | | | 1.2E+07 | 1.2E+07 |
| Hydroquinone | 123-31-9 | 6.0E-02 | P | | | 4.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 4.8E+01 | 7.2E+01 | | 2.9E+01 | 4.1E+04 | 6.2E+04 | | 2.5E+04 |
| Imazalil | 35554-44-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Imazaquin | 81335-37-7 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+05 | 3.9E+05 | | 1.5E+05 |
| Iodine | 7553-56-2 | | | | | 1.0E-02 | A | | | | | | | 1.4E+09 | | | | | | | 1.0E+04 | | | 1.0E+04 |
| Iprodione | 36734-19-7 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+04 | 6.2E+04 | | 2.5E+04 |
| Iron | 7439-89-6 | | | | | 7.0E-01 | P | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+05 | | | 7.2E+05 |
| Isobutyl Alcohol | 78-83-1 | | | | | 3.0E-01 | I | | | V | | 1 | | 1.4E+09 | 3.0E+04 | 1.0E+04 | | | | | 3.1E+05 | | | 3.1E+05 |
| Isophorone | 78-59-1 | 9.5E-04 | I | | | 2.0E-01 | I | 2.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | 3.0E+03 | 4.6E+03 | | 1.8E+03 | 2.0E+05 | 3.1E+05 | 1.2E+10 | 1.2E+05 |
| Isopropalin | 33820-53-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+04 | 2.3E+04 | | 9.2E+03 |
| Isopropanol | 67-63-0 | | | | | | | 7.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 4.2E+10 | 4.2E+10 |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Isoxaben | 82558-50-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| JP-7 | NA | | | | | | | 3.0E-01 | A | V | | 1 | | 1.4E+09 | | | | | | | | | 1.8E+09 | 1.8E+09 |
| Kerb | 23950-58-5 | | | | | 7.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.7E+04 | 1.2E+05 | | 4.6E+04 |
| Lactofen | 77501-63-4 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| **Lead Compounds** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | | | | 1 | | 1.4E+09 | | | | | | | | | | 8.0E+02 |
| ~Tetraethyl Lead | 78-00-2 | | | | | 1.0E-07 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E-01 | 1.6E-01 | | 6.2E-02 |
| Lead acetate | 301-04-2 | 2.8E-01 | C | 8.0E-05 | C | | | | | | | | | 1.4E+09 | | | 1.0E+01 | | 2.1E+05 | 1.0E+01 | | | | |
| Lead subacetate | 1335-32-6 | 3.8E-02 | C | 1.1E-05 | C | | | | | | | | | 1.4E+09 | | | 7.5E+01 | | 1.5E+06 | 7.5E+01 | | | | |
| Linuron | 330-55-2 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Lithium | 7439-93-2 | | | | | 2.0E-03 | P | | | | | 1 | | 1.4E+09 | | | | | | | 2.0E+03 | | | 2.0E+03 |
| Lithium Perchlorate | 7791-03-9 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+02 | | | 7.2E+02 |
| Londax | 83055-99-6 | | | | | 2.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+05 | 3.1E+05 | | 1.2E+05 |
| MCPA | 94-74-6 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+02 | 7.7E+02 | | 3.1E+02 |
| MCPB | 94-81-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| MCPP | 93-65-2 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Malathion | 121-75-5 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Maleic Anhydride | 108-31-6 | | | | | 1.0E-01 | I | 7.0E-04 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | 4.2E+06 | 6.1E+04 |
| Maleic Hydrazide | 123-33-1 | | | | | 5.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+05 | 7.7E+05 | | 3.1E+05 |
| Malononitrile | 109-77-3 | | | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Mancozeb | 8018-01-7 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Maneb | 12427-38-2 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Manganese (Water) | 7439-96-5 | | | | | 2.4E-02 | I | 5.0E-05 | I | | | 0.04 | | 1.4E+09 | | | | | | | 2.5E+04 | | 3.0E+05 | 2.3E+04 |
| Mephosfolan | 950-10-7 | | | | | 9.0E-05 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+01 | 1.4E+02 | | 5.5E+01 |
| Mepiquat Chloride | 24307-26-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| **Mercury Compounds** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | | | 3.0E-04 | I | 3.0E-05 | C | | | 0.07 | | 1.4E+09 | | | | | | | 3.1E+02 | | 1.8E+05 | 3.1E+02 |
| ~Mercuric Sulfide | 1344-48-5 | | | | | 3.0E-04 | S | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+02 | | | 3.1E+02 |
| ~Mercury (elemental) | 7439-97-6 | | | | | 1.6E-04 | C | 3.0E-04 | I | V | | 1 | | 1.4E+09 | 3.2E+04 | 3.1E+00 | | | | | 1.6E+02 | | 4.3E+01 | 3.4E+01 |
| ~Mercury, Inorganic Salts | NA | | | | | 3.0E-04 | S | | | | | 0.07 | | 1.4E+09 | | | | | | | 3.1E+02 | | | 3.1E+02 |
| ~Methyl Mercury | 22967-92-6 | | | | | 1.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.0E+02 | | | 1.0E+02 |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | 8.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+01 | 1.2E+02 | | 4.9E+01 |
| Merphos | 150-50-5 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+01 | 4.7E+01 | | 1.9E+01 |
| Merphos Oxide | 78-48-8 | | | | | 3.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+01 | 4.7E+01 | | 1.9E+01 |
| Metalaxyl | 57837-19-1 | | | | | 6.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+04 | 9.3E+04 | | 3.7E+04 |
| Methacrylonitrile | 126-98-7 | | | | | 1.0E-04 | I | 7.0E-04 | H | V | | 1 | | 1.4E+09 | 7.3E+03 | 4.6E+03 | | | | | 1.0E+02 | | 2.2E+01 | 1.8E+01 |
| Methamidophos | 10265-92-6 | | | | | 5.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+01 | 7.7E+01 | | 3.1E+01 |
| Methanol | 67-56-1 | | | | | 5.0E-01 | I | 4.0E+00 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+05 | 7.7E+05 | 2.4E+10 | 3.1E+05 |
| Methidathion | 950-37-8 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Methomyl | 16752-77-5 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 4.9E-02 | C | 1.4E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E+01 | 8.9E+01 | 1.2E+06 | 3.5E+01 | | | | |
| Methoxychlor | 72-43-5 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | | | 2.0E-03 | H | 9.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | 5.4E+08 | 1.2E+03 |
| Methoxyethanol, 2- | 109-86-4 | | | | | 3.0E-03 | P | 2.0E-02 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | 1.2E+08 | 1.9E+03 |
| Methyl Acetate | 79-20-9 | | | | | 1.0E+00 | H | | | V | | 1 | | 1.4E+09 | 8.7E+03 | 2.9E+04 | | | | | 1.0E+06 | | | 1.0E+06 |
| Methyl Acrylate | 96-33-3 | | | | | 3.0E-02 | H | | | V | | 1 | | 1.4E+09 | 7.5E+03 | 6.8E+03 | | | | | 3.1E+04 | | | 3.1E+04 |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | | | 6.0E-01 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 1.3E+04 | 2.8E+04 | | | | | 6.1E+05 | | 2.9E+05 | 2.0E+05 |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | | | 8.0E-02 | H | 3.0E+00 | I | V | | 1 | | 1.4E+09 | 1.1E+04 | 3.4E+03 | | | | | 8.2E+04 | | 1.5E+05 | 5.3E+04 |
| Methyl Isocyanate | 624-83-9 | | | | | | | 1.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 6.0E+06 | 6.0E+06 |
| Methyl Methacrylate | 80-62-6 | | | | | 1.4E+00 | I | 7.0E-01 | I | V | | 1 | | 1.4E+09 | 6.8E+03 | 2.4E+03 | | | | | 1.4E+06 | | 2.1E+04 | 2.1E+04 |
| Methyl Parathion | 298-00-0 | | | | | 2.5E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+02 | 3.9E+02 | | 1.5E+02 |
| Methyl Phosphonic Acid | 993-13-5 | | | | | 6.0E-02 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+04 | 9.3E+04 | | 3.7E+04 |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | | | 6.0E-03 | H | 4.0E-02 | H | V | | 1 | | 1.4E+09 | 1.2E+04 | 3.8E+02 | | | | | 6.1E+03 | | 2.2E+03 | 1.6E+03 |
| Methyl methanesulfonate | 66-27-3 | 9.9E-02 | C | 2.8E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.9E+01 | 4.4E+01 | 6.0E+05 | 1.7E+01 | | | | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 1.8E-03 | C | 2.6E-07 | C | | | 3.0E+00 | I | V | | 1 | | 1.4E+09 | 5.3E+03 | 8.9E+03 | 1.6E+03 | | 2.5E+02 | 2.2E+02 | | | 6.9E+04 | 6.9E+04 |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 3.3E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.7E+01 | 1.3E+02 | | 5.2E+01 | | | | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 8.3E+00 | C | 2.4E-03 | C | | | | | | | | | 1.4E+09 | | | 3.5E-01 | | 7.0E+03 | 3.5E-01 | | | | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 1.3E-01 | C | 3.7E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.2E+01 | 3.3E+01 | 4.5E+05 | 1.3E+01 | | | | |
| Methylarsonic acid | 124-58-3 | | | | | 1.0E-02 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Methylcholanthrene, 3- | 56-49-5 | 2.2E+01 | C | 6.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E-01 | 2.0E-01 | 2.7E+03 | 7.8E-02 | | | | |
| Methylene Chloride | 75-09-2 | 7.5E-03 | I | 4.7E-07 | I | 6.0E-02 | I | 1.0E+00 | A | V | | 1 | | 1.4E+09 | 2.4E+03 | 3.3E+03 | 3.8E+02 | | 6.2E+01 | 5.3E+01 | 6.1E+04 | | 1.1E+04 | 9.2E+03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P | | | | M | 1 | 0.1 | 1.4E+09 | | | 2.9E+01 | 4.3E+01 | 3.9E+04 | 1.7E+01 | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 4.6E-02 | I | 1.3E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.2E+01 | 9.4E+01 | 1.3E+06 | 3.8E+01 | | | | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 1.6E+00 | C | 4.6E-04 | C | | | 2.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | 1.8E+00 | 2.7E+00 | 3.6E+04 | 1.1E+00 | | | 1.2E+08 | 1.2E+08 |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 3.6E+06 | 3.6E+06 |
| Methylstyrene, Alpha- | 98-83-9 | | | | | 7.0E-02 | H | | | V | | 1 | | 1.4E+09 | 1.4E+04 | 5.0E+02 | | | | | 7.2E+04 | | | 7.2E+04 |
| Metolachlor | 51218-45-2 | | | | | 1.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+05 | 2.3E+05 | | 9.2E+04 |
| Metribuzin | 21087-64-9 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Mineral oils | 8012-95-1 | | | | | 3.0E+00 | P | | | | | | | 1.4E+09 | | | | | | | 3.1E+06 | | | 3.1E+06 |
| Mirex | 2385-85-5 | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E-01 | 2.4E-01 | 3.3E+03 | 9.6E-02 | 2.0E+02 | 3.1E+02 | | 1.2E+02 |
| Molinate | 2212-67-1 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Molybdenum | 7439-98-7 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.1E+03 | | | 5.1E+03 |
| Monochloramine | 10599-90-3 | | | | | 1.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.0E+05 | | | 1.0E+05 |
| Monomethylaniline | 100-61-8 | | | | | 2.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | 3.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Naled | 300-76-5 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | 3.0E-02 | X | 1.0E-01 | P | V | | | | 1.4E+09 | | | | | | | 3.1E+04 | | 6.0E+08 | 3.1E+04 |
| Naphthylamine, 2- | 91-59-8 | 1.8E+00 | C | 0.0E+00 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.6E+00 | 2.4E+00 | | 9.6E-01 | | | | |
| Napropamide | 15299-99-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Nickel Carbonyl | 13463-39-3 | | | | | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | | | | | 5.1E+04 | | 3.0E+05 | 4.4E+04 |
| Nickel Oxide | 1313-99-1 | | | | | 5.0E-02 | C | 1.0E-04 | C | | | | | 1.4E+09 | | | | | | | 5.1E+04 | | 6.0E+05 | 4.7E+04 |
| Nickel Refinery Dust | NA | | | 2.4E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | | | 7.0E+04 | 7.0E+04 | 5.1E+04 | | 3.0E+05 | 4.4E+04 |
| Nickel Soluble Salts | 7440-02-0 | | | 2.6E-04 | C | 2.0E-02 | I | 9.0E-05 | A | | | 0.04 | | 1.4E+09 | | | | | 6.4E+04 | 6.4E+04 | 2.0E+04 | | 5.4E+05 | 2.0E+04 |
| Nickel Subsulfide | 12035-72-2 | 1.7E+00 | C | 4.8E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 0.04 | | 1.4E+09 | | | 1.7E+00 | | 3.5E+04 | 1.7E+00 | 5.1E+04 | | 3.0E+05 | 4.4E+04 |
| Nitrate | 14797-55-8 | | | | | 1.6E+00 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.6E+06 | | | 1.6E+06 |
| Nitrite | 14797-65-0 | | | | | 1.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 1.0E+05 | | | 1.0E+05 |
| Nitroaniline, 2- | 88-74-4 | | | | | 1.0E-02 | X | 5.0E-05 | X | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | 3.0E+05 | 6.0E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Nitroaniline, 4- | 100-01-6 | 2.0E-02 | P | | | 4.0E-03 | P | 6.0E-03 | P | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+02 | 2.2E+02 | | 8.6E+01 | 4.1E+03 | 6.2E+03 | 3.6E+07 | 2.5E+03 |
| Nitrobenzene | 98-95-3 | | | 4.0E-05 | I | 2.0E-03 | I | 9.0E-03 | I | V | | 1 | | 1.4E+09 | 7.9E+04 | 3.1E+03 | | | 2.4E+01 | 2.4E+01 | 2.0E+03 | | 3.1E+03 | 1.2E+03 |
| Nitrocellulose | 9004-70-0 | | | | | 3.0E+03 | P | | | | | | | 1.4E+09 | | | | | | | 3.1E+09 | | | 3.1E+09 |
| Nitrofurantoin | 67-20-9 | | | | | 7.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+04 | 1.1E+05 | | 4.3E+04 |
| Nitrofurazone | 59-87-0 | 1.3E+00 | C | 3.7E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.2E+00 | 3.3E+00 | 4.5E+04 | 1.3E+00 | | | | |
| Nitroglycerin | 55-63-0 | 1.7E-02 | P | | | 1.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 1.7E+02 | 2.6E+02 | | 1.0E+02 | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Nitroguanidine | 556-88-7 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Nitromethane | 75-52-5 | | | 9.0E-06 | P | | | 2.0E-02 | P | V | | 1 | | 1.4E+09 | 1.8E+04 | 1.8E+04 | | | 2.5E+01 | 2.5E+01 | | | 1.6E+03 | 1.6E+03 |
| Nitropropane, 2- | 79-46-9 | | | 2.7E-03 | H | | | 2.0E-02 | I | V | | 1 | | 1.4E+09 | 1.4E+04 | 4.9E+03 | | | 6.4E-02 | 6.4E-02 | | | 1.2E+03 | 1.2E+03 |
| Nitroso-N-ethylurea, N- | 759-73-9 | 2.7E+01 | C | 7.7E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E-01 | 1.6E-01 | 2.2E+03 | 6.4E-02 | | | | |
| Nitroso-N-methylurea, N- | 684-93-5 | 1.2E+02 | C | 3.4E-02 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.4E-02 | 3.6E-02 | 4.9E+02 | 1.4E-02 | | | | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 5.4E+00 | I | 1.6E-03 | I | | | | | V | | 1 | | 1.4E+09 | 2.1E+05 | 7.1E+03 | 5.3E-01 | | 1.6E+00 | 4.0E-01 | | | | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 7.0E+00 | I | 2.0E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.1E-01 | 6.2E-01 | 8.3E+03 | 2.5E-01 | | | | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 2.8E+00 | I | 8.0E-04 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.0E+00 | 1.6E+00 | 2.1E+04 | 6.2E-01 | | | | |
| Nitrosodiethylamine, N- | 55-18-5 | 1.5E+02 | I | 4.3E-02 | I | | | | | | M | 1 | 0.1 | 1.4E+09 | | | 1.9E-02 | 2.9E-02 | 3.9E+02 | 1.2E-02 | | | | |
| Nitrosodimethylamine, N- | 62-75-9 | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P | 4.0E-05 | X | | M | 1 | 0.1 | 1.4E+09 | | | 5.6E-02 | 8.5E-02 | 1.2E+03 | 3.4E-02 | 8.2E+00 | 1.2E+01 | 2.4E+05 | 4.9E+00 |
| Nitrosodiphenylamine, N- | 86-30-6 | 4.9E-03 | I | 2.6E-06 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 5.8E+02 | 8.9E+02 | 6.4E+06 | 3.5E+02 | | | | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 2.2E+01 | I | 6.3E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E-01 | 2.0E-01 | 2.7E+03 | 7.8E-02 | | | | |
| Nitrosomorpholine [N-] | 59-89-2 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 4.3E-01 | 6.5E-01 | 8.8E+03 | 2.6E-01 | | | | |
| Nitrosopiperidine [N-] | 100-75-4 | 9.4E+00 | C | 2.7E-03 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.0E-01 | 4.6E-01 | 6.2E+03 | 1.8E-01 | | | | |
| Nitrosopyrrolidine, N- | 930-55-2 | 2.1E+00 | I | 6.1E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+00 | 2.1E+00 | 2.7E+04 | 8.2E-01 | | | | |
| Nitrotoluene, m- | 99-08-1 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Nitrotoluene, o- | 88-72-2 | 2.2E-01 | P | | | 9.0E-04 | P | | | V | | 1 | | 1.4E+09 | 1.5E+05 | 1.5E+03 | 1.3E+01 | | | 1.3E+01 | 9.2E+02 | | | 9.2E+02 |
| Nitrotoluene, p- | 99-99-0 | 1.6E-02 | P | | | 4.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 1.8E+02 | 2.7E+02 | | 1.1E+02 | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Nonane, n- | 111-84-2 | | | | | 3.0E-04 | X | 2.0E-01 | P | V | | | | 1.4E+09 | 1.1E+03 | 6.9E+00 | | | | | 3.1E+02 | | 9.8E+02 | 2.3E+02 |
| Norflurazon | 27314-13-2 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+04 | 6.2E+04 | | 2.5E+04 |
| Nustar | 85509-19-9 | | | | | 7.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+02 | 1.1E+03 | | 4.3E+02 |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | 5.0E-02 | I | | | | | 1 | 0.006 | 1.4E+09 | | | | | | | 5.1E+04 | 1.3E+06 | | 4.9E+04 |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | 2.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Oryzalin | 19044-88-3 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Oxadiazon | 19666-30-9 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Oxamyl | 23135-22-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Paclobutrazol | 76738-62-0 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Paraquat Dichloride | 1910-42-5 | | | | | 4.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.6E+03 | 7.0E+03 | | 2.8E+03 |
| Parathion | 56-38-2 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+03 | 9.3E+03 | | 3.7E+03 |
| Pebulate | 1114-71-2 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Pendimethalin | 40487-42-1 | | | | | 4.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+04 | 6.2E+04 | | 2.5E+04 |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | 1.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 1.0E+02 | | | 1.0E+02 |
| Pentachlorobenzene | 608-93-5 | | | | | 8.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Pentachloroethane | 76-01-7 | 9.0E-02 | P | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 3.2E+01 | 4.8E+01 | | 1.9E+01 | | | | |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | H | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+01 | 1.7E+01 | | 6.6E+00 | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | I | 5.1E-06 | C | 3.0E-02 | I | | | | | 1 | 0.25 | 1.4E+09 | | | 2.4E+01 | 1.5E+01 | 3.3E+06 | 9.0E+00 | 3.1E+04 | 1.9E+04 | | 1.2E+04 |
| Pentane, n- | 109-66-0 | | | | | | | 1.0E+00 | P | V | | | | 1.4E+09 | 8.4E+02 | 3.9E+02 | | | | | | | 3.7E+03 | 3.7E+03 |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+02 | | | 7.2E+02 |
| Permethrin | 52645-53-1 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Phenacetin | 62-44-2 | 2.2E-03 | C | 6.3E-07 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E+03 | 2.0E+03 | 2.7E+07 | 7.8E+02 | | | | |
| Phenmedipham | 13684-63-4 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+05 | 3.9E+05 | | 1.5E+05 |
| Phenol | 108-95-2 | | | | | 3.0E-01 | I | 2.0E-01 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+05 | 4.7E+05 | 1.2E+09 | 1.9E+05 |
| Phenylenediamine, m- | 108-45-2 | | | | | 6.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+03 | 9.3E+03 | | 3.7E+03 |
| Phenylenediamine, o- | 95-54-5 | 4.7E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 6.1E+01 | 9.2E+01 | | 3.7E+01 | | | | |
| Phenylenediamine, p- | 106-50-3 | | | | | 1.9E-01 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.9E+05 | 2.9E+05 | | 1.2E+05 |
| Phenylphenol, 2- | 90-43-7 | 1.9E-03 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.5E+03 | 2.2E+03 | | 8.9E+02 | | | | |
| Phorate | 298-02-2 | | | | | 2.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+02 | 3.1E+02 | | 1.2E+02 |
| Phosgene | 75-44-5 | | | | | | | 3.0E-04 | I | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.6E+03 | | | | | | | 1.4E+00 | 1.4E+00 |
| Phosmet | 732-11-6 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Phosphine | 7803-51-2 | | | | | 3.0E-04 | I | 3.0E-04 | I | | | 1 | | 1.4E+09 | | | | | | | 3.1E+02 | | 1.8E+06 | 3.1E+02 |
| Phosphoric Acid | 7664-38-2 | | | | | | | 1.0E-02 | I | | | 1 | | 1.4E+09 | | | | | | | | | 6.0E+07 | 6.0E+07 |
| Phosphorus, White | 7723-14-0 | | | | | 2.0E-05 | I | | | | | 1 | | 1.4E+09 | | | | | | | 2.0E+01 | | | 2.0E+01 |
| Phthalic Acid, P- | 100-21-0 | | | | | 1.0E+00 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+06 | 1.6E+06 | | 6.2E+05 |
| Phthalic Anhydride | 85-44-9 | | | | | 2.0E+00 | I | 2.0E-02 | C | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+06 | 3.1E+06 | 1.2E+08 | 1.2E+06 |
| Picloram | 1918-02-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+04 | 1.1E+05 | | 4.3E+04 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | 1.0E-04 | X | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+02 | 1.6E+02 | | 6.2E+01 |
| Pirimiphos, Methyl | 29232-93-7 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Polybrominated Biphenyls | 59536-65-1 | 3.0E+01 | C | 8.6E-03 | C | 7.0E-06 | H | | | | | 1 | 0.1 | 1.4E+09 | | | 9.5E-02 | 1.5E-01 | 1.9E+03 | 5.8E-02 | 7.2E+00 | 1.1E+01 | | 4.3E+00 |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 7.0E-02 | I | 2.0E-05 | I | 7.0E-05 | I | | | | | 1 | 0.14 | 1.4E+09 | | | 4.1E+01 | 4.4E+01 | 8.3E+05 | 2.1E+01 | 7.2E+01 | 7.7E+01 | | 3.7E+01 |
| ~Aroclor 1221 | 11104-28-2 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 1.4E+09 | 9.2E+04 | 7.6E+02 | 1.4E+00 | 1.6E+00 | 2.0E+00 | 5.4E-01 | | | | |
| ~Aroclor 1232 | 11141-16-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 1 | 0.14 | 1.4E+09 | 9.2E+04 | 7.3E+01 | 1.4E+00 | 1.6E+00 | 2.0E+00 | 5.4E-01 | | | | |
| ~Aroclor 1242 | 53469-21-9 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 1.4E+00 | 1.6E+00 | 2.9E+04 | 7.4E-01 | | | | |
| ~Aroclor 1248 | 12672-29-6 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 1.4E+00 | 1.6E+00 | 2.9E+04 | 7.4E-01 | | | | |
| ~Aroclor 1254 | 11097-69-1 | 2.0E+00 | I | 5.7E-04 | I | 2.0E-05 | I | | | | | 1 | 0.14 | 1.4E+09 | | | 1.4E+00 | 1.6E+00 | 2.9E+04 | 7.4E-01 | 2.0E+01 | 2.2E+01 | | 1.1E+01 |
| ~Aroclor 1260 | 11096-82-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 1 | 0.14 | 1.4E+09 | | | 1.4E+00 | 1.6E+00 | 2.9E+04 | 7.4E-01 | | | | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 1.3E+00 | C | 3.8E-04 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E+00 | 2.4E+00 | 4.4E+04 | 1.1E+00 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.4E-02 | 4.8E-02 | 8.8E+02 | 2.3E-02 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.4E-02 | 4.8E-02 | 8.8E+02 | 2.3E-02 | | | | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 1.3E+03 | C | 3.8E-01 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-03 | 2.4E-03 | 4.4E+01 | 1.1E-03 | | | | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 6.5E+02 | C | 1.9E-02 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 4.4E-03 | 4.8E-03 | 8.8E+02 | 2.3E-03 | | | | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 1.3E+04 | C | 3.8E+00 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-04 | 2.4E-04 | 4.4E+00 | 1.1E-04 | | | | |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 2.0E+00 | I | 5.7E-04 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 1.4E+00 | 1.6E+00 | 2.9E+04 | 7.4E-01 | | | | |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 1 | 0.14 | 1.4E+09 | | | 2.2E-01 | 2.4E-01 | 4.4E+03 | 1.1E-01 | | | | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | | | | | 6.0E-04 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | | | 3.6E+06 | 3.6E+06 |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | 6.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 1.5E+05 | | | | | | 6.1E+04 | 7.2E+04 | | 3.3E+04 |
| ~Anthracene | 120-12-7 | | | | | 3.0E-01 | I | | | V | | 1 | 0.13 | 1.4E+09 | 5.6E+05 | | | | | | 3.1E+05 | 3.6E+05 | | 1.7E+05 |
| ~Benz[a]anthracene | 56-55-3 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E+00 | 4.6E+00 | 1.5E+05 | 2.1E+00 | | | | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | | | 1.4E+09 | | | 2.4E+00 | | 1.5E+05 | 2.4E+00 | | | | |
| ~Benzo[a]pyrene | 50-32-8 | 7.3E+00 | I | 1.1E-03 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E-01 | 4.6E-01 | 1.5E+04 | 2.1E-01 | | | | |
| ~Benzo[b]fluoranthene | 205-99-2 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E+00 | 4.6E+00 | 1.5E+05 | 2.1E+00 | | | | |
| ~Benzo[k]fluoranthene | 207-08-9 | 7.3E-02 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E+01 | 4.6E+01 | 1.5E+05 | 2.1E+01 | | | | |
| ~Chrysene | 218-01-9 | 7.3E-03 | E | 1.1E-05 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E+02 | 4.6E+02 | 1.5E+06 | 2.1E+02 | | | | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 7.3E+00 | E | 1.2E-03 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E-01 | 4.6E-01 | 1.4E+04 | 2.1E-01 | | | | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.2E+01 | C | 1.1E-03 | C | | | | | | | | | 1.4E+09 | | | 2.4E-01 | | 1.5E+04 | 2.4E-01 | | | | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 2.5E+02 | C | 7.1E-02 | C | | | | | | | 1 | 0.13 | 1.4E+09 | | | 1.1E-02 | 1.3E-02 | 2.4E+02 | 6.2E-03 | | | | |
| ~Fluoranthene | 206-44-0 | | | | | 4.0E-02 | I | | | | | 1 | 0.13 | 1.4E+09 | | | | | | | 4.1E+04 | 4.8E+04 | | 2.2E+04 |
| ~Fluorene | 86-73-7 | | | | | 4.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 3.0E+05 | | | | | | 4.1E+04 | 4.8E+04 | | 2.2E+04 |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 1 | 0.13 | 1.4E+09 | | | 3.9E+00 | 4.6E+00 | 1.5E+05 | 2.1E+00 | | | | |
| ~Methylnaphthalene, 1- | 90-12-0 | 2.9E-02 | P | | | 7.0E-02 | A | | | V | | 1 | | 1.4E+09 | 6.3E+04 | 3.9E+02 | 9.9E+01 | | | 9.9E+01 | 7.2E+04 | | | 7.2E+04 |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | 4.0E-03 | I | | | V | | 1 | | 1.4E+09 | 6.2E+04 | 3.7E+02 | | | | | 4.1E+03 | | | 4.1E+03 |
| ~Naphthalene | 91-20-3 | | | 3.4E-05 | C | 2.0E-02 | I | 3.0E-03 | I | V | | 1 | 0.13 | 1.4E+09 | 5.0E+04 | | | | 1.8E+01 | 1.8E+01 | 2.0E+04 | 2.4E+04 | 6.6E+02 | 6.2E+02 |
| ~Nitropyrene, 4- | 57835-92-4 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | | | 1.4E+09 | | | 2.4E+00 | | 1.5E+05 | 2.4E+00 | | | | |
| ~Pyrene | 129-00-0 | | | | | 3.0E-02 | I | | | V | | 1 | 0.13 | 1.4E+09 | 2.6E+06 | | | | | | 3.1E+04 | 3.6E+04 | | 1.7E+04 |
| Potassium Perchlorate | 7778-74-7 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+02 | | | 7.2E+02 |
| Prochloraz | 67747-09-5 | 1.5E-01 | I | | | 9.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.9E+01 | 2.9E+01 | | 1.2E+01 | 9.2E+03 | 1.4E+04 | | 5.5E+03 |
| Profluralin | 26399-36-0 | | | | | 6.0E-03 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 6.1E+03 | 9.3E+03 | | 3.7E+03 |
| Prometon | 1610-18-0 | | | | | 1.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.5E+04 | 2.3E+04 | | 9.2E+03 |
| Prometryn | 7287-19-6 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Propachlor | 1918-16-7 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Propanil | 709-98-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Propargite | 2312-35-8 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Propargyl Alcohol | 107-19-7 | | | | | 2.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+03 | 3.1E+03 | | 1.2E+03 |
| Propazine | 139-40-2 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Propham | 122-42-9 | | | | | 2.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Propiconazole | 60207-90-1 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Propionaldehyde | 123-38-6 | | | | | | | 8.0E-03 | I | V | | | | 1.4E+09 | 9.6E+03 | 3.3E+04 | | | | | | | 3.4E+02 | 3.4E+02 |
| Propyl benzene | 103-65-1 | | | | | 1.0E-01 | X | 1.0E+00 | X | V | | 1 | 0.1 | 1.4E+09 | 7.5E+03 | 2.6E+02 | | | | | 1.0E+05 | 1.6E+05 | 3.3E+04 | 2.2E+04 |
| Propylene | 115-07-1 | | | | | | | 3.0E+00 | C | | | | | 1.4E+09 | | | | | | | | | 1.8E+10 | 1.8E+10 |
| Propylene Glycol | 57-55-6 | | | | | 2.0E+01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+07 | 3.1E+07 | | 1.2E+07 |
| Propylene Glycol Dinitrate | 6423-43-4 | | | | | | | 2.7E-04 | A | V | | 1 | | 1.4E+09 | 2.0E+05 | 1.5E+03 | | | | | | | 2.4E+02 | 2.4E+02 |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | 7.0E-01 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+05 | 1.1E+06 | | 4.3E+05 |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | | | 7.0E-01 | H | 2.0E+00 | I | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+05 | 1.1E+06 | 1.2E+10 | 4.3E+05 |
| Propylene Oxide | 75-56-9 | 2.4E-01 | I | 3.7E-06 | I | | | 3.0E-02 | I | V | | 1 | | 1.4E+09 | 1.0E+04 | 7.8E+04 | 1.2E+01 | | 3.4E+01 | 8.8E+00 | | | 1.4E+03 | 1.4E+03 |
| Pursuit | 81335-77-5 | | | | | 2.5E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+05 | 3.9E+05 | | 1.5E+05 |
| Pydrin | 51630-58-1 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Pyridine | 110-86-1 | | | | | 1.0E-03 | I | | | V | | 1 | | 1.4E+09 | 6.0E+04 | 5.3E+05 | | | | | 1.0E+03 | | | 1.0E+03 |
| Quinalphos | 13593-03-8 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+02 | 7.7E+02 | | 3.1E+02 |
| Quinoline | 91-22-5 | 3.0E+00 | I | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.5E-01 | 1.5E+00 | | 5.8E-01 | | | | |
| Refractory Ceramic Fibers | NA | | | | | | | 3.0E-02 | A | | | 1 | | 1.4E+09 | | | | | | | | | 1.8E+08 | 1.8E+08 |
| Resmethrin | 10453-86-8 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Ronnel | 299-84-3 | | | | | 5.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |
| Rotenone | 83-79-4 | | | | | 4.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Safrole | 94-59-7 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.3E+01 | 2.0E+01 | 2.7E+05 | 7.8E+00 | | | | |
| Savey | 78587-05-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Selenious Acid | 7783-00-8 | | | | | 5.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 5.1E+03 | | | 5.1E+03 |
| Selenium | 7782-49-2 | | | | | 5.0E-03 | I | 2.0E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 5.1E+03 | | 1.2E+08 | 5.1E+03 |
| Selenium Sulfide | 7446-34-6 | | | | | 5.0E-03 | C | 2.0E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 5.1E+03 | | 1.2E+08 | 5.1E+03 |
| Sethoxydim | 74051-80-2 | | | | | 9.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 9.2E+04 | 1.4E+05 | | 5.5E+04 |
| Silica (crystalline, respirable) | 7631-86-9 | | | | | | | 3.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 1.8E+07 | 1.8E+07 |
| Silver | 7440-22-4 | | | | | 5.0E-03 | I | | | | | 0.04 | | 1.4E+09 | | | | | | | 5.1E+03 | | | 5.1E+03 |
| Simazine | 122-34-9 | 1.2E-01 | H | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 2.4E+01 | 3.6E+01 | | 1.4E+01 | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Sodium Acifluorfen | 62476-59-9 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Sodium Azide | 26628-22-8 | | | | | 4.0E-03 | I | | | | | 1 | | 1.4E+09 | | | | | | | 4.1E+03 | | | 4.1E+03 |
| Sodium Diethyldithiocarbamate | 148-18-5 | 2.7E-01 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.1E+01 | 1.6E+01 | | 6.4E+00 | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Sodium Fluoride | 7681-49-4 | | | | | 5.0E-02 | A | 1.3E-02 | C | | | 1 | | 1.4E+09 | | | | | | | 5.1E+04 | | 7.7E+07 | 5.1E+04 |
| Sodium Fluoroacetate | 62-74-8 | | | | | 2.0E-05 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+01 | 3.1E+01 | | 1.2E+01 |
| Sodium Metavanadate | 13718-26-8 | | | | | 1.0E-03 | H | | | | | 1 | | 1.4E+09 | | | | | | | 1.0E+03 | | | 1.0E+03 |
| Sodium Perchlorate | 7601-89-0 | | | | | 7.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 7.2E+02 | | | 7.2E+02 |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 2.4E-02 | H | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 1.2E+02 | 1.8E+02 | | 7.2E+01 | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Strontium, Stable | 7440-24-6 | | | | | 6.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 6.1E+05 | | | 6.1E+05 |
| Strychnine | 57-24-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Styrene | 100-42-5 | | | | | 2.0E-01 | I | 1.0E+00 | I | V | | 1 | | 1.4E+09 | 1.0E+04 | 8.7E+02 | | | | | 2.0E+05 | | 4.4E+04 | 3.6E+04 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | 8.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Sulfuric Acid | 7664-93-9 | | | | | | | 1.0E-03 | C | | | | | 1.4E+09 | | | | | | | | | 6.0E+06 | 6.0E+06 |
| Systhane | 88671-89-0 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| TCMTB | 21564-17-0 | | | | | 3.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Tebuthiuron | 34014-18-1 | | | | | 7.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.2E+04 | 1.1E+05 | | 4.3E+04 |
| Temephos | 3383-96-8 | | | | | 2.0E-02 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Terbacil | 5902-51-2 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Terbufos | 13071-79-9 | | | | | 2.5E-05 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+01 | 3.9E+01 | | 1.5E+01 |
| Terbutryn | 886-50-0 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | 1.0E-04 | I | | | | | | | 1.4E+09 | | | | | | | 1.0E+02 | | | 1.0E+02 |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 2.6E-02 | I | 7.4E-06 | I | 3.0E-02 | I | | | V | | 1 | | 1.4E+09 | 6.1E+03 | 6.8E+02 | 1.1E+02 | | 1.0E+01 | 9.3E+00 | 3.1E+04 | | | 3.1E+04 |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 2.0E-01 | I | 5.8E-05 | I | 4.0E-03 | P | | | V | | 1 | | 1.4E+09 | 1.6E+04 | 1.9E+03 | 1.4E+01 | | 3.4E+00 | 2.8E+00 | 4.1E+03 | | | 4.1E+03 |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | C | 5.9E-06 | C | 1.0E-02 | I | 2.7E-01 | A | V | | 1 | | 1.4E+09 | 2.5E+03 | 1.7E+02 | 5.3E+00 | | 5.3E+00 | 2.6E+00 | 1.0E+04 | | 3.0E+03 | 2.3E+03 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | 3.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+04 | 4.7E+04 | | 1.9E+04 |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 2.0E+01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E-01 | 2.2E-01 | | 8.6E-02 | | | | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | 5.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+02 | 7.7E+02 | | 3.1E+02 |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | | | | | 8.0E+01 | I | V | | 1 | | 1.4E+09 | 1.3E+03 | 1.1E+03 | | | | | | | 4.6E+05 | 4.6E+05 |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | 4.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 4.1E+03 | 6.2E+03 | | 2.5E+03 |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | | | | 1 | | 1.4E+09 | | | | | | | | | | |
| Thiobencarb | 28249-77-6 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Thiodiglycol | 111-48-8 | | | | | 7.0E-02 | X | | | | | 1 | 0.008 | 1.4E+09 | | | | | | | 7.2E+04 | 1.5E+06 | | 6.8E+04 |
| Thiofanox | 39196-18-4 | | | | | 3.0E-04 | H | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Thiophanate, Methyl | 23564-05-8 | | | | | 8.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+04 | 1.2E+05 | | 4.9E+04 |
| Thiram | 137-26-8 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Tin | 7440-31-5 | | | | | 6.0E-01 | H | | | | | 1 | | 1.4E+09 | | | | | | | 6.1E+05 | | | 6.1E+05 |
| Titanium Tetrachloride | 7550-45-0 | | | | | | | 1.0E-04 | A | | | 1 | | 1.4E+09 | | | | | | | | | 6.0E+05 | 6.0E+05 |
| Toluene | 108-88-3 | | | | | 8.0E-02 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 4.6E+03 | 8.2E+02 | | | | | 8.2E+04 | | 1.0E+05 | 4.5E+04 |
| Toluidine, p- | 106-49-0 | 1.9E-01 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 1.5E+01 | 2.3E+01 | | 9.1E+00 | | | | |
| Toxaphene | 8001-35-2 | 1.1E+00 | I | 3.2E-04 | I | | | | | | | 1 | 0.1 | 1.4E+09 | | | 2.6E+00 | 3.9E+00 | 5.2E+04 | 1.6E+00 | | | | |
| Tralomethrin | 66841-25-6 | | | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 7.7E+03 | 1.2E+04 | | 4.6E+03 |
| Tri-n-butyltin | 688-73-3 | | | | | 3.0E-04 | A | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Triallate | 2303-17-5 | | | | | 1.3E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.3E+04 | 2.0E+04 | | 8.0E+03 |
| Triasulfuron | 82097-50-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | 5.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+03 | 7.7E+03 | | 3.1E+03 |
| Tributyl Phosphate | 126-73-8 | 9.2E-03 | P | | | 2.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 | 2.0E+05 | 3.1E+05 | | 1.2E+05 |
| Tributyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Tributyltin Oxide | 56-35-9 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | | Noncancer Hazard Index (HI) = 1 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | GIABS | ABS | PEF | VF | Csat | Ingestion | Dermal | Inhalation | Total | Ingestion | Dermal | Inhalation | Total |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | (m$^3$/kg) | (m$^3$/kg) | (mg/kg) | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg | mg/kg |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | | | 3.0E+01 | I | 3.0E+01 | H | V | | 1 | | 1.4E+09 | 1.4E+03 | 9.1E+02 | | | | | 3.1E+07 | | 1.8E+05 | 1.8E+05 |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 2.9E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 9.9E+01 | 1.5E+02 | | 5.9E+01 | | | | |
| Trichloroaniline, 2,4,6- | 634-93-5 | 3.4E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 8.4E+01 | 1.3E+02 | | 5.1E+01 | | | | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | 8.0E-04 | X | | | V | | 1 | 0.1 | 1.4E+09 | 3.5E+04 | 1.5E+02 | | | | | 8.2E+02 | 1.2E+03 | | 4.9E+02 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 2.9E-02 | P | | | 1.0E-02 | I | 2.0E-03 | P | V | | 1 | | 1.4E+09 | 3.2E+04 | 4.0E+02 | 9.9E+01 | | | 9.9E+01 | 1.0E+04 | | 2.8E+02 | 2.8E+02 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | | | 2.0E+00 | I | 5.0E+00 | I | V | | 1 | | 1.4E+09 | 1.8E+03 | 6.4E+02 | | | | | 2.0E+06 | | 3.9E+04 | 3.8E+04 |
| Trichloroethane, 1,1,2- | 79-00-5 | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I | | | V | | 1 | | 1.4E+09 | 7.8E+03 | 2.2E+03 | 5.0E+01 | | 6.0E+00 | 5.3E+00 | 4.1E+03 | | | 4.1E+03 |
| Trichloroethylene | 79-01-6 | 5.9E-03 | C | 2.0E-06 | C | | | | | V | | 1 | | 1.4E+09 | 2.4E+03 | 6.9E+02 | 4.9E+02 | | 1.5E+01 | 1.4E+01 | | | | |
| Trichlorofluoromethane | 75-69-4 | | | | | 3.0E-01 | I | 7.0E-01 | H | V | | 1 | | 1.4E+09 | 1.1E+03 | 1.2E+03 | | | | | 3.1E+05 | | 3.4E+03 | 3.4E+03 |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | 1.0E-01 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 2.6E+02 | 3.9E+02 | 5.4E+06 | 1.6E+02 | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | 1.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+04 | 1.6E+04 | | 6.2E+03 |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | 8.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 8.2E+03 | 1.2E+04 | | 4.9E+03 |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | 5.0E-03 | I | | | V | | 1 | | 1.4E+09 | 1.6E+04 | 1.3E+03 | | | | | 5.1E+03 | | | 5.1E+03 |
| Trichloropropane, 1,2,3- | 96-18-4 | 3.0E+01 | I | | | 4.0E-03 | I | 3.0E-04 | I | V | M | 1 | | 1.4E+09 | 1.7E+04 | 1.4E+03 | 9.5E-02 | | | 9.5E-02 | 4.1E+03 | | 2.2E+01 | 2.2E+01 |
| Trichloropropene, 1,2,3- | 96-19-5 | | | | | 3.0E-03 | X | 3.0E-04 | P | V | | 1 | | 1.4E+09 | 2.5E+03 | 4.5E+02 | | | | | 3.1E+03 | | 3.3E+00 | 3.3E+00 |
| Tridiphane | 58138-08-2 | | | | | 3.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+03 | 4.7E+03 | | 1.9E+03 |
| Triethylamine | 121-44-8 | | | | | | | 7.0E-03 | I | V | | 1 | | 1.4E+09 | 1.7E+04 | 2.8E+04 | | | | | | | 5.2E+02 | 5.2E+02 |
| Trifluralin | 1582-09-8 | 7.7E-03 | I | | | 7.5E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | 3.7E+02 | 5.6E+02 | | 2.2E+02 | 7.7E+03 | 1.2E+04 | | 4.6E+03 |
| Trimethyl Phosphate | 512-56-1 | 3.7E-02 | H | | | | | | | | | 1 | 0.1 | 1.4E+09 | | | 7.7E+01 | 1.2E+02 | | 4.7E+01 | | | | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | | | | | 7.0E-03 | P | V | | 1 | | 1.4E+09 | 8.5E+03 | 2.2E+02 | | | | | | | 2.6E+02 | 2.6E+02 |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | 1.0E-02 | X | | | V | | 1 | | 1.4E+09 | 7.1E+03 | 1.8E+02 | | | | | 1.0E+04 | | | 1.0E+04 |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | 3.0E-02 | I | | | | | 1 | 0.019 | 1.4E+09 | | | | | | | 3.1E+04 | 2.4E+05 | | 2.7E+04 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.0E-02 | I | | | 5.0E-04 | I | | | | | 1 | 0.032 | 1.4E+09 | | | 9.5E+01 | 4.5E+02 | | 7.9E+01 | 5.1E+02 | 2.4E+03 | | 4.2E+02 |
| Triphenylphosphine Oxide | 791-28-6 | | | | | 2.0E-02 | P | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.0E+04 | 3.1E+04 | | 1.2E+04 |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 2.0E-02 | P | | | 7.0E-03 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 1.4E+02 | 2.2E+02 | | 8.6E+01 | 7.2E+03 | 1.1E+04 | | 4.3E+03 |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 3.2E-03 | P | | | 1.0E-01 | P | | | | | 1 | 0.1 | 1.4E+09 | | | 8.9E+02 | 1.4E+03 | | 5.4E+02 | 1.0E+05 | 1.6E+05 | | 6.2E+04 |
| Uranium (Soluble Salts) | NA | | | | | 3.0E-03 | I | 3.0E-04 | A | | | 1 | | 1.4E+09 | | | | | | | 3.1E+03 | | 1.8E+06 | 3.1E+03 |
| Urethane | 51-79-6 | 1.0E+00 | C | 2.9E-04 | C | | | | | | | | | 1.4E+09 | | | 2.9E+00 | | 5.8E+04 | 2.9E+00 | | | | |
| Vanadium Pentoxide | 1314-62-1 | | | 8.3E-03 | P | 9.0E-03 | I | 7.0E-06 | P | | | 0.026 | | 1.4E+09 | | | | | 2.0E+03 | 2.0E+03 | 9.2E+03 | | 4.2E+04 | 7.5E+03 |
| Vanadium Sulfate | 36907-42-3 | | | | | 2.0E-02 | H | | | | | 0.026 | | 1.4E+09 | | | | | | | 2.0E+04 | | | 2.0E+04 |
| Vanadium and Compounds | NA | | | | | 5.0E-03 | S | | | | | 1 | | 1.4E+09 | | | | | | | 5.2E+03 | | | 5.2E+03 |
| Vanadium, Metallic | 7440-62-2 | | | | | 7.0E-05 | P | | | | | 0.026 | | 1.4E+09 | | | | | | | 7.2E+01 | | | 7.2E+01 |
| Vernolate | 1929-77-7 | | | | | 1.0E-03 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 1.0E+03 | 1.6E+03 | | 6.2E+02 |
| Vinclozolin | 50471-44-8 | | | | | 2.5E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 2.6E+04 | 3.9E+04 | | 1.5E+04 |
| Vinyl Acetate | 108-05-4 | | | | | 1.0E+00 | H | 2.0E-01 | I | V | | 1 | | 1.4E+09 | 4.7E+03 | 2.8E+03 | | | | | 1.0E+06 | | 4.2E+03 | 4.1E+03 |
| Vinyl Bromide | 593-60-2 | | | 3.2E-05 | H | | | 3.0E-03 | I | V | | 1 | | 1.4E+09 | 1.5E+03 | 3.4E+03 | | | 5.7E-01 | 5.7E-01 | | | 1.9E+01 | 1.9E+01 |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I | 1.0E-01 | I | V | M | 1 | | 1.4E+09 | 1.0E+03 | 3.9E+03 | 4.0E+00 | | 2.9E+00 | 1.7E+00 | 3.1E+03 | | 4.5E+02 | 3.9E+02 |
| Warfarin | 81-81-2 | | | | | 3.0E-04 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 3.1E+02 | 4.7E+02 | | 1.9E+02 |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | 1 | | 1.4E+09 | 6.3E+03 | 2.6E+02 | | | | | 2.0E+05 | | 2.7E+03 | 2.7E+03 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 6.0E+03 | 3.9E+02 | | | | | 2.0E+05 | | 1.8E+04 | 1.7E+04 |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 5.9E+03 | 3.9E+02 | | | | | 2.0E+05 | | 1.8E+04 | 1.7E+04 |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | 1 | | 1.4E+09 | 7.0E+03 | 4.3E+02 | | | | | 2.0E+05 | | 2.1E+04 | 1.9E+04 |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+05 | | | 3.1E+05 |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | 1 | | 1.4E+09 | | | | | | | 3.1E+02 | | | 3.1E+02 |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | 1 | 0.1 | 1.4E+09 | | | | | | | 5.1E+04 | 7.7E+04 | | 3.1E+04 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| ALAR | 1596-84-5 | 5.1E-06 | C | | | | | 4.8E-01 | |
| Acephate | 30560-19-1 | | | | | | | | |
| Acetaldehyde | 75-07-0 | 2.2E-06 | I | 9.0E-03 | I | V | | 1.1E+00 | 9.4E+00 |
| Acetochlor | 34256-82-1 | | | | | | | | |
| Acetone | 67-64-1 | | | 3.1E+01 | A | V | | | 3.2E+04 |
| Acetone Cyanohydrin | 75-86-5 | | | 6.0E-02 | P | V | | | 6.3E+01 |
| Acetonitrile | 75-05-8 | | | 6.0E-02 | I | V | | | 6.3E+01 |
| Acetophenone | 98-86-2 | | | | | V | | | |
| Acetylaminofluorene, 2- | 53-96-3 | 1.3E-03 | C | | | | | 1.9E-03 | |
| Acrolein | 107-02-8 | | | 2.0E-05 | I | V | | | 2.1E-02 |
| Acrylamide | 79-06-1 | 1.3E-03 | I | | | | | 1.9E-03 | |
| Acrylic Acid | 79-10-7 | | | 1.0E-03 | I | | | | 1.0E+00 |
| Acrylonitrile | 107-13-1 | 6.8E-05 | I | 2.0E-03 | I | V | | 3.6E-02 | 2.1E+00 |
| Adiponitrile | 111-69-3 | | | 6.0E-03 | P | | | | 6.3E+00 |
| Alachlor | 15972-60-8 | | | | | | | | |
| Aldicarb | 116-06-3 | | | | | | | | |
| Aldicarb Sulfone | 1646-88-4 | | | | | | | | |
| Aldrin | 309-00-2 | 4.9E-03 | I | | | | | 5.0E-04 | |
| Ally | 74223-64-6 | | | | | | | | |
| Allyl Alcohol | 107-18-6 | | | 1.0E-04 | X | | | | 1.0E-01 |
| Allyl Chloride | 107-05-1 | 6.0E-06 | C | 1.0E-03 | I | V | | 4.1E-01 | 1.0E+00 |
| Aluminum | 7429-90-5 | | | 5.0E-03 | P | | | | 5.2E+00 |
| Aluminum Phosphide | 20859-73-8 | | | | | | | | |
| Amdro | 67485-29-4 | | | | | | | | |
| Ametryn | 834-12-8 | | | | | | | | |
| Aminobiphenyl, 4- | 92-67-1 | 6.0E-03 | C | | | | | 4.1E-04 | |
| Aminophenol, m- | 591-27-5 | | | | | | | | |
| Aminophenol, p- | 123-30-8 | | | | | | | | |
| Amitraz | 33089-61-1 | | | | | | | | |
| Ammonia | 7664-41-7 | | | 1.0E-01 | I | | | | 1.0E+02 |
| Ammonium Perchlorate | 7790-98-9 | | | | | | | | |
| Ammonium Sulfamate | 7773-06-0 | | | | | | | | |
| Aniline | 62-53-3 | 1.6E-06 | C | 1.0E-03 | I | | | 1.5E+00 | 1.0E+00 |
| Antimony (metallic) | 7440-36-0 | | | | | | | | |
| Antimony Pentoxide | 1314-60-9 | | | | | | | | |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | | | | |
| Antimony Tetroxide | 1332-81-6 | | | | | | | | |
| Antimony Trioxide | 1309-64-4 | | | 2.0E-04 | I | | | | 2.1E-01 |
| Apollo | 74115-24-5 | | | | | | | | |
| Aramite | 140-57-8 | 7.1E-06 | I | | | | | 3.4E-01 | |
| Arsenic, Inorganic | 7440-38-2 | 4.3E-03 | I | 1.5E-05 | C | | | 5.7E-04 | 1.6E-02 |
| Arsine | 7784-42-1 | | | 5.0E-05 | I | | | | 5.2E-02 |
| Assure | 76578-14-8 | | | | | | | | |
| Asulam | 3337-71-1 | | | | | | | | |
| Atrazine | 1912-24-9 | | | | | | | | |
| Auramine | 492-80-8 | 2.5E-04 | C | | | | | 9.7E-03 | |
| Avermectin B1 | 65195-55-3 | | | | | | | | |
| Azobenzene | 103-33-3 | 3.1E-05 | I | | | V | | 7.9E-02 | |
| Barium | 7440-39-3 | | | 5.0E-04 | H | | | | 5.2E-01 |
| Baygon | 114-26-1 | | | | | | | | |
| Bayleton | 43121-43-3 | | | | | | | | |
| Baythroid | 68359-37-5 | | | | | | | | |
| Benefin | 1861-40-1 | | | | | | | | |
| Benomyl | 17804-35-2 | | | | | | | | |
| Bentazon | 25057-89-0 | | | | | | | | |
| Benzaldehyde | 100-52-7 | | | | | V | | | |
| Benzene | 71-43-2 | 7.8E-06 | I | 3.0E-02 | I | V | | 3.1E-01 | 3.1E+01 |
| Benzenethiol | 108-98-5 | | | | | V | | | |
| Benzidine | 92-87-5 | 6.7E-02 | I | | | | M | 1.4E-05 | |
| Benzoic Acid | 65-85-0 | | | | | | | | |
| Benzotrichloride | 98-07-7 | | | | | V | | | |
| Benzyl Alcohol | 100-51-6 | | | | | | | | |
| Benzyl Chloride | 100-44-7 | 4.9E-05 | C | 1.0E-03 | P | V | | 5.0E-02 | 1.0E+00 |
| Beryllium and compounds | 7440-41-7 | 2.4E-03 | I | 2.0E-05 | I | | | 1.0E-03 | 2.1E-02 |
| Bidrin | 141-66-2 | | | | | | | | |
| Bifenox | 42576-02-3 | | | | | | | | |
| Biphenthrin | 82657-04-3 | | | | | | | | |
| Biphenyl, 1,1'- | 92-52-4 | | | | | V | | | |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 1.0E-05 | H | | | V | | 2.4E-01 | |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | | | | |
| Bis(2-chloroethyl)ether | 111-44-4 | 3.3E-04 | I | | | V | | 7.4E-03 | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 2.4E-06 | C | | | | | 1.0E+00 | |
| Bis(chloromethyl)ether | 542-88-1 | 6.2E-02 | I | | | V | | 3.9E-05 | |
| Bisphenol A | 80-05-7 | | | | | | | | |
| Boron And Borates Only | 7440-42-8 | | | 2.0E-02 | H | | | | 2.1E+01 |
| Boron Trifluoride | 7637-07-2 | | | 1.3E-02 | C | | | | 1.4E+01 |
| Bromate | 15541-45-4 | | | | | | | | |
| Bromo-2-chloroethane, 1- | 107-04-0 | 6.0E-04 | X | | | V | | 4.1E-03 | |
| Bromobenzene | 108-86-1 | | | 6.0E-02 | I | V | | | 6.3E+01 |
| Bromodichloromethane | 75-27-4 | 3.7E-05 | C | | | V | | 6.6E-02 | |
| Bromoform | 75-25-2 | 1.1E-06 | I | | | | | 2.2E+00 | |
| Bromomethane | 74-83-9 | | | 5.0E-03 | I | V | | | 5.2E+00 |
| Bromophos | 2104-96-3 | | | | | | | | |
| Bromoxynil | 1689-84-5 | | | | | | | | |
| Bromoxynil Octanoate | 1689-99-2 | | | | | | | | |
| Butadiene, 1,3- | 106-99-0 | 3.0E-05 | I | 2.0E-03 | I | V | | 8.1E-02 | 2.1E+00 |
| Butanol, N- | 71-36-3 | | | | | | | | |
| Butyl Benzyl Phthlate | 85-68-7 | | | | | | | | |
| Butyl alcohol, sec- | 78-92-2 | | | 3.0E+01 | P | | | | 3.1E+04 |
| Butylate | 2008-41-5 | | | | | | | | |
| Butylated hydroxyanisole | 25013-16-5 | 5.7E-08 | C | | | | | 4.3E+01 | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | | | | |
| Cacodylic Acid | 75-60-5 | | | | | | | | |
| Cadmium (Water) | 7440-43-9 | 1.8E-03 | I | 1.0E-05 | A | | | 1.4E-03 | 1.0E-02 |
| Caprolactam | 105-60-2 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Captafol | 2425-06-1 | 4.3E-05 | C | | | | | 5.7E-02 | |
| Captan | 133-06-2 | 6.6E-07 | C | | | | | 3.7E+00 | |
| Carbaryl | 63-25-2 | | | | | | | | |
| Carbofuran | 1563-66-2 | | | | | | | | |
| Carbon Disulfide | 75-15-0 | | | 7.0E-01 | I | V | | | 7.3E+02 |
| Carbon Tetrachloride | 56-23-5 | 1.5E-05 | I | 1.9E-01 | A | V | | 1.6E-01 | 2.0E+02 |
| Carbosulfan | 55285-14-8 | | | | | | | | |
| Carboxin | 5234-68-4 | | | | | | | | |
| Ceric oxide | 1306-38-3 | | | 9.0E-04 | I | | | | 9.4E-01 |
| Chloral Hydrate | 302-17-0 | | | | | | | | |
| Chloramben | 133-90-4 | | | | | | | | |
| Chloranil | 118-75-2 | | | | | | | | |
| Chlordane | 12789-03-6 | 1.0E-04 | I | 7.0E-04 | I | | | 2.4E-02 | 7.3E-01 |
| Chlordecone (Kepone) | 143-50-0 | 4.6E-03 | C | | | | | 5.3E-04 | |
| Chlorfenvinphos | 470-90-6 | | | | | | | | |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | | | | |
| Chlorine | 7782-50-5 | | | 1.5E-04 | A | | | | 1.5E-01 |
| Chlorine Dioxide | 10049-04-4 | | | 2.0E-04 | I | | | | 2.1E-01 |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | | | | |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | 5.0E+01 | I | V | | | 5.2E+04 |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | 7.0E-03 | H | V | | | 7.3E+00 |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | | | | | | | | |
| Chloroacetic Acid | 79-11-8 | | | | | | | | |
| Chloroacetophenone, 2- | 532-27-4 | | | 3.0E-05 | I | | | | 3.1E-02 |
| Chloroaniline, p- | 106-47-8 | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | 5.0E-02 | P | V | | | 5.2E+01 |
| Chlorobenzilate | 510-15-6 | 3.1E-05 | C | | | | | 7.9E-02 | |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | | | | |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | 3.0E-01 | P | V | | | 3.1E+02 |
| Chlorobutane, 1- | 109-69-3 | | | | | V | | | |
| Chlorodifluoromethane | 75-45-6 | | | 5.0E+01 | I | V | | | 5.2E+04 |
| Chloroform | 67-66-3 | 2.3E-05 | I | 9.8E-02 | A | V | | 1.1E-01 | 1.0E+02 |
| Chloromethane | 74-87-3 | | | 9.0E-02 | I | V | | | 9.4E+01 |
| Chloromethyl Methyl Ether | 107-30-2 | 6.9E-04 | C | | | V | | 3.5E-03 | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | V | | | |
| Chloronitrobenzene, o- | 88-73-3 | | | 1.0E-05 | X | | | | 1.0E-02 |
| Chloronitrobenzene, p- | 100-00-5 | | | 6.0E-04 | P | | | | 6.3E-01 |
| Chlorophenol, 2- | 95-57-8 | | | | | V | | | |
| Chloropicrin | 76-06-2 | | | 4.0E-04 | C | | | | 4.2E-01 |
| Chlorothalonil | 1897-45-6 | 8.9E-07 | C | | | | | 2.7E+00 | |
| Chlorotoluene, o- | 95-49-8 | | | | | V | | | |
| Chlorotoluene, p- | 106-43-4 | | | | | V | | | |
| Chlorozotocin | 54749-90-5 | 6.9E-02 | C | | | | | 3.5E-05 | |
| Chlorpropham | 101-21-3 | | | | | | | | |
| Chlorpyrifos | 2921-88-2 | | | | | | | | |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | | | | |
| Chlorsulfuron | 64902-72-3 | | | | | | | | |
| Chlorthiophos | 60238-56-4 | | | | | | | | |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | | | | |
| Chromium(VI) | 18540-29-9 | 8.4E-02 | I | 1.0E-04 | I | | M | 1.1E-05 | 1.0E-01 |
| Chromium, Total | 7440-47-3 | | | | | | | | |
| Cobalt | 7440-48-4 | 9.0E-03 | P | 6.0E-06 | P | | | 2.7E-04 | 6.3E-03 |
| Coke Oven Emissions | 8007-45-2 | 6.2E-04 | I | | | | M | 1.6E-03 | |
| Copper | 7440-50-8 | | | | | | | | |
| Cresol, m- | 108-39-4 | | | 6.0E-01 | C | | | | 6.3E+02 |
| Cresol, o- | 95-48-7 | | | 6.0E-01 | C | | | | 6.3E+02 |
| Cresol, p- | 106-44-5 | | | 6.0E-01 | C | | | | 6.3E+02 |
| Cresol, p-chloro-m- | 59-50-7 | | | | | | | | |
| Cresols | 1319-77-3 | | | 6.0E-01 | C | V | | | 6.3E+02 |
| Crotonaldehyde, trans- | 123-73-9 | | | | | V | | | |
| Cumene | 98-82-8 | | | 4.0E-01 | I | V | | | 4.2E+02 |
| Cupferron | 135-20-6 | 6.3E-05 | C | | | | | 3.9E-02 | |
| Cyanazine | 21725-46-2 | | | | | | | | |
| **Cyanides** | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | | | | |
| ~Copper Cyanide | 544-92-3 | | | | | | | | |
| ~Cyanide (CN-) | 57-12-5 | | | | | V | | | |
| ~Cyanogen | 460-19-5 | | | | | V | | | |
| ~Cyanogen Bromide | 506-68-3 | | | | | V | | | |
| ~Cyanogen Chloride | 506-77-4 | | | | | V | | | |
| ~Hydrogen Cyanide | 74-90-8 | | | 3.0E-03 | I | V | | | 3.1E+00 |
| ~Potassium Cyanide | 151-50-8 | | | | | | | | |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | | | | |
| ~Silver Cyanide | 506-64-9 | | | | | | | | |
| ~Sodium Cyanide | 143-33-9 | | | | | | | | |
| ~Thiocyanate | 463-56-9 | | | | | V | | | |
| ~Zinc Cyanide | 557-21-1 | | | | | | | | |
| Cyclohexane | 110-82-7 | | | 6.0E+00 | I | V | | | 6.3E+03 |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | | | | | | | | |
| Cyclohexanone | 108-94-1 | | | | | | | | |
| Cyclohexylamine | 108-91-8 | | | | | | | | |
| Cyhalothrin/karate | 68085-85-8 | | | | | | | | |
| Cypermethrin | 52315-07-8 | | | | | | | | |
| Cyromazine | 66215-27-8 | | | | | | | | |
| DDD | 72-54-8 | 6.9E-05 | C | | | | | 3.5E-02 | |
| DDE, p,p'- | 72-55-9 | 9.7E-05 | C | | | | | 2.5E-02 | |
| DDT | 50-29-3 | 9.7E-05 | I | | | | | 2.5E-02 | |
| Dacthal | 1861-32-1 | | | | | | | | |
| Dalapon | 75-99-0 | | | | | | | | |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | | | | | | | | |
| Demeton | 8065-48-3 | | | | | | | | |
| Di(2-ethylhexyl)adipate | 103-23-1 | | | | | | | | |
| Diallate | 2303-16-4 | | | | | | | | |
| Diazinon | 333-41-5 | | | | | | | | |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 6.0E-03 | P | 2.0E-04 | I | V | M | 1.6E-04 | 2.1E-01 |

Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | | | | |
| Dibromochloromethane | 124-48-1 | 2.7E-05 | C | | | V | | 9.0E-02 | |
| Dibromoethane, 1,2- | 106-93-4 | 6.0E-04 | I | 9.0E-03 | I | V | | 4.1E-03 | 9.4E+00 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | 4.0E-03 | X | V | | | 4.2E+00 |
| Dibutyl Phthalate | 84-74-2 | | | | | | | | |
| Dibutyltin Compounds | NA | | | | | | | | |
| Dicamba | 1918-00-9 | | | | | | | | |
| Dichloro-2-butene, 1,4- | 764-41-0 | 4.2E-03 | P | | | V | | 5.8E-04 | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | 4.2E-03 | P | | | V | | 5.8E-04 | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | 4.2E-03 | P | | | V | | 5.8E-04 | |
| Dichloroacetic Acid | 79-43-6 | | | | | | | | |
| Dichlorobenzene, 1,2- | 95-50-1 | | | 2.0E-01 | H | V | | | 2.1E+02 |
| Dichlorobenzene, 1,4- | 106-46-7 | 1.1E-05 | C | 8.0E-01 | I | V | | 2.2E-01 | 8.3E+02 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 3.4E-04 | C | | | | | 7.2E-03 | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | | | 2.0E-01 | H | V | | | 2.1E+02 |
| Dichloroethane, 1,1- | 75-34-3 | 1.6E-06 | C | | | V | | 1.5E+00 | |
| Dichloroethane, 1,2- | 107-06-2 | 2.6E-05 | I | 2.4E+00 | A | V | | 9.4E-02 | 2.5E+03 |
| Dichloroethylene, 1,1- | 75-35-4 | | | 2.0E-01 | I | V | | | 2.1E+02 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | V | | | |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | V | | | |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | 6.0E-02 | P | V | | | 6.3E+01 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | | | | |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | | | | |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | | | | |
| Dichloropropane, 1,2- | 78-87-5 | 1.0E-05 | C | 4.0E-03 | I | V | | 2.4E-01 | 4.2E+00 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | V | | | |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | | | | |
| Dichloropropene, 1,3- | 542-75-6 | 4.0E-06 | I | 2.0E-02 | I | V | | 6.1E-01 | 2.1E+01 |
| Dichlorvos | 62-73-7 | 8.3E-05 | C | 5.0E-04 | I | | | 2.9E-02 | 5.2E-01 |
| Dicyclopentadiene | 77-73-6 | | | 7.0E-03 | P | V | | | 7.3E+00 |
| Dieldrin | 60-57-1 | 4.6E-03 | I | | | | | 5.3E-04 | |
| Diesel Engine Exhaust | NA | 3.0E-04 | C | 5.0E-03 | I | | | 8.1E-03 | 5.2E+00 |
| Diethanolamine | 111-42-2 | | | 3.0E-03 | C | | | | 3.1E+00 |
| Diethyl Phthalate | 84-66-2 | | | | | | | | |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | 1.0E-04 | P | | | | 1.0E-01 |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | 3.0E-04 | P | | | | 3.1E-01 |
| Diethylformamide | 617-84-5 | | | | | | | | |
| Diethylstilbestrol | 56-53-1 | 1.0E-01 | C | | | | | 2.4E-05 | |
| Difenzoquat | 43222-48-6 | | | | | | | | |
| Diflubenzuron | 35367-38-5 | | | | | | | | |
| Difluoroethane, 1,1- | 75-37-6 | | | 4.0E+01 | I | V | | | 4.2E+04 |
| Dihydrosafrole | 94-58-6 | 1.3E-05 | C | | | | | 1.9E-01 | |
| Diisopropyl Ether | 108-20-3 | | | 4.0E-01 | P | V | | | 4.2E+02 |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | V | | | |
| Dimethipin | 55290-64-7 | | | | | | | | |
| Dimethoate | 60-51-5 | | | | | | | | |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | | | | | | | | |
| Dimethyl methylphosphonate | 756-79-6 | | | | | | | | |
| Dimethylamino azobenzene [p-] | 60-11-7 | 1.3E-03 | C | | | | | 1.9E-03 | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | | | | | | | | |
| Dimethylaniline, 2,4- | 95-68-1 | | | | | | | | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | V | | | |
| Dimethylbenzidine, 3,3'- | 119-93-7 | | | | | | | | |
| Dimethylformamide | 68-12-2 | | | 3.0E-02 | I | | | | 3.1E+01 |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | 2.0E-06 | X | | | | 2.1E-03 |
| Dimethylhydrazine, 1,2- | 540-73-8 | 1.6E-01 | C | | | | | 1.5E-05 | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | | | | |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | | | | |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | | | | |
| Dimethylterephthalate | 120-61-6 | | | | | V | | | |
| Dimethylvinylchloride | 513-37-1 | 1.3E-05 | C | | | | | 1.9E-01 | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | | | | |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | | | | |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | | | | |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | | | | |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | | | | |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | | | | |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | | | | | | | | |
| Dinitrotoluene, 2,4- | 121-14-2 | 8.9E-05 | C | | | | | 2.7E-02 | |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | | | | |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | | | | |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | | | | |
| Dinoseb | 88-85-7 | | | | | | | | |
| Dioxane, 1,4- | 123-91-1 | 7.7E-06 | C | 3.6E+00 | A | | | 3.2E-01 | 3.8E+03 |
| Dioxins | | | | | | | | | |
| **~Hexachlorodibenzo-p-dioxin, Mixture** | NA | 1.3E+00 | I | | | | | 1.9E-06 | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 3.8E+01 | C | 4.0E-08 | C | | | 6.4E-08 | 4.2E-05 |
| Diphenamid | 957-51-7 | | | | | | | | |
| Diphenyl Sulfone | 127-63-9 | | | | | | | | |
| Diphenylamine | 122-39-4 | | | | | | | | |
| Diphenylhydrazine, 1,2- | 122-66-7 | 2.2E-04 | I | | | | | 1.1E-02 | |
| Diquat | 85-00-7 | | | | | | | | |
| Direct Black 38 | 1937-37-7 | 2.1E-03 | C | | | | | 1.2E-03 | |
| Direct Blue 6 | 2602-46-2 | 2.1E-03 | C | | | | | 1.2E-03 | |
| Direct Brown 95 | 16071-86-6 | 1.9E-03 | C | | | | | 1.3E-03 | |
| Disulfoton | 298-04-4 | | | | | | | | |
| Dithiane, 1,4- | 505-29-3 | | | | | | | | |
| Diuron | 330-54-1 | | | | | | | | |
| Dodine | 2439-10-3 | | | | | | | | |
| EPTC | 759-94-4 | | | | | V | | | |
| Endosulfan | 115-29-7 | | | | | | | | |
| Endothall | 145-73-3 | | | | | | | | |
| Endrin | 72-20-8 | | | | | | | | |
| Epichlorohydrin | 106-89-8 | 1.2E-06 | I | 1.0E-03 | I | V | | 2.0E+00 | 1.0E+00 |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Epoxybutane, 1,2- | 106-88-7 | | | 2.0E-02 | I | V | | | 2.1E+01 |
| Ethephon | 16672-87-0 | | | | | | | | |
| Ethion | 563-12-2 | | | | | | | | |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | 3.0E-01 | C | | | | 3.1E+02 |
| Ethoxyethanol, 2- | 110-80-5 | | | 2.0E-01 | I | | | | 2.1E+02 |
| Ethyl Acetate | 141-78-6 | | | | | V | | | |
| Ethyl Acrylate | 140-88-5 | | | | | V | | | |
| Ethyl Chloride | 75-00-3 | | | 1.0E+01 | I | V | | | 1.0E+04 |
| Ethyl Ether | 60-29-7 | | | | | V | | | |
| Ethyl Methacrylate | 97-63-2 | | | | | V | | | |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | | | | |
| Ethylbenzene | 100-41-4 | 2.5E-06 | C | 1.0E+00 | I | V | | 9.7E-01 | 1.0E+03 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | | | | |
| Ethylene Diamine | 107-15-3 | | | | | | | | |
| Ethylene Glycol | 107-21-1 | | | 4.0E-01 | C | | | | 4.2E+02 |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | 1.3E+01 | I | | | | 1.4E+04 |
| Ethylene Oxide | 75-21-8 | 8.8E-05 | C | 3.0E-02 | C | V | | 2.8E-02 | 3.1E+01 |
| Ethylene Thiourea | 96-45-7 | 1.3E-05 | C | | | | | 1.9E-01 | |
| Ethyleneimine | 151-56-4 | 1.9E-02 | C | | | | | 1.3E-04 | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | | | | |
| Express | 101200-48-0 | | | | | | | | |
| Fenamiphos | 22224-92-6 | | | | | | | | |
| Fenpropathrin | 39515-41-8 | | | | | | | | |
| Fluometuron | 2164-17-2 | | | | | | | | |
| Fluoride | 16984-48-8 | | | 1.3E-02 | C | | | | 1.4E+01 |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | 1.3E-02 | C | | | | 1.4E+01 |
| Fluridone | 59756-60-4 | | | | | | | | |
| Flurprimidol | 56425-91-3 | | | | | | | | |
| Flutolanil | 66332-96-5 | | | | | | | | |
| Fluvalinate | 69409-94-5 | | | | | | | | |
| Folpet | 133-07-3 | | | | | | | | |
| Fomesafen | 72178-02-0 | | | | | | | | |
| Fonofos | 944-22-9 | | | | | | | | |
| Formaldehyde | 50-00-0 | 1.3E-05 | I | 9.8E-03 | A | | | 1.9E-01 | 1.0E+01 |
| Formic Acid | 64-18-6 | | | 3.0E-03 | P | | | | 3.1E+00 |
| Fosetyl-AL | 39148-24-8 | | | | | | | | |
| **Furans** | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | V | | | |
| ~Furan | 110-00-9 | | | | | V | | | |
| Furazolidone | 67-45-8 | | | | | | | | |
| Furfural | 98-01-1 | | | 5.0E-02 | H | | | | 5.2E+01 |
| Furium | 531-82-8 | 4.3E-04 | C | | | | | 5.7E-03 | |
| Furmecyclox | 60568-05-0 | 8.6E-06 | C | | | | | 2.8E-01 | |
| Glufosinate, Ammonium | 77182-82-2 | | | | | | | | |
| Glutaraldehyde | 111-30-8 | | | 8.0E-05 | C | | | | 8.3E-02 |
| Glycidyl | 765-34-4 | | | 1.0E-03 | H | | | | 1.0E+00 |
| Glyphosate | 1071-83-6 | | | | | | | | |
| Goal | 42874-03-3 | | | | | | | | |
| Guthion | 86-50-0 | | | 1.0E-02 | A | | | | 1.0E+01 |
| Haloxyfop, Methyl | 69806-40-2 | | | | | | | | |
| Harmony | 79277-27-3 | | | | | | | | |
| Heptachlor | 76-44-8 | 1.3E-03 | I | | | | | 1.9E-03 | |
| Heptachlor Epoxide | 1024-57-3 | 2.6E-03 | I | | | | | 9.4E-04 | |
| Hexabromobenzene | 87-82-1 | | | | | | | | |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | | | | |
| Hexachlorobenzene | 118-74-1 | 4.6E-04 | I | | | | | 5.3E-03 | |
| Hexachlorobutadiene | 87-68-3 | 2.2E-05 | I | | | | | 1.1E-01 | |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 1.8E-03 | I | | | | | 1.4E-03 | |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 5.3E-04 | I | | | | | 4.6E-03 | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 3.1E-04 | C | | | | | 7.9E-03 | |
| Hexachlorocyclohexane, Technical | 608-73-1 | 5.1E-04 | I | | | | | 4.8E-03 | |
| Hexachlorocyclopentadiene | 77-47-4 | | | 2.0E-04 | I | | | | 2.1E-01 |
| Hexachloroethane | 67-72-1 | 4.0E-06 | I | | | | | 6.1E-01 | |
| Hexachlorophene | 70-30-4 | | | | | | | | |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | | | | | | | | |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | 1.0E-05 | I | V | | | 1.0E-02 |
| Hexane, N- | 110-54-3 | | | 7.0E-01 | I | V | | | 7.3E+02 |
| Hexanedioic Acid | 124-04-9 | | | | | | | | |
| Hexanone, 2- | 591-78-6 | | | 3.0E-02 | I | V | | | 3.1E+01 |
| Hexazinone | 51235-04-2 | | | | | | | | |
| Hydrazine | 302-01-2 | 4.9E-03 | I | 3.0E-05 | P | | | 5.0E-04 | 3.1E-02 |
| Hydrazine Sulfate | 10034-93-2 | 4.9E-03 | I | | | | | 5.0E-04 | |
| Hydrogen Chloride | 7647-01-0 | | | 2.0E-02 | I | | | | 2.1E+01 |
| Hydrogen Fluoride | 7664-39-3 | | | 1.4E-02 | C | | | | 1.5E+01 |
| Hydrogen Sulfide | 7783-06-4 | | | 2.0E-03 | I | | | | 2.1E+00 |
| Hydroquinone | 123-31-9 | | | | | | | | |
| Imazalil | 35554-44-0 | | | | | | | | |
| Imazaquin | 81335-37-7 | | | | | | | | |
| Iodine | 7553-56-2 | | | | | | | | |
| Iprodione | 36734-19-7 | | | | | | | | |
| Iron | 7439-89-6 | | | | | | | | |
| Isobutyl Alcohol | 78-83-1 | | | | | V | | | |
| Isophorone | 78-59-1 | | | 2.0E+00 | C | | | | 2.1E+03 |
| Isopropalin | 33820-53-0 | | | | | | | | |
| Isopropanol | 67-63-0 | | | 7.0E+00 | C | | | | 7.3E+03 |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | | | | |
| Isoxaben | 82558-50-7 | | | | | | | | |
| JP-7 | NA | | | 3.0E-01 | A | V | | | 3.1E+02 |
| Kerb | 23950-58-5 | | | | | | | | |
| Lactofen | 77501-63-4 | | | | | | | | |
| **Lead Compounds** | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | |
| ~Tetraethyl Lead | 78-00-2 | | | | | | | | |
| Lead acetate | 301-04-2 | 8.0E-05 | C | | | | | 3.0E-02 | |
| Lead subacetate | 1335-32-6 | 1.1E-05 | C | | | | | 2.2E-01 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; nL = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Linuron | 330-55-2 | | | | | | | | |
| Lithium | 7439-93-2 | | | | | | | | |
| Lithium Perchlorate | 7791-03-9 | | | | | | | | |
| Londax | 83055-99-6 | | | | | | | | |
| MCPA | 94-74-6 | | | | | | | | |
| MCPB | 94-81-5 | | | | | | | | |
| MCPP | 93-65-2 | | | | | | | | |
| Malathion | 121-75-5 | | | | | | | | |
| Maleic Anhydride | 108-31-6 | | | 7.0E-04 | C | | | | 7.3E-01 |
| Maleic Hydrazide | 123-33-1 | | | | | | | | |
| Malononitrile | 109-77-3 | | | | | | | | |
| Mancozeb | 8018-01-7 | | | | | | | | |
| Maneb | 12427-38-2 | | | | | | | | |
| Manganese (Water) | 7439-96-5 | | | 5.0E-05 | I | | | | 5.2E-02 |
| Mephosfolan | 950-10-7 | | | | | | | | |
| Mepiquat Chloride | 24307-26-4 | | | | | | | | |
| **Mercury Compounds** | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | 3.0E-05 | C | | | | 3.1E-02 |
| ~Mercuric Sulfide | 1344-48-5 | | | | | | | | |
| ~Mercury (elemental) | 7439-97-6 | | | 3.0E-04 | I | V | | | 3.1E-01 |
| ~Mercury, Inorganic Salts | NA | | | | | | | | |
| ~Methyl Mercury | 22967-92-6 | | | | | | | | |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | | | | |
| Merphos | 150-50-5 | | | | | | | | |
| Merphos Oxide | 78-48-8 | | | | | | | | |
| Metalaxyl | 57837-19-1 | | | | | | | | |
| Methacrylonitrile | 126-98-7 | | | 7.0E-04 | H | V | | | 7.3E-01 |
| Methamidophos | 10265-92-6 | | | | | | | | |
| Methanol | 67-56-1 | | | 4.0E+00 | C | | | | 4.2E+03 |
| Methidathion | 950-37-8 | | | | | | | | |
| Methomyl | 16752-77-5 | | | | | | | | |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 1.4E-05 | C | | | | | 1.7E-01 | |
| Methoxychlor | 72-43-5 | | | | | | | | |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | 9.0E-02 | C | | | | 9.4E+01 |
| Methoxyethanol, 2- | 109-86-4 | | | 2.0E-02 | I | | | | 2.1E+01 |
| Methyl Acetate | 79-20-9 | | | | | V | | | |
| Methyl Acrylate | 96-33-3 | | | | | V | | | |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | 5.0E+00 | I | V | | | 5.2E+03 |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | 3.0E+00 | I | V | | | 3.1E+03 |
| Methyl Isocyanate | 624-83-9 | | | 1.0E-03 | C | | | | 1.0E+00 |
| Methyl Methacrylate | 80-62-6 | | | 7.0E-01 | I | V | | | 7.3E+02 |
| Methyl Parathion | 298-00-0 | | | | | | | | |
| Methyl Phosphonic Acid | 993-13-5 | | | | | | | | |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | 4.0E-02 | H | V | | | 4.2E+01 |
| Methyl methanesulfonate | 66-27-3 | 2.8E-05 | C | | | | | 8.7E-02 | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 2.6E-07 | C | 3.0E+00 | I | V | | 9.4E+00 | 3.1E+03 |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | | | | | | | | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 2.4E-03 | C | | | | | 1.0E-03 | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 3.7E-05 | C | | | | | 6.6E-02 | |
| Methylarsonic acid | 124-58-3 | | | | | | | | |
| Methylcholanthrene, 3- | 56-49-5 | 6.3E-03 | C | | | | | 3.9E-04 | |
| Methylene Chloride | 75-09-2 | 4.7E-07 | I | 1.0E+00 | A | V | | 5.2E+00 | 1.1E+03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 4.3E-04 | C | | | | M | 2.2E-03 | |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 1.3E-05 | C | | | | | 1.9E-01 | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 4.6E-04 | C | 2.0E-02 | C | | | 5.3E-03 | 2.1E+01 |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | 6.0E-04 | I | | | | 6.3E-01 |
| Methylstyrene, Alpha- | 98-83-9 | | | | | V | | | |
| Metolachlor | 51218-45-2 | | | | | | | | |
| Metribuzin | 21087-64-9 | | | | | | | | |
| Mineral oils | 8012-95-1 | | | | | | | | |
| Mirex | 2385-85-5 | 5.1E-03 | C | | | | | 4.8E-04 | |
| Molinate | 2212-67-1 | | | | | | | | |
| Molybdenum | 7439-98-7 | | | | | | | | |
| Monochloramine | 10599-90-3 | | | | | | | | |
| Monomethylaniline | 100-61-8 | | | | | | | | |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | | | | |
| Naled | 300-76-5 | | | | | | | | |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | 1.0E-01 | P | V | | | 1.0E+02 |
| Naphthylamine, 2- | 91-59-8 | 0.0E+00 | C | | | | | | |
| Napropamide | 15299-99-7 | | | | | | | | |
| Nickel Carbonyl | 13463-39-3 | | | 5.0E-05 | C | | | | 5.2E-02 |
| Nickel Oxide | 1313-99-1 | | | 1.0E-04 | C | | | | 1.0E-01 |
| Nickel Refinery Dust | NA | 2.4E-04 | I | 5.0E-05 | C | | | 1.0E-02 | 5.2E-02 |
| Nickel Soluble Salts | 7440-02-0 | 2.6E-04 | C | 9.0E-05 | A | | | 9.4E-03 | 9.4E-02 |
| Nickel Subsulfide | 12035-72-2 | 4.8E-04 | I | 5.0E-05 | C | | | 5.1E-03 | 5.2E-02 |
| Nitrate | 14797-55-8 | | | | | | | | |
| Nitrite | 14797-65-0 | | | | | | | | |
| Nitroaniline, 2- | 88-74-4 | | | 5.0E-05 | X | | | | 5.2E-02 |
| Nitroaniline, 4- | 100-01-6 | | | 6.0E-03 | P | | | | 6.3E+00 |
| Nitrobenzene | 98-95-3 | 4.0E-05 | I | 9.0E-03 | I | V | | 6.1E-02 | 9.4E+00 |
| Nitrocellulose | 9004-70-0 | | | | | | | | |
| Nitrofurantoin | 67-20-9 | | | | | | | | |
| Nitrofurazone | 59-87-0 | 3.7E-04 | C | | | | | 6.6E-03 | |
| Nitroglycerin | 55-63-0 | | | | | | | | |
| Nitroguanidine | 556-88-7 | | | | | | | | |
| Nitromethane | 75-52-5 | 9.0E-06 | P | 2.0E-02 | P | V | | 2.7E-01 | 2.1E+01 |
| Nitropropane, 2- | 79-46-9 | 2.7E-03 | H | 2.0E-02 | I | V | | 9.0E-04 | 2.1E+01 |
| Nitroso-N-ethylurea, N- | 759-73-9 | 7.7E-03 | C | | | | | 3.2E-04 | |
| Nitroso-N-methylurea, N- | 684-93-5 | 3.4E-02 | C | | | | | 7.2E-05 | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 1.6E-03 | I | | | V | | 1.5E-03 | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 2.0E-03 | C | | | | | 1.2E-03 | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 8.0E-04 | C | | | | | 3.0E-03 | |
| Nitrosodiethylamine, N- | 55-18-5 | 4.3E-02 | I | | | | M | 2.2E-05 | |
| Nitrosodimethylamine, N- | 62-75-9 | 1.4E-02 | I | 4.0E-05 | X | | M | 6.9E-05 | 4.2E-02 |
| Nitrosodiphenylamine, N- | 86-30-6 | 2.6E-06 | C | | | | | 9.4E-01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Nitrosomethylethylamine, N- | 10595-95-6 | 6.3E-03 | C | | | | | 3.9E-04 | |
| Nitrosomorpholine [N-] | 59-89-2 | 1.9E-03 | C | | | | | 1.3E-03 | |
| Nitrosopiperidine [N-] | 100-75-4 | 2.7E-03 | C | | | | | 9.0E-04 | |
| Nitrosopyrrolidine, N- | 930-55-2 | 6.1E-04 | I | | | | | 4.0E-03 | |
| Nitrotoluene, m- | 99-08-1 | | | | | | | | |
| Nitrotoluene, o- | 88-72-2 | | | | | V | | | |
| Nitrotoluene, p- | 99-99-0 | | | | | | | | |
| Nonane, n- | 111-84-2 | | | 2.0E-01 | P | V | | | 2.1E+02 |
| Norflurazon | 27314-13-2 | | | | | | | | |
| Nustar | 85509-19-9 | | | | | | | | |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | | | | |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | | | | |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | | | | |
| Oryzalin | 19044-88-3 | | | | | | | | |
| Oxadiazon | 19666-30-9 | | | | | | | | |
| Oxamyl | 23135-22-0 | | | | | | | | |
| Paclobutrazol | 76738-62-0 | | | | | | | | |
| Paraquat Dichloride | 1910-42-5 | | | | | | | | |
| Parathion | 56-38-2 | | | | | | | | |
| Pebulate | 1114-71-2 | | | | | | | | |
| Pendimethalin | 40487-42-1 | | | | | | | | |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | | | | |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | | | | |
| Pentachlorobenzene | 608-93-5 | | | | | | | | |
| Pentachloroethane | 76-01-7 | | | | | | | | |
| Pentachloronitrobenzene | 82-68-8 | | | | | | | | |
| Pentachlorophenol | 87-86-5 | 5.1E-06 | C | | | | | 4.8E-01 | |
| Pentane, n- | 109-66-0 | | | 1.0E+00 | P | V | | | 1.0E+03 |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | | | | |
| Permethrin | 52645-53-1 | | | | | | | | |
| Phenacetin | 62-44-2 | 6.3E-07 | C | | | | | 3.9E+00 | |
| Phenmedipham | 13684-63-4 | | | | | | | | |
| Phenol | 108-95-2 | | | 2.0E-01 | C | | | | 2.1E+02 |
| Phenylenediamine, m- | 108-45-2 | | | | | | | | |
| Phenylenediamine, o- | 95-54-5 | | | | | | | | |
| Phenylenediamine, p- | 106-50-3 | | | | | | | | |
| Phenylphenol, 2- | 90-43-7 | | | | | | | | |
| Phorate | 298-02-2 | | | | | | | | |
| Phosgene | 75-44-5 | | | 3.0E-04 | I | V | | | 3.1E-01 |
| Phosmet | 732-11-6 | | | | | | | | |
| Phosphine | 7803-51-2 | | | 3.0E-04 | I | | | | 3.1E-01 |
| Phosphoric Acid | 7664-38-2 | | | 1.0E-02 | I | | | | 1.0E+01 |
| Phosphorus, White | 7723-14-0 | | | | | | | | |
| Phthalic Acid, P- | 100-21-0 | | | | | | | | |
| Phthalic Anhydride | 85-44-9 | | | 2.0E-02 | C | | | | 2.1E+01 |
| Picloram | 1918-02-1 | | | | | | | | |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | | | | |
| Pirimiphos, Methyl | 29232-93-7 | | | | | | | | |
| Polybrominated Biphenyls | 59536-65-1 | 8.6E-03 | C | | | | | 2.8E-04 | |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 2.0E-05 | I | | | | | 1.2E-01 | |
| ~Aroclor 1221 | 11104-28-2 | 5.7E-04 | I | | | V | | 4.3E-03 | |
| ~Aroclor 1232 | 11141-16-5 | 5.7E-04 | I | | | V | | 4.3E-03 | |
| ~Aroclor 1242 | 53469-21-9 | 5.7E-04 | I | | | | | 4.3E-03 | |
| ~Aroclor 1248 | 12672-29-6 | 5.7E-04 | I | | | | | 4.3E-03 | |
| ~Aroclor 1254 | 11097-69-1 | 5.7E-04 | I | | | | | 4.3E-03 | |
| ~Aroclor 1260 | 11096-82-5 | 5.7E-04 | I | | | | | 4.3E-03 | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 3.8E-03 | C | | | | | 6.4E-04 | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 3.8E-04 | C | | | | | 6.4E-03 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 1.9E-02 | C | | | | | 1.3E-04 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 1.9E-02 | C | | | | | 1.3E-04 | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 3.8E-01 | C | | | | | 6.4E-06 | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 3.8E-03 | C | | | | | 6.4E-04 | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 3.8E-03 | C | | | | | 6.4E-04 | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 3.8E-03 | C | | | | | 6.4E-04 | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 1.9E-02 | C | | | | | 1.3E-04 | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 3.8E+00 | C | | | | | 6.4E-07 | |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 5.7E-04 | C | | | | | 4.3E-03 | |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 1.0E-04 | I | | | | | 2.4E-02 | |
| ~Polychlorinated Biphenyls (lowest risk) | 1336-36-3 | 2.0E-05 | C | | | | | 1.2E-01 | |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 3.8E-03 | C | | | | | 6.4E-04 | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 3.8E-03 | C | | | | | 6.4E-04 | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | 6.0E-04 | I | | | | 6.3E-01 |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | V | | | |
| ~Anthracene | 120-12-7 | | | | | V | | | |
| ~Benz[a]anthracene | 56-55-3 | 1.1E-04 | C | | | | M | 8.7E-03 | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.1E-04 | C | | | | | 2.2E-02 | |
| ~Benzo[a]pyrene | 50-32-8 | 1.1E-03 | C | | | | M | 8.7E-04 | |
| ~Benzo[b]fluoranthene | 205-99-2 | 1.1E-04 | C | | | | M | 8.7E-03 | |
| ~Benzo[k]fluoranthene | 207-08-9 | 1.1E-04 | C | | | | M | 8.7E-03 | |
| ~Chrysene | 218-01-9 | 1.1E-05 | C | | | | M | 8.7E-02 | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 1.2E-03 | C | | | | M | 8.0E-04 | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.1E-03 | C | | | | | 2.2E-03 | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 7.1E-02 | C | | | | | 3.4E-05 | |
| ~Fluoranthene | 206-44-0 | | | | | | | | |
| ~Fluorene | 86-73-7 | | | | | V | | | |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 1.1E-04 | C | | | | M | 8.7E-03 | |
| ~Methylnaphthalene, 1- | 90-12-0 | | | | | V | | | |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | V | | | |
| ~Naphthalene | 91-20-3 | 3.4E-05 | C | 3.0E-03 | I | V | | 7.2E-02 | 3.1E+00 |
| ~Nitropyrene, 4- | 57835-92-4 | 1.1E-04 | C | | | | | 2.2E-02 | |
| ~Pyrene | 129-00-0 | | | | | V | | | |
| Potassium Perchlorate | 7778-74-7 | | | | | | | | |
| Prochloraz | 67747-09-5 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Profluralin | 26399-36-0 | | | | | | | | |
| Prometon | 1610-18-0 | | | | | | | | |
| Prometryn | 7287-19-6 | | | | | | | | |
| Propachlor | 1918-16-7 | | | | | | | | |
| Propanil | 709-98-8 | | | | | | | | |
| Propargite | 2312-35-8 | | | | | | | | |
| Propargyl Alcohol | 107-19-7 | | | | | | | | |
| Propazine | 139-40-2 | | | | | | | | |
| Propham | 122-42-9 | | | | | | | | |
| Propiconazole | 60207-90-1 | | | | | | | | |
| Propionaldehyde | 123-38-6 | | | 8.0E-03 | I | V | | | 8.3E+00 |
| Propyl benzene | 103-65-1 | | | 1.0E+00 | X | V | | | 1.0E+03 |
| Propylene | 115-07-1 | | | 3.0E+00 | C | | | | 3.1E+03 |
| Propylene Glycol | 57-55-6 | | | | | | | | |
| Propylene Glycol Dinitrate | 6423-43-4 | | | 2.7E-04 | A | V | | | 2.8E-01 |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | | | | |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | 2.0E+00 | I | | | | 2.1E+03 |
| Propylene Oxide | 75-56-9 | 3.7E-06 | I | 3.0E-02 | I | V | | 6.6E-01 | 3.1E+01 |
| Pursuit | 81335-77-5 | | | | | | | | |
| Pydrin | 51630-58-1 | | | | | | | | |
| Pyridine | 110-86-1 | | | | | V | | | |
| Quinalphos | 13593-03-8 | | | | | | | | |
| Quinoline | 91-22-5 | | | | | | | | |
| Refractory Ceramic Fibers | NA | | | 3.0E-02 | A | | | | 3.1E+01 |
| Resmethrin | 10453-86-8 | | | | | | | | |
| Ronnel | 299-84-3 | | | | | | | | |
| Rotenone | 83-79-4 | | | | | | | | |
| Safrole | 94-59-7 | 6.3E-05 | C | | | | | 3.9E-02 | |
| Savey | 78587-05-0 | | | | | | | | |
| Selenious Acid | 7783-00-8 | | | | | | | | |
| Selenium | 7782-49-2 | | | 2.0E-02 | C | | | | 2.1E+01 |
| Selenium Sulfide | 7446-34-6 | | | 2.0E-02 | C | | | | 2.1E+01 |
| Sethoxydim | 74051-80-2 | | | | | | | | |
| Silica (crystalline, respirable) | 7631-86-9 | | | 3.0E-03 | C | | | | 3.1E+00 |
| Silver | 7440-22-4 | | | | | | | | |
| Simazine | 122-34-9 | | | | | | | | |
| Sodium Acifluorfen | 62476-59-9 | | | | | | | | |
| Sodium Azide | 26628-22-8 | | | | | | | | |
| Sodium Diethyldithiocarbamate | 148-18-5 | | | | | | | | |
| Sodium Fluoride | 7681-49-4 | | | 1.3E-02 | C | | | | 1.4E+01 |
| Sodium Fluoroacetate | 62-74-8 | | | | | | | | |
| Sodium Metavanadate | 13718-26-8 | | | | | | | | |
| Sodium Perchlorate | 7601-89-0 | | | | | | | | |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | | | | | | | | |
| Strontium, Stable | 7440-24-6 | | | | | | | | |
| Strychnine | 57-24-9 | | | | | | | | |
| Styrene | 100-42-5 | | | 1.0E+00 | I | V | | | 1.0E+03 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | | | | |
| Sulfuric Acid | 7664-93-9 | | | 1.0E-03 | C | | | | 1.0E+00 |
| Systhane | 88671-89-0 | | | | | | | | |
| TCMTB | 21564-17-0 | | | | | | | | |
| Tebuthiuron | 34014-18-1 | | | | | | | | |
| Temephos | 3383-96-8 | | | | | | | | |
| Terbacil | 5902-51-2 | | | | | | | | |
| Terbufos | 13071-79-9 | | | | | | | | |
| Terbutryn | 886-50-0 | | | | | | | | |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | | | | |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | | | | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 7.4E-06 | I | | | V | | 3.3E-01 | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 5.8E-05 | I | | | V | | 4.2E-02 | |
| Tetrachloroethylene | 127-18-4 | 5.9E-06 | C | 2.7E-01 | A | V | | 4.1E-01 | 2.8E+02 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | | | | |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | | | | | | | | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | | | | |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | 8.0E+01 | I | V | | | 8.3E+04 |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | | | | |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | |
| Thiobencarb | 28249-77-6 | | | | | | | | |
| Thiodiglycol | 111-48-8 | | | | | | | | |
| Thiofanox | 39196-18-4 | | | | | | | | |
| Thiophanate, Methyl | 23564-05-8 | | | | | | | | |
| Thiram | 137-26-8 | | | | | | | | |
| Tin | 7440-31-5 | | | | | | | | |
| Titanium Tetrachloride | 7550-45-0 | | | 1.0E-04 | A | | | | 1.0E-01 |
| Toluene | 108-88-3 | | | 5.0E+00 | I | V | | | 5.2E+03 |
| Toluidine, p- | 106-49-0 | | | | | | | | |
| Toxaphene | 8001-35-2 | 3.2E-04 | I | | | | | 7.6E-03 | |
| Tralomethrin | 66841-25-6 | | | | | | | | |
| Tri-n-butyltin | 688-73-3 | | | | | | | | |
| Triallate | 2303-17-5 | | | | | | | | |
| Triasulfuron | 82097-50-5 | | | | | | | | |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | | | | |
| Tributyl Phosphate | 126-73-8 | | | | | | | | |
| Tributyltin Compounds | NA | | | | | | | | |
| Tributyltin Oxide | 56-35-9 | | | | | | | | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | 3.0E+01 | H | V | | | 3.1E+04 |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | | | | | | | | |
| Trichloroaniline, 2,4,6- | 634-93-5 | | | | | | | | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | V | | | |
| Trichlorobenzene, 1,2,4- | 120-82-1 | | | 2.0E-03 | P | V | | | 2.1E+00 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | 5.0E+00 | I | V | | | 5.2E+03 |
| Trichloroethane, 1,1,2- | 79-00-5 | 1.6E-05 | I | | | V | | 1.5E-01 | |
| Trichloroethylene | 79-01-6 | 2.0E-06 | C | | | V | | 1.2E+00 | |
| Trichlorofluoromethane | 75-69-4 | | | 7.0E-01 | H | V | | | 7.3E+02 |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Trichlorophenol, 2,4,6- | 88-06-2 | 3.1E-06 | I | | | | | 7.9E-01 | |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | | | | |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | | | | |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | V | | | |
| Trichloropropane, 1,2,3- | 96-18-4 | | | 3.0E-04 | I | V | M | | 3.1E-01 |
| Trichloropropene, 1,2,3- | 96-19-5 | | | 3.0E-04 | P | V | | | 3.1E-01 |
| Tridiphane | 58138-08-2 | | | | | | | | |
| Triethylamine | 121-44-8 | | | 7.0E-03 | I | V | | | 7.3E+00 |
| Trifluralin | 1582-09-8 | | | | | | | | |
| Trimethyl Phosphate | 512-56-1 | | | | | | | | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | 7.0E-03 | P | V | | | 7.3E+00 |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | V | | | |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 118-96-7 | | | | | | | | |
| Triphenylphosphine Oxide | 791-28-6 | | | | | | | | |
| Tris(2-chloroethyl)phosphate | 115-96-8 | | | | | | | | |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | | | | | | | | |
| Uranium (Soluble Salts) | NA | | | 3.0E-04 | A | | | | 3.1E-01 |
| Urethane | 51-79-6 | 2.9E-04 | C | | | | | 8.4E-03 | |
| Vanadium Pentoxide | 1314-62-1 | 8.3E-03 | P | 7.0E-06 | P | | | 2.9E-04 | 7.3E-03 |
| Vanadium Sulfate | 36907-42-3 | | | | | | | | |
| Vanadium and Compounds | NA | | | | | | | | |
| Vanadium, Metallic | 7440-62-2 | | | | | | | | |
| Vernolate | 1929-77-7 | | | | | | | | |
| Vinclozolin | 50471-44-8 | | | | | | | | |
| Vinyl Acetate | 108-05-4 | | | 2.0E-01 | I | V | | | 2.1E+02 |
| Vinyl Bromide | 593-60-2 | 3.2E-05 | H | 3.0E-03 | I | V | | 7.6E-02 | 3.1E+00 |
| Vinyl Chloride | 75-01-4 | 4.4E-06 | I | 1.0E-01 | I | V | M | 1.6E-01 | 1.0E+02 |
| Warfarin | 81-81-2 | | | | | | | | |
| Xylene, Mixture | 1330-20-7 | | | 1.0E-01 | I | V | | | 1.0E+02 |
| Xylene, P- | 106-42-3 | | | 7.0E-01 | C | V | | | 7.3E+02 |
| Xylene, m- | 108-38-3 | | | 7.0E-01 | C | V | | | 7.3E+02 |
| Xylene, o- | 95-47-6 | | | 7.0E-01 | C | V | | | 7.3E+02 |
| Zinc (Metallic) | 7440-66-6 | | | | | | | | |
| Zinc Phosphide | 1314-84-7 | | | | | | | | |
| Zineb | 12122-67-7 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| ALAR | 1596-84-5 | 5.1E-06 | C | | | | | 2.4E+00 | |
| Acephate | 30560-19-1 | | | | | | | | |
| Acetaldehyde | 75-07-0 | 2.2E-06 | I | 9.0E-03 | I | V | | 5.6E+00 | 3.9E+01 |
| Acetochlor | 34256-82-1 | | | | | | | | |
| Acetone | 67-64-1 | | | 3.1E+01 | A | V | | | 1.4E+05 |
| Acetone Cyanohydrin | 75-86-5 | | | 6.0E-02 | P | V | | | 2.6E+02 |
| Acetonitrile | 75-05-8 | | | 6.0E-02 | I | V | | | 2.6E+02 |
| Acetophenone | 98-86-2 | | | | | V | | | |
| Acetylaminofluorene, 2- | 53-96-3 | 1.3E-03 | C | | | | | 9.4E-03 | |
| Acrolein | 107-02-8 | | | 2.0E-05 | I | V | | | 8.8E-02 |
| Acrylamide | 79-06-1 | 1.3E-03 | I | | | | | 9.4E-03 | |
| Acrylic Acid | 79-10-7 | | | 1.0E-03 | I | | | | 4.4E+00 |
| Acrylonitrile | 107-13-1 | 6.8E-05 | I | 2.0E-03 | I | V | | 1.8E-01 | 8.8E+00 |
| Adiponitrile | 111-69-3 | | | 6.0E-03 | P | | | | 2.6E+01 |
| Alachlor | 15972-60-8 | | | | | | | | |
| Aldicarb | 116-06-3 | | | | | | | | |
| Aldicarb Sulfone | 1646-88-4 | | | | | | | | |
| Aldrin | 309-00-2 | 4.9E-03 | I | | | | | 2.5E-03 | |
| Ally | 74223-64-6 | | | | | | | | |
| Allyl Alcohol | 107-18-6 | | | 1.0E-04 | X | | | | 4.4E-01 |
| Allyl Chloride | 107-05-1 | 6.0E-06 | C | 1.0E-03 | I | V | | 2.0E+00 | 4.4E+00 |
| Aluminum | 7429-90-5 | | | 5.0E-03 | P | | | | 2.2E+01 |
| Aluminum Phosphide | 20859-73-8 | | | | | | | | |
| Amdro | 67485-29-4 | | | | | | | | |
| Ametryn | 834-12-8 | | | | | | | | |
| Aminobiphenyl, 4- | 92-67-1 | 6.0E-03 | C | | | | | 2.0E-03 | |
| Aminophenol, m- | 591-27-5 | | | | | | | | |
| Aminophenol, p- | 123-30-8 | | | | | | | | |
| Amitraz | 33089-61-1 | | | | | | | | |
| Ammonia | 7664-41-7 | | | 1.0E-01 | I | | | | 4.4E+02 |
| Ammonium Perchlorate | 7790-98-9 | | | | | | | | |
| Ammonium Sulfamate | 7773-06-0 | | | | | | | | |
| Aniline | 62-53-3 | 1.6E-06 | C | 1.0E-03 | I | | | 7.7E+00 | 4.4E+00 |
| Antimony (metallic) | 7440-36-0 | | | | | | | | |
| Antimony Pentoxide | 1314-60-9 | | | | | | | | |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | | | | |
| Antimony Tetroxide | 1332-81-6 | | | | | | | | |
| Antimony Trioxide | 1309-64-4 | | | 2.0E-04 | I | | | | 8.8E-01 |
| Apollo | 74115-24-5 | | | | | | | | |
| Aramite | 140-57-8 | 7.1E-06 | I | | | | | 1.7E+00 | |
| Arsenic, Inorganic | 7440-38-2 | 4.3E-03 | I | 1.5E-05 | C | | | 2.9E-03 | 6.6E-02 |
| Arsine | 7784-42-1 | | | 5.0E-05 | I | | | | 2.2E-01 |
| Assure | 76578-14-8 | | | | | | | | |
| Asulam | 3337-71-1 | | | | | | | | |
| Atrazine | 1912-24-9 | | | | | | | | |
| Auramine | 492-80-8 | 2.5E-04 | C | | | | | 4.9E-02 | |
| Avermectin B1 | 65195-55-3 | | | | | | | | |
| Azobenzene | 103-33-3 | 3.1E-05 | I | | | V | | 4.0E-01 | |
| Barium | 7440-39-3 | | | 5.0E-04 | H | | | | 2.2E+00 |
| Baygon | 114-26-1 | | | | | | | | |
| Bayleton | 43121-43-3 | | | | | | | | |
| Baythroid | 68359-37-5 | | | | | | | | |
| Benefin | 1861-40-1 | | | | | | | | |
| Benomyl | 17804-35-2 | | | | | | | | |
| Bentazon | 25057-89-0 | | | | | | | | |
| Benzaldehyde | 100-52-7 | | | | | V | | | |
| Benzene | 71-43-2 | 7.8E-06 | I | 3.0E-02 | I | V | | 1.6E+00 | 1.3E+02 |
| Benzenethiol | 108-98-5 | | | | | V | | | |
| Benzidine | 92-87-5 | 6.7E-02 | I | | | | M | 1.8E-04 | |
| Benzoic Acid | 65-85-0 | | | | | | | | |
| Benzotrichloride | 98-07-7 | | | | | V | | | |
| Benzyl Alcohol | 100-51-6 | | | | | | | | |
| Benzyl Chloride | 100-44-7 | 4.9E-05 | C | 1.0E-03 | P | V | | 2.5E-01 | 4.4E+00 |
| Beryllium and compounds | 7440-41-7 | 2.4E-03 | I | 2.0E-05 | I | | | 5.1E-03 | 8.8E-02 |
| Bidrin | 141-66-2 | | | | | | | | |
| Bifenox | 42576-02-3 | | | | | | | | |
| Biphenthrin | 82657-04-3 | | | | | | | | |
| Biphenyl, 1,1'- | 92-52-4 | | | | | V | | | |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 1.0E-05 | H | | | V | | 1.2E+00 | |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | | | | |
| Bis(2-chloroethyl)ether | 111-44-4 | 3.3E-04 | I | | | V | | 3.7E-02 | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 2.4E-06 | C | | | | | 5.1E+00 | |
| Bis(chloromethyl)ether | 542-88-1 | 6.2E-02 | I | | | V | | 2.0E-04 | |
| Bisphenol A | 80-05-7 | | | | | | | | |
| Boron And Borates Only | 7440-42-8 | | | 2.0E-02 | H | | | | 8.8E+01 |
| Boron Trifluoride | 7637-07-2 | | | 1.3E-02 | C | | | | 5.7E+01 |
| Bromate | 15541-45-4 | | | | | | | | |
| Bromo-2-chloroethane, 1- | 107-04-0 | 6.0E-04 | X | | | V | | 2.0E-02 | |
| Bromobenzene | 108-86-1 | | | 6.0E-02 | I | V | | | 2.6E+02 |
| Bromodichloromethane | 75-27-4 | 3.7E-05 | C | | | V | | 3.3E-01 | |
| Bromoform | 75-25-2 | 1.1E-06 | I | | | | | 1.1E+01 | |
| Bromomethane | 74-83-9 | | | 5.0E-03 | I | V | | | 2.2E+01 |
| Bromophos | 2104-96-3 | | | | | | | | |
| Bromoxynil | 1689-84-5 | | | | | | | | |
| Bromoxynil Octanoate | 1689-99-2 | | | | | | | | |
| Butadiene, 1,3- | 106-99-0 | 3.0E-05 | I | 2.0E-03 | I | V | | 4.1E-01 | 8.8E+00 |
| Butanol, N- | 71-36-3 | | | | | | | | |
| Butyl Benzyl Phthlate | 85-68-7 | | | | | | | | |
| Butyl alcohol, sec- | 78-92-2 | | | 3.0E+01 | P | | | | 1.3E+05 |
| Butylate | 2008-41-5 | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Butylated hydroxyanisole | 25013-16-5 | 5.7E-08 | C | | | | | 2.2E+02 | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | | | | |
| Cacodylic Acid | 75-60-5 | | | | | | | | |
| Cadmium (Water) | 7440-43-9 | 1.8E-03 | I | 1.0E-05 | A | | | 6.8E-03 | 4.4E-02 |
| Caprolactam | 105-60-2 | | | | | | | | |
| Captafol | 2425-06-1 | 4.3E-05 | C | | | | | 2.9E-01 | |
| Captan | 133-06-2 | 6.6E-07 | C | | | | | 1.9E+01 | |
| Carbaryl | 63-25-2 | | | | | | | | |
| Carbofuran | 1563-66-2 | | | | | | | | |
| Carbon Disulfide | 75-15-0 | | | 7.0E-01 | I | V | | | 3.1E+03 |
| Carbon Tetrachloride | 56-23-5 | 1.5E-05 | I | 1.9E-01 | A | V | | 8.2E-01 | 8.3E+02 |
| Carbosulfan | 55285-14-8 | | | | | | | | |
| Carboxin | 5234-68-4 | | | | | | | | |
| Ceric oxide | 1306-38-3 | | | 9.0E-04 | I | | | | 3.9E+00 |
| Chloral Hydrate | 302-17-0 | | | | | | | | |
| Chloramben | 133-90-4 | | | | | | | | |
| Chloranil | 118-75-2 | | | | | | | | |
| Chlordane | 12789-03-6 | 1.0E-04 | I | 7.0E-04 | I | | | 1.2E-01 | 3.1E+00 |
| Chlordecone (Kepone) | 143-50-0 | 4.6E-03 | C | | | | | 2.7E-03 | |
| Chlorfenvinphos | 470-90-6 | | | | | | | | |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | | | | |
| Chlorine | 7782-50-5 | | | 1.5E-04 | A | | | | 6.4E-01 |
| Chlorine Dioxide | 10049-04-4 | | | 2.0E-04 | I | | | | 8.8E-01 |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | | | | |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | 5.0E+01 | I | V | | | 2.2E+05 |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | 7.0E-03 | H | V | | | 3.1E+01 |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | | | | | | | | |
| Chloroacetic Acid | 79-11-8 | | | | | | | | |
| Chloroacetophenone, 2- | 532-27-4 | | | 3.0E-05 | I | | | | 1.3E-01 |
| Chloroaniline, p- | 106-47-8 | | | | | | | | |
| Chlorobenzene | 108-90-7 | | | 5.0E-02 | P | V | | | 2.2E+02 |
| Chlorobenzilate | 510-15-6 | 3.1E-05 | C | | | | | 4.0E-01 | |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | | | | |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | 3.0E-01 | P | V | | | 1.3E+03 |
| Chlorobutane, 1- | 109-69-3 | | | | | V | | | |
| Chlorodifluoromethane | 75-45-6 | | | 5.0E+01 | I | V | | | 2.2E+05 |
| Chloroform | 67-66-3 | 2.3E-05 | I | 9.8E-02 | A | V | | 5.3E-01 | 4.3E+02 |
| Chloromethane | 74-87-3 | | | 9.0E-02 | I | V | | | 3.9E+02 |
| Chloromethyl Methyl Ether | 107-30-2 | 6.9E-04 | C | | | V | | 1.8E-02 | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | V | | | |
| Chloronitrobenzene, o- | 88-73-3 | | | 1.0E-05 | X | | | | 4.4E-02 |
| Chloronitrobenzene, p- | 100-00-5 | | | 6.0E-04 | P | | | | 2.6E+00 |
| Chlorophenol, 2- | 95-57-8 | | | | | V | | | |
| Chloropicrin | 76-06-2 | | | 4.0E-04 | C | | | | 1.8E+00 |
| Chlorothalonil | 1897-45-6 | 8.9E-07 | C | | | | | 1.4E+01 | |
| Chlorotoluene, o- | 95-49-8 | | | | | V | | | |
| Chlorotoluene, p- | 106-43-4 | | | | | V | | | |
| Chlorozotocin | 54749-90-5 | 6.9E-02 | C | | | | | 1.8E-04 | |
| Chlorpropham | 101-21-3 | | | | | | | | |
| Chlorpyrifos | 2921-88-2 | | | | | | | | |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | | | | |
| Chlorsulfuron | 64902-72-3 | | | | | | | | |
| Chlorthiophos | 60238-56-4 | | | | | | | | |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | | | | |
| Chromium(VI) | 18540-29-9 | 8.4E-02 | I | 1.0E-04 | I | | M | 1.5E-04 | 4.4E-01 |
| Chromium, Total | 7440-47-3 | | | | | | | | |
| Cobalt | 7440-48-4 | 9.0E-03 | P | 6.0E-06 | P | | | 1.4E-03 | 2.6E-02 |
| Coke Oven Emissions | 8007-45-2 | 6.2E-04 | I | | | | M | 2.0E-02 | |
| Copper | 7440-50-8 | | | | | | | | |
| Cresol, m- | 108-39-4 | | | 6.0E-01 | C | | | | 2.6E+03 |
| Cresol, o- | 95-48-7 | | | 6.0E-01 | C | | | | 2.6E+03 |
| Cresol, p- | 106-44-5 | | | 6.0E-01 | C | | | | 2.6E+03 |
| Cresol, p-chloro-m- | 59-50-7 | | | | | | | | |
| Cresols | 1319-77-3 | | | 6.0E-01 | C | V | | | 2.6E+03 |
| Crotonaldehyde, trans- | 123-73-9 | | | | | V | | | |
| Cumene | 98-82-8 | | | 4.0E-01 | I | V | | | 1.8E+03 |
| Cupferron | 135-20-6 | 6.3E-05 | C | | | | | 2.0E-01 | |
| Cyanazine | 21725-46-2 | | | | | | | | |
| **Cyanides** | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | | | | |
| ~Copper Cyanide | 544-92-3 | | | | | | | | |
| ~Cyanide (CN-) | 57-12-5 | | | | | V | | | |
| ~Cyanogen | 460-19-5 | | | | | V | | | |
| ~Cyanogen Bromide | 506-68-3 | | | | | V | | | |
| ~Cyanogen Chloride | 506-77-4 | | | | | V | | | |
| ~Hydrogen Cyanide | 74-90-8 | | | 3.0E-03 | I | V | | | 1.3E+01 |
| ~Potassium Cyanide | 151-50-8 | | | | | | | | |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | | | | |
| ~Silver Cyanide | 506-64-9 | | | | | | | | |
| ~Sodium Cyanide | 143-33-9 | | | | | | | | |
| ~Thiocyanate | 463-56-9 | | | | | V | | | |
| ~Zinc Cyanide | 557-21-1 | | | | | | | | |
| Cyclohexane | 110-82-7 | | | 6.0E+00 | I | V | | | 2.6E+04 |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | | | | | | | | |
| Cyclohexanone | 108-94-1 | | | | | | | | |
| Cyclohexylamine | 108-91-8 | | | | | | | | |
| Cyhalothrin/karate | 68085-85-8 | | | | | | | | |
| Cypermethrin | 52315-07-8 | | | | | | | | |
| Cyromazine | 66215-27-8 | | | | | | | | |
| DDD | 72-54-8 | 6.9E-05 | C | | | | | 1.8E-01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| DDE, p,p'- | 72-55-9 | 9.7E-05 | C | | | | | 1.3E-01 | |
| DDT | 50-29-3 | 9.7E-05 | I | | | | | 1.3E-01 | |
| Dacthal | 1861-32-1 | | | | | | | | |
| Dalapon | 75-99-0 | | | | | | | | |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | | | | | | | | |
| Demeton | 8065-48-3 | | | | | | | | |
| Di(2-ethylhexyl)adipate | 103-23-1 | | | | | | | | |
| Diallate | 2303-16-4 | | | | | | | | |
| Diazinon | 333-41-5 | | | | | | | | |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 6.0E-03 | P | 2.0E-04 | I | V | M | 2.0E-03 | 8.8E-01 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | | | | |
| Dibromochloromethane | 124-48-1 | 2.7E-05 | C | | | V | | 4.5E-01 | |
| Dibromoethane, 1,2- | 106-93-4 | 6.0E-04 | I | 9.0E-03 | I | V | | 2.0E-02 | 3.9E+01 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | 4.0E-03 | X | V | | | 1.8E+01 |
| Dibutyl Phthalate | 84-74-2 | | | | | | | | |
| Dibutyltin Compounds | NA | | | | | | | | |
| Dicamba | 1918-00-9 | | | | | | | | |
| Dichloro-2-butene, 1,4- | 764-41-0 | 4.2E-03 | P | | | V | | 2.9E-03 | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | 4.2E-03 | P | | | V | | 2.9E-03 | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | 4.2E-03 | P | | | V | | 2.9E-03 | |
| Dichloroacetic Acid | 79-43-6 | | | | | | | | |
| Dichlorobenzene, 1,2- | 95-50-1 | | | 2.0E-01 | H | V | | | 8.8E+02 |
| Dichlorobenzene, 1,4- | 106-46-7 | 1.1E-05 | C | 8.0E-01 | I | V | | 1.1E+00 | 3.5E+03 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 3.4E-04 | C | | | | | 3.6E-02 | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | | | 2.0E-01 | H | V | | | 8.8E+02 |
| Dichloroethane, 1,1- | 75-34-3 | 1.6E-06 | C | | | V | | 7.7E+00 | |
| Dichloroethane, 1,2- | 107-06-2 | 2.6E-05 | I | 2.4E+00 | A | V | | 4.7E-01 | 1.1E+04 |
| Dichloroethylene, 1,1- | 75-35-4 | | | 2.0E-01 | I | V | | | 8.8E+02 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | V | | | |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | V | | | |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | 6.0E-02 | P | V | | | 2.6E+02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | | | | |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | | | | |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | | | | |
| Dichloropropane, 1,2- | 78-87-5 | 1.0E-05 | C | 4.0E-03 | I | V | | 1.2E+00 | 1.8E+01 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | V | | | |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | | | | |
| Dichloropropene, 1,3- | 542-75-6 | 4.0E-06 | I | 2.0E-02 | I | V | | 3.1E+00 | 8.8E+01 |
| Dichlorvos | 62-73-7 | 8.3E-05 | C | 5.0E-04 | I | | | 1.5E-01 | 2.2E+00 |
| Dicyclopentadiene | 77-73-6 | | | 7.0E-03 | P | V | | | 3.1E+01 |
| Dieldrin | 60-57-1 | 4.6E-03 | I | | | | | 2.7E-03 | |
| Diesel Engine Exhaust | NA | 3.0E-04 | C | 5.0E-03 | I | | | 4.1E-02 | 2.2E+01 |
| Diethanolamine | 111-42-2 | | | 3.0E-03 | C | | | | 1.3E+01 |
| Diethyl Phthalate | 84-66-2 | | | | | | | | |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | 1.0E-04 | P | | | | 4.4E-01 |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | 3.0E-04 | P | | | | 1.3E+00 |
| Diethylformamide | 617-84-5 | | | | | | | | |
| Diethylstilbestrol | 56-53-1 | 1.0E-01 | C | | | | | 1.2E-04 | |
| Difenzoquat | 43222-48-6 | | | | | | | | |
| Diflubenzuron | 35367-38-5 | | | | | | | | |
| Difluoroethane, 1,1- | 75-37-6 | | | 4.0E+01 | I | V | | | 1.8E+05 |
| Dihydrosafrole | 94-58-6 | 1.3E-05 | C | | | | | 9.4E-01 | |
| Diisopropyl Ether | 108-20-3 | | | 4.0E-01 | P | V | | | 1.8E+03 |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | V | | | |
| Dimethipin | 55290-64-7 | | | | | | | | |
| Dimethoate | 60-51-5 | | | | | | | | |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | | | | | | | | |
| Dimethyl methylphosphonate | 756-79-6 | | | | | | | | |
| Dimethylamino azobenzene [p-] | 60-11-7 | 1.3E-03 | C | | | | | 9.4E-03 | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | | | | | | | | |
| Dimethylaniline, 2,4- | 95-68-1 | | | | | | | | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | V | | | |
| Dimethylbenzidine, 3,3'- | 119-93-7 | | | | | | | | |
| Dimethylformamide | 68-12-2 | | | 3.0E-02 | I | | | | 1.3E+02 |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | 2.0E-06 | X | | | | 8.8E-03 |
| Dimethylhydrazine, 1,2- | 540-73-8 | 1.6E-01 | C | | | | | 7.7E-05 | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | | | | |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | | | | |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | | | | |
| Dimethylterephthalate | 120-61-6 | | | | | V | | | |
| Dimethylvinylchloride | 513-37-1 | 1.3E-05 | C | | | | | 9.4E-01 | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | | | | |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | | | | |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | | | | |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | | | | |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | | | | |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | | | | |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | | | | | | | | |
| Dinitrotoluene, 2,4- | 121-14-2 | 8.9E-05 | C | | | | | 1.4E-01 | |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | | | | |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | | | | |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | | | | |
| Dinoseb | 88-85-7 | | | | | | | | |
| Dioxane, 1,4- | 123-91-1 | 7.7E-06 | C | 3.6E+00 | A | | | 1.6E+00 | 1.6E+04 |
| **Dioxins** | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 1.3E+00 | I | | | | | 9.4E-06 | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 3.8E+01 | C | 4.0E-08 | C | | | 3.2E-07 | 1.8E-04 |
| Diphenamid | 957-51-7 | | | | | | | | |
| Diphenyl Sulfone | 127-63-9 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Diphenylamine | 122-39-4 | | | | | | | | |
| Diphenylhydrazine, 1,2- | 122-66-7 | 2.2E-04 | I | | | | | 5.6E-02 | |
| Diquat | 85-00-7 | | | | | | | | |
| Direct Black 38 | 1937-37-7 | 2.1E-03 | C | | | | | 5.8E-03 | |
| Direct Blue 6 | 2602-46-2 | 2.1E-03 | C | | | | | 5.8E-03 | |
| Direct Brown 95 | 16071-86-6 | 1.9E-03 | C | | | | | 6.5E-03 | |
| Disulfoton | 298-04-4 | | | | | | | | |
| Dithiane, 1,4- | 505-29-3 | | | | | | | | |
| Diuron | 330-54-1 | | | | | | | | |
| Dodine | 2439-10-3 | | | | | | | | |
| EPTC | 759-94-4 | | | | | V | | | |
| Endosulfan | 115-29-7 | | | | | | | | |
| Endothall | 145-73-3 | | | | | | | | |
| Endrin | 72-20-8 | | | | | | | | |
| Epichlorohydrin | 106-89-8 | 1.2E-06 | I | 1.0E-03 | I | V | | 1.0E+01 | 4.4E+00 |
| Epoxybutane, 1,2- | 106-88-7 | | | 2.0E-02 | I | V | | | 8.8E+01 |
| Ethephon | 16672-87-0 | | | | | | | | |
| Ethion | 563-12-2 | | | | | | | | |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | 3.0E-01 | C | | | | 1.3E+03 |
| Ethoxyethanol, 2- | 110-80-5 | | | 2.0E-01 | I | | | | 8.8E+02 |
| Ethyl Acetate | 141-78-6 | | | | | V | | | |
| Ethyl Acrylate | 140-88-5 | | | | | V | | | |
| Ethyl Chloride | 75-00-3 | | | 1.0E+01 | I | V | | | 4.4E+04 |
| Ethyl Ether | 60-29-7 | | | | | V | | | |
| Ethyl Methacrylate | 97-63-2 | | | | | V | | | |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | | | | |
| Ethylbenzene | 100-41-4 | 2.5E-06 | C | 1.0E+00 | I | V | | 4.9E+00 | 4.4E+03 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | | | | |
| Ethylene Diamine | 107-15-3 | | | | | | | | |
| Ethylene Glycol | 107-21-1 | | | 4.0E-01 | C | | | | 1.8E+03 |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | 1.3E+01 | I | | | | 5.7E+04 |
| Ethylene Oxide | 75-21-8 | 8.8E-05 | C | 3.0E-02 | C | V | | 1.4E-01 | 1.3E+02 |
| Ethylene Thiourea | 96-45-7 | 1.3E-05 | C | | | | | 9.4E-01 | |
| Ethyleneimine | 151-56-4 | 1.9E-02 | C | | | | | 6.5E-04 | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | | | | |
| Express | 101200-48-0 | | | | | | | | |
| Fenamiphos | 22224-92-6 | | | | | | | | |
| Fenpropathrin | 39515-41-8 | | | | | | | | |
| Fluometuron | 2164-17-2 | | | | | | | | |
| Fluoride | 16984-48-8 | | | 1.3E-02 | C | | | | 5.7E+01 |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | 1.3E-02 | C | | | | 5.7E+01 |
| Fluridone | 59756-60-4 | | | | | | | | |
| Flurprimidol | 56425-91-3 | | | | | | | | |
| Flutolanil | 66332-96-5 | | | | | | | | |
| Fluvalinate | 69409-94-5 | | | | | | | | |
| Folpet | 133-07-3 | | | | | | | | |
| Fomesafen | 72178-02-0 | | | | | | | | |
| Fonofos | 944-22-9 | | | | | | | | |
| Formaldehyde | 50-00-0 | 1.3E-05 | I | 9.8E-03 | A | | | 9.4E-01 | 4.3E+01 |
| Formic Acid | 64-18-6 | | | 3.0E-03 | P | | | | 1.3E+01 |
| Fosetyl-AL | 39148-24-8 | | | | | | | | |
| **Furans** | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | V | | | |
| ~Furan | 110-00-9 | | | | | V | | | |
| Furazolidone | 67-45-8 | | | | | | | | |
| Furfural | 98-01-1 | | | 5.0E-02 | H | | | | 2.2E+02 |
| Furium | 531-82-8 | 4.3E-04 | C | | | | | 2.9E-02 | |
| Furmecyclox | 60568-05-0 | 8.6E-06 | C | | | | | 1.4E+00 | |
| Glufosinate, Ammonium | 77182-82-2 | | | | | | | | |
| Glutaraldehyde | 111-30-8 | | | 8.0E-05 | C | | | | 3.5E-01 |
| Glycidyl | 765-34-4 | | | 1.0E-03 | H | | | | 4.4E+00 |
| Glyphosate | 1071-83-6 | | | | | | | | |
| Goal | 42874-03-3 | | | | | | | | |
| Guthion | 86-50-0 | | | 1.0E-02 | A | | | | 4.4E+01 |
| Haloxyfop, Methyl | 69806-40-2 | | | | | | | | |
| Harmony | 79277-27-3 | | | | | | | | |
| Heptachlor | 76-44-8 | 1.3E-03 | I | | | | | 9.4E-03 | |
| Heptachlor Epoxide | 1024-57-3 | 2.6E-03 | I | | | | | 4.7E-03 | |
| Hexabromobenzene | 87-82-1 | | | | | | | | |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | | | | |
| Hexachlorobenzene | 118-74-1 | 4.6E-04 | I | | | | | 2.7E-02 | |
| Hexachlorobutadiene | 87-68-3 | 2.2E-05 | I | | | | | 5.6E-01 | |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 1.8E-03 | I | | | | | 6.8E-03 | |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 5.3E-04 | I | | | | | 2.3E-02 | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 3.1E-04 | C | | | | | 4.0E-02 | |
| Hexachlorocyclohexane, Technical | 608-73-1 | 5.1E-04 | I | | | | | 2.4E-02 | |
| Hexachlorocyclopentadiene | 77-47-4 | | | 2.0E-04 | I | | | | 8.8E-01 |
| Hexachloroethane | 67-72-1 | 4.0E-06 | I | | | | | 3.1E+00 | |
| Hexachlorophene | 70-30-4 | | | | | | | | |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | | | | | | | | |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | 1.0E-05 | I | V | | | 4.4E-02 |
| Hexane, N- | 110-54-3 | | | 7.0E-01 | I | V | | | 3.1E+03 |
| Hexanedioic Acid | 124-04-9 | | | | | | | | |
| Hexanone, 2- | 591-78-6 | | | 3.0E-02 | I | V | | | 1.3E+02 |
| Hexazinone | 51235-04-2 | | | | | | | | |
| Hydrazine | 302-01-2 | 4.9E-03 | I | 3.0E-05 | P | | | 2.5E-03 | 1.3E-01 |
| Hydrazine Sulfate | 10034-93-2 | 4.9E-03 | I | | | | | 2.5E-03 | |
| Hydrogen Chloride | 7647-01-0 | | | 2.0E-02 | I | | | | 8.8E+01 |
| Hydrogen Fluoride | 7664-39-3 | | | 1.4E-02 | C | | | | 6.1E+01 |
| Hydrogen Sulfide | 7783-06-4 | | | 2.0E-03 | I | | | | 8.8E+00 |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Hydroquinone | 123-31-9 | | | | | | | | |
| Imazalil | 35554-44-0 | | | | | | | | |
| Imazaquin | 81335-37-7 | | | | | | | | |
| Iodine | 7553-56-2 | | | | | | | | |
| Iprodione | 36734-19-7 | | | | | | | | |
| Iron | 7439-89-6 | | | | | | | | |
| Isobutyl Alcohol | 78-83-1 | | | | | V | | | |
| Isophorone | 78-59-1 | | | 2.0E+00 | C | | | | 8.8E+03 |
| Isopropalin | 33820-53-0 | | | | | | | | |
| Isopropanol | 67-63-0 | | | 7.0E+00 | C | | | | 3.1E+04 |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | | | | |
| Isoxaben | 82558-50-7 | | | | | | | | |
| JP-7 | NA | | | 3.0E-01 | A | V | | | 1.3E+03 |
| Kerb | 23950-58-5 | | | | | | | | |
| Lactofen | 77501-63-4 | | | | | | | | |
| **Lead Compounds** | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | |
| ~Tetraethyl Lead | 78-00-2 | | | | | | | | |
| Lead acetate | 301-04-2 | 8.0E-05 | C | | | | | 1.5E-01 | |
| Lead subacetate | 1335-32-6 | 1.1E-05 | C | | | | | 1.1E+00 | |
| Linuron | 330-55-2 | | | | | | | | |
| Lithium | 7439-93-2 | | | | | | | | |
| Lithium Perchlorate | 7791-03-9 | | | | | | | | |
| Londax | 83055-99-6 | | | | | | | | |
| MCPA | 94-74-6 | | | | | | | | |
| MCPB | 94-81-5 | | | | | | | | |
| MCPP | 93-65-2 | | | | | | | | |
| Malathion | 121-75-5 | | | | | | | | |
| Maleic Anhydride | 108-31-6 | | | 7.0E-04 | C | | | | 3.1E+00 |
| Maleic Hydrazide | 123-33-1 | | | | | | | | |
| Malononitrile | 109-77-3 | | | | | | | | |
| Mancozeb | 8018-01-7 | | | | | | | | |
| Maneb | 12427-38-2 | | | | | | | | |
| Manganese (Water) | 7439-96-5 | | | 5.0E-05 | I | | | | 2.2E-01 |
| Mephosfolan | 950-10-7 | | | | | | | | |
| Mepiquat Chloride | 24307-26-4 | | | | | | | | |
| **Mercury Compounds** | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | 3.0E-05 | C | | | | 1.3E-01 |
| ~Mercuric Sulfide | 1344-48-5 | | | | | | | | |
| ~Mercury (elemental) | 7439-97-6 | | | 3.0E-04 | I | V | | | 1.3E+00 |
| ~Mercury, Inorganic Salts | NA | | | | | | | | |
| ~Methyl Mercury | 22967-92-6 | | | | | | | | |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | | | | |
| Merphos | 150-50-5 | | | | | | | | |
| Merphos Oxide | 78-48-8 | | | | | | | | |
| Metalaxyl | 57837-19-1 | | | | | | | | |
| Methacrylonitrile | 126-98-7 | | | 7.0E-04 | H | V | | | 3.1E+00 |
| Methamidophos | 10265-92-6 | | | | | | | | |
| Methanol | 67-56-1 | | | 4.0E+00 | C | | | | 1.8E+04 |
| Methidathion | 950-37-8 | | | | | | | | |
| Methomyl | 16752-77-5 | | | | | | | | |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 1.4E-05 | C | | | | | 8.8E-01 | |
| Methoxychlor | 72-43-5 | | | | | | | | |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | 9.0E-02 | C | | | | 3.9E+02 |
| Methoxyethanol, 2- | 109-86-4 | | | 2.0E-02 | I | | | | 8.8E+01 |
| Methyl Acetate | 79-20-9 | | | | | V | | | |
| Methyl Acrylate | 96-33-3 | | | | | V | | | |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | 5.0E+00 | I | V | | | 2.2E+04 |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | 3.0E+00 | I | V | | | 1.3E+04 |
| Methyl Isocyanate | 624-83-9 | | | 1.0E-03 | C | | | | 4.4E+00 |
| Methyl Methacrylate | 80-62-6 | | | 7.0E-01 | I | V | | | 3.1E+03 |
| Methyl Parathion | 298-00-0 | | | | | | | | |
| Methyl Phosphonic Acid | 993-13-5 | | | | | | | | |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | 4.0E-02 | H | V | | | 1.8E+02 |
| Methyl methanesulfonate | 66-27-3 | 2.8E-05 | C | | | | | 4.4E-01 | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 2.6E-07 | C | 3.0E+00 | I | V | | 4.7E+01 | 1.3E+04 |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | | | | | | | | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 2.4E-03 | C | | | | | 5.1E-03 | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 3.7E-05 | C | | | | | 3.3E-01 | |
| Methylarsonic acid | 124-58-3 | | | | | | | | |
| Methylcholanthrene, 3- | 56-49-5 | 6.3E-03 | C | | | | | 2.0E-03 | |
| Methylene Chloride | 75-09-2 | 4.7E-07 | I | 1.0E+00 | A | V | | 2.6E+01 | 4.6E+03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 4.3E-04 | C | | | | M | 2.9E-02 | |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 1.3E-05 | C | | | | | 9.4E-01 | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 4.6E-04 | C | 2.0E-02 | C | | | 2.7E-02 | 8.8E+01 |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | 6.0E-04 | I | | | | 2.6E+00 |
| Methylstyrene, Alpha- | 98-83-9 | | | | | V | | | |
| Metolachlor | 51218-45-2 | | | | | | | | |
| Metribuzin | 21087-64-9 | | | | | | | | |
| Mineral oils | 8012-95-1 | | | | | | | | |
| Mirex | 2385-85-5 | 5.1E-03 | C | | | | | 2.4E-03 | |
| Molinate | 2212-67-1 | | | | | | | | |
| Molybdenum | 7439-98-7 | | | | | | | | |
| Monochloramine | 10599-90-3 | | | | | | | | |
| Monomethylaniline | 100-61-8 | | | | | | | | |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | | | | |
| Naled | 300-76-5 | | | | | | | | |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | 1.0E-01 | P | V | | | 4.4E+02 |
| Naphthylamine, 2- | 91-59-8 | 0.0E+00 | C | | | | | | |
| Napropamide | 15299-99-7 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Nickel Carbonyl | 13463-39-3 | | | 5.0E-05 | C | | | | 2.2E-01 |
| Nickel Oxide | 1313-99-1 | | | 1.0E-04 | C | | | | 4.4E-01 |
| Nickel Refinery Dust | NA | 2.4E-04 | I | 5.0E-05 | C | | | 5.1E-02 | 2.2E-01 |
| Nickel Soluble Salts | 7440-02-0 | 2.6E-04 | C | 9.0E-05 | A | | | 4.7E-02 | 3.9E-01 |
| Nickel Subsulfide | 12035-72-2 | 4.8E-04 | I | 5.0E-05 | C | | | 2.6E-02 | 2.2E-01 |
| Nitrate | 14797-55-8 | | | | | | | | |
| Nitrite | 14797-65-0 | | | | | | | | |
| Nitroaniline, 2- | 88-74-4 | | | 5.0E-05 | X | | | | 2.2E-01 |
| Nitroaniline, 4- | 100-01-6 | | | 6.0E-03 | P | | | | 2.6E+01 |
| Nitrobenzene | 98-95-3 | 4.0E-05 | I | 9.0E-03 | I | V | | 3.1E-01 | 3.9E+01 |
| Nitrocellulose | 9004-70-0 | | | | | | | | |
| Nitrofurantoin | 67-20-9 | | | | | | | | |
| Nitrofurazone | 59-87-0 | 3.7E-04 | C | | | | | 3.3E-02 | |
| Nitroglycerin | 55-63-0 | | | | | | | | |
| Nitroguanidine | 556-88-7 | | | | | | | | |
| Nitromethane | 75-52-5 | 9.0E-06 | P | 2.0E-02 | P | V | | 1.4E+00 | 8.8E+01 |
| Nitropropane, 2- | 79-46-9 | 2.7E-03 | H | 2.0E-02 | I | V | | 4.5E-03 | 8.8E+01 |
| Nitroso-N-ethylurea, N- | 759-73-9 | 7.7E-03 | C | | | | | 1.6E-03 | |
| Nitroso-N-methylurea, N- | 684-93-5 | 3.4E-02 | C | | | | | 3.6E-04 | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 1.6E-03 | I | | | V | | 7.7E-03 | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 2.0E-03 | C | | | | | 6.1E-03 | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 8.0E-04 | C | | | | | 1.5E-02 | |
| Nitrosodiethylamine, N- | 55-18-5 | 4.3E-02 | I | | | | M | 2.9E-04 | |
| Nitrosodimethylamine, N- | 62-75-9 | 1.4E-02 | I | 4.0E-05 | X | | M | 8.8E-04 | 1.8E-01 |
| Nitrosodiphenylamine, N- | 86-30-6 | 2.6E-06 | C | | | | | 4.7E+00 | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 6.3E-03 | C | | | | | 2.0E-03 | |
| Nitrosomorpholine [N-] | 59-89-2 | 1.9E-03 | C | | | | | 6.5E-03 | |
| Nitrosopiperidine [N-] | 100-75-4 | 2.7E-03 | C | | | | | 4.5E-03 | |
| Nitrosopyrrolidine, N- | 930-55-2 | 6.1E-04 | I | | | | | 2.0E-02 | |
| Nitrotoluene, m- | 99-08-1 | | | | | | | | |
| Nitrotoluene, o- | 88-72-2 | | | | | V | | | |
| Nitrotoluene, p- | 99-99-0 | | | | | | | | |
| Nonane, n- | 111-84-2 | | | 2.0E-01 | P | V | | | 8.8E+02 |
| Norflurazon | 27314-13-2 | | | | | | | | |
| Nustar | 85509-19-9 | | | | | | | | |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | | | | |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | | | | |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | | | | |
| Oryzalin | 19044-88-3 | | | | | | | | |
| Oxadiazon | 19666-30-9 | | | | | | | | |
| Oxamyl | 23135-22-0 | | | | | | | | |
| Paclobutrazol | 76738-62-0 | | | | | | | | |
| Paraquat Dichloride | 1910-42-5 | | | | | | | | |
| Parathion | 56-38-2 | | | | | | | | |
| Pebulate | 1114-71-2 | | | | | | | | |
| Pendimethalin | 40487-42-1 | | | | | | | | |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | | | | |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | | | | |
| Pentachlorobenzene | 608-93-5 | | | | | | | | |
| Pentachloroethane | 76-01-7 | | | | | | | | |
| Pentachloronitrobenzene | 82-68-8 | | | | | | | | |
| Pentachlorophenol | 87-86-5 | 5.1E-06 | C | | | | | 2.4E+00 | |
| Pentane, n- | 109-66-0 | | | 1.0E+00 | P | V | | | 4.4E+03 |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | | | | |
| Permethrin | 52645-53-1 | | | | | | | | |
| Phenacetin | 62-44-2 | 6.3E-07 | C | | | | | 2.0E+01 | |
| Phenmedipham | 13684-63-4 | | | | | | | | |
| Phenol | 108-95-2 | | | 2.0E-01 | C | | | | 8.8E+02 |
| Phenylenediamine, m- | 108-45-2 | | | | | | | | |
| Phenylenediamine, o- | 95-54-5 | | | | | | | | |
| Phenylenediamine, p- | 106-50-3 | | | | | | | | |
| Phenylphenol, 2- | 90-43-7 | | | | | | | | |
| Phorate | 298-02-2 | | | | | | | | |
| Phosgene | 75-44-5 | | | 3.0E-04 | I | V | | | 1.3E+00 |
| Phosmet | 732-11-6 | | | | | | | | |
| Phosphine | 7803-51-2 | | | 3.0E-04 | I | | | | 1.3E+00 |
| Phosphoric Acid | 7664-38-2 | | | 1.0E-02 | I | | | | 4.4E+01 |
| Phosphorus, White | 7723-14-0 | | | | | | | | |
| Phthalic Acid, P- | 100-21-0 | | | | | | | | |
| Phthalic Anhydride | 85-44-9 | | | 2.0E-02 | C | | | | 8.8E+01 |
| Picloram | 1918-02-1 | | | | | | | | |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | | | | |
| Pirimiphos, Methyl | 29232-93-7 | | | | | | | | |
| Polybrominated Biphenyls | 59536-65-1 | 8.6E-03 | C | | | | | 1.4E-03 | |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 2.0E-05 | I | | | | | 6.1E-01 | |
| ~Aroclor 1221 | 11104-28-2 | 5.7E-04 | I | | | V | | 2.2E-02 | |
| ~Aroclor 1232 | 11141-16-5 | 5.7E-04 | I | | | V | | 2.2E-02 | |
| ~Aroclor 1242 | 53469-21-9 | 5.7E-04 | I | | | | | 2.2E-02 | |
| ~Aroclor 1248 | 12672-29-6 | 5.7E-04 | I | | | | | 2.2E-02 | |
| ~Aroclor 1254 | 11097-69-1 | 5.7E-04 | I | | | | | 2.2E-02 | |
| ~Aroclor 1260 | 11096-82-5 | 5.7E-04 | I | | | | | 2.2E-02 | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 3.8E-03 | C | | | | | 3.2E-03 | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 3.8E-04 | C | | | | | 3.2E-02 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 1.9E-02 | C | | | | | 6.5E-04 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 1.9E-02 | C | | | | | 6.5E-04 | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 3.8E-01 | C | | | | | 3.2E-05 | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 3.8E-03 | C | | | | | 3.2E-03 | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 3.8E-03 | C | | | | | 3.2E-03 | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 3.8E-03 | C | | | | | 3.2E-03 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 1.9E-02 | C | | | | | 6.5E-04 | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 3.8E+00 | C | | | | | 3.2E-06 | |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 5.7E-04 | C | | | | | 2.2E-02 | |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 1.0E-04 | I | | | | | 1.2E-01 | |
| ~Polychlorinated Biphenyls (lowest risk) | 1336-36-3 | 2.0E-05 | C | | | | | 6.1E-01 | |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 3.8E-03 | C | | | | | 3.2E-03 | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 3.8E-03 | C | | | | | 3.2E-03 | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | 6.0E-04 | I | | | | 2.6E+00 |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | V | | | |
| ~Anthracene | 120-12-7 | | | | | V | | | |
| ~Benz[a]anthracene | 56-55-3 | 1.1E-04 | C | | | | M | 1.1E-01 | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.1E-04 | C | | | | | 1.1E-01 | |
| ~Benzo[a]pyrene | 50-32-8 | 1.1E-03 | C | | | | M | 1.1E-02 | |
| ~Benzo[b]fluoranthene | 205-99-2 | 1.1E-04 | C | | | | M | 1.1E-01 | |
| ~Benzo[k]fluoranthene | 207-08-9 | 1.1E-04 | C | | | | M | 1.1E-01 | |
| ~Chrysene | 218-01-9 | 1.1E-05 | C | | | | M | 1.1E+00 | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 1.2E-03 | C | | | | M | 1.0E-02 | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.1E-03 | C | | | | | 1.1E-02 | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 7.1E-02 | C | | | | | 1.7E-04 | |
| ~Fluoranthene | 206-44-0 | | | | | | | | |
| ~Fluorene | 86-73-7 | | | | | V | | | |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 1.1E-04 | C | | | | M | 1.1E-01 | |
| ~Methylnaphthalene, 1- | 90-12-0 | | | | | V | | | |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | V | | | |
| ~Naphthalene | 91-20-3 | 3.4E-05 | C | 3.0E-03 | I | V | | 3.6E-01 | 1.3E+01 |
| ~Nitropyrene, 4- | 57835-92-4 | 1.1E-04 | C | | | | | 1.1E-01 | |
| ~Pyrene | 129-00-0 | | | | | V | | | |
| Potassium Perchlorate | 7778-74-7 | | | | | | | | |
| Prochloraz | 67747-09-5 | | | | | | | | |
| Profluralin | 26399-36-0 | | | | | | | | |
| Prometon | 1610-18-0 | | | | | | | | |
| Prometryn | 7287-19-6 | | | | | | | | |
| Propachlor | 1918-16-7 | | | | | | | | |
| Propanil | 709-98-8 | | | | | | | | |
| Propargite | 2312-35-8 | | | | | | | | |
| Propargyl Alcohol | 107-19-7 | | | | | | | | |
| Propazine | 139-40-2 | | | | | | | | |
| Propham | 122-42-9 | | | | | | | | |
| Propiconazole | 60207-90-1 | | | | | | | | |
| Propionaldehyde | 123-38-6 | | | 8.0E-03 | I | V | | | 3.5E+01 |
| Propyl benzene | 103-65-1 | | | 1.0E+00 | X | V | | | 4.4E+03 |
| Propylene | 115-07-1 | | | 3.0E+00 | C | | | | 1.3E+04 |
| Propylene Glycol | 57-55-6 | | | | | | | | |
| Propylene Glycol Dinitrate | 6423-43-4 | | | 2.7E-04 | A | V | | | 1.2E+00 |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | | | | |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | 2.0E+00 | I | | | | 8.8E+03 |
| Propylene Oxide | 75-56-9 | 3.7E-06 | I | 3.0E-02 | I | V | | 3.3E+00 | 1.3E+02 |
| Pursuit | 81335-77-5 | | | | | | | | |
| Pydrin | 51630-58-1 | | | | | | | | |
| Pyridine | 110-86-1 | | | | | V | | | |
| Quinalphos | 13593-03-8 | | | | | | | | |
| Quinoline | 91-22-5 | | | | | | | | |
| Refractory Ceramic Fibers | NA | | | 3.0E-02 | A | | | | 1.3E+02 |
| Resmethrin | 10453-86-8 | | | | | | | | |
| Ronnel | 299-84-3 | | | | | | | | |
| Rotenone | 83-79-4 | | | | | | | | |
| Safrole | 94-59-7 | 6.3E-05 | C | | | | | 2.0E-01 | |
| Savey | 78587-05-0 | | | | | | | | |
| Selenious Acid | 7783-00-8 | | | | | | | | |
| Selenium | 7782-49-2 | | | 2.0E-02 | C | | | | 8.8E+01 |
| Selenium Sulfide | 7446-34-6 | | | 2.0E-02 | C | | | | 8.8E+01 |
| Sethoxydim | 74051-80-2 | | | | | | | | |
| Silica (crystalline, respirable) | 7631-86-9 | | | 3.0E-03 | C | | | | 1.3E+01 |
| Silver | 7440-22-4 | | | | | | | | |
| Simazine | 122-34-9 | | | | | | | | |
| Sodium Acifluorfen | 62476-59-9 | | | | | | | | |
| Sodium Azide | 26628-22-8 | | | | | | | | |
| Sodium Diethyldithiocarbamate | 148-18-5 | | | | | | | | |
| Sodium Fluoride | 7681-49-4 | | | 1.3E-02 | C | | | | 5.7E+01 |
| Sodium Fluoroacetate | 62-74-8 | | | | | | | | |
| Sodium Metavanadate | 13718-26-8 | | | | | | | | |
| Sodium Perchlorate | 7601-89-0 | | | | | | | | |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | | | | | | | | |
| Strontium, Stable | 7440-24-6 | | | | | | | | |
| Strychnine | 57-24-9 | | | | | | | | |
| Styrene | 100-42-5 | | | 1.0E+00 | I | V | | | 4.4E+03 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | | | | |
| Sulfuric Acid | 7664-93-9 | | | 1.0E-03 | C | | | | 4.4E+00 |
| Systhane | 88671-89-0 | | | | | | | | |
| TCMTB | 21564-17-0 | | | | | | | | |
| Tebuthiuron | 34014-18-1 | | | | | | | | |
| Temephos | 3383-96-8 | | | | | | | | |
| Terbacil | 5902-51-2 | | | | | | | | |
| Terbufos | 13071-79-9 | | | | | | | | |
| Terbutryn | 886-50-0 | | | | | | | | |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | | | | |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | | | | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 7.4E-06 | I | | | V | | 1.7E+00 | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 5.8E-05 | I | | | V | | 2.1E-01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | Noncancer Hazard Index (HI) = 1 |
|---|---|---|---|---|---|---|---|---|---|
| | | IUR | | RfCi | | | | Inhalation | Inhalation |
| Analyte | CAS No. | $(ug/m^3)^{-1}$ | key | $(mg/m^3)$ | key | voc | mutagen | $ug/m^3$ | $ug/m^3$ |
| Tetrachloroethylene | 127-18-4 | 5.9E-06 | C | 2.7E-01 | A | V | | 2.1E+00 | 1.2E+03 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | | | | |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | | | | | | | | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | | | | |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | 8.0E+01 | I | V | | | 3.5E+05 |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | | | | |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | |
| Thiobencarb | 28249-77-6 | | | | | | | | |
| Thiodiglycol | 111-48-8 | | | | | | | | |
| Thiofanox | 39196-18-4 | | | | | | | | |
| Thiophanate, Methyl | 23564-05-8 | | | | | | | | |
| Thiram | 137-26-8 | | | | | | | | |
| Tin | 7440-31-5 | | | | | | | | |
| Titanium Tetrachloride | 7550-45-0 | | | 1.0E-04 | A | | | | 4.4E-01 |
| Toluene | 108-88-3 | | | 5.0E+00 | I | V | | | 2.2E+04 |
| Toluidine, p- | 106-49-0 | | | | | | | | |
| Toxaphene | 8001-35-2 | 3.2E-04 | I | | | | | 3.8E-02 | |
| Tralomethrin | 66841-25-6 | | | | | | | | |
| Tri-n-butyltin | 688-73-3 | | | | | | | | |
| Triallate | 2303-17-5 | | | | | | | | |
| Triasulfuron | 82097-50-5 | | | | | | | | |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | | | | |
| Tributyl Phosphate | 126-73-8 | | | | | | | | |
| Tributyltin Compounds | NA | | | | | | | | |
| Tributyltin Oxide | 56-35-9 | | | | | | | | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | 3.0E+01 | H | V | | | 1.3E+05 |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | | | | | | | | |
| Trichloroaniline, 2,4,6- | 634-93-5 | | | | | | | | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | V | | | |
| Trichlorobenzene, 1,2,4- | 120-82-1 | | | 2.0E-03 | P | V | | | 8.8E+00 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | 5.0E+00 | I | V | | | 2.2E+04 |
| Trichloroethane, 1,1,2- | 79-00-5 | 1.6E-05 | I | | | V | | 7.7E-01 | |
| Trichloroethylene | 79-01-6 | 2.0E-06 | C | | | V | | 6.1E+00 | |
| Trichlorofluoromethane | 75-69-4 | | | 7.0E-01 | H | V | | | 3.1E+03 |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | | | | |
| Trichlorophenol, 2,4,6- | 88-06-2 | 3.1E-06 | I | | | | | 4.0E+00 | |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | | | | |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | | | | |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | V | | | |
| Trichloropropane, 1,2,3- | 96-18-4 | | | 3.0E-04 | I | V | M | | 1.3E+00 |
| Trichloropropene, 1,2,3- | 96-19-5 | | | 3.0E-04 | P | V | | | 1.3E+00 |
| Tridiphane | 58138-08-2 | | | | | | | | |
| Triethylamine | 121-44-8 | | | 7.0E-03 | I | V | | | 3.1E+01 |
| Trifluralin | 1582-09-8 | | | | | | | | |
| Trimethyl Phosphate | 512-56-1 | | | | | | | | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | 7.0E-03 | P | V | | | 3.1E+01 |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | V | | | |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | | | | |
| Trinitrotoluene, 2,4,6- | 118-96-7 | | | | | | | | |
| Triphenylphosphine Oxide | 791-28-6 | | | | | | | | |
| Tris(2-chloroethyl)phosphate | 115-96-8 | | | | | | | | |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | | | | | | | | |
| Uranium (Soluble Salts) | NA | | | 3.0E-04 | A | | | | 1.3E+00 |
| Urethane | 51-79-6 | 2.9E-04 | C | | | | | 4.2E-02 | |
| Vanadium Pentoxide | 1314-62-1 | 8.3E-03 | P | 7.0E-06 | P | | | 1.5E-03 | 3.1E-02 |
| Vanadium Sulfate | 36907-42-3 | | | | | | | | |
| Vanadium and Compounds | NA | | | | | | | | |
| Vanadium, Metallic | 7440-62-2 | | | | | | | | |
| Vernolate | 1929-77-7 | | | | | | | | |
| Vinclozolin | 50471-44-8 | | | | | | | | |
| Vinyl Acetate | 108-05-4 | | | 2.0E-01 | I | V | | | 8.8E+02 |
| Vinyl Bromide | 593-60-2 | 3.2E-05 | H | 3.0E-03 | I | V | | 3.8E-01 | 1.3E+01 |
| Vinyl Chloride | 75-01-4 | 4.4E-06 | I | 1.0E-01 | I | V | M | 2.8E+00 | 4.4E+02 |
| Warfarin | 81-81-2 | | | | | | | | |
| Xylene, Mixture | 1330-20-7 | | | 1.0E-01 | I | V | | | 4.4E+02 |
| Xylene, P- | 106-42-3 | | | 7.0E-01 | C | V | | | 3.1E+03 |
| Xylene, m- | 108-38-3 | | | 7.0E-01 | C | V | | | 3.1E+03 |
| Xylene, o- | 95-47-6 | | | 7.0E-01 | C | V | | | 3.1E+03 |
| Zinc (Metallic) | 7440-66-6 | | | | | | | | |
| Zinc Phosphide | 1314-84-7 | | | | | | | | |
| Zineb | 12122-67-7 | | | | | | | | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| ALAR | 1596-84-5 | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I | | | | | 3.7E+00 | | 3.7E+00 | 5.5E+03 | | 5.5E+03 | |
| Acephate | 30560-19-1 | 8.7E-03 | I | | | 4.0E-03 | I | | | | | 7.7E+00 | | 7.7E+00 | 1.5E+02 | | 1.5E+02 | |
| Acetaldehyde | 75-07-0 | | | 2.2E-06 | I | | | 9.0E-03 | I | V | | | 2.2E+00 | 2.2E+00 | | 1.9E+01 | 1.9E+01 | |
| Acetochlor | 34256-82-1 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Acetone | 67-64-1 | | | | | 9.0E-01 | I | 3.1E+01 | A | V | | | | | 3.3E+04 | 6.4E+04 | 2.2E+04 | |
| Acetone Cyanohydrin | 75-86-5 | | | | | 3.0E-03 | P | 6.0E-02 | P | V | | | | | 1.1E+02 | 1.3E+02 | 5.8E+01 | |
| Acetonitrile | 75-05-8 | | | | | | | 6.0E-02 | I | V | | | | | | 1.3E+02 | 1.3E+02 | |
| Acetophenone | 98-86-2 | | | | | 1.0E-01 | I | | | V | | | | | 3.7E+03 | | 3.7E+03 | |
| Acetylaminofluorene, 2- | 53-96-3 | 3.8E+00 | C | 1.3E-03 | C | | | | | | | 1.8E-02 | | 1.8E-02 | | | | |
| Acrolein | 107-02-8 | | | | | 5.0E-04 | I | 2.0E-05 | I | V | | | | | 1.8E+01 | 4.2E-02 | 4.2E-02 | |
| Acrylamide | 79-06-1 | 4.5E+00 | I | 1.3E-03 | I | 2.0E-04 | I | | | | | 1.5E-02 | | 1.5E-02 | 7.3E+00 | | 7.3E+00 | |
| Acrylic Acid | 79-10-7 | | | | | 5.0E-01 | I | 1.0E-03 | I | | | | | | 1.8E+04 | | 1.8E+04 | |
| Acrylonitrile | 107-13-1 | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A | 2.0E-03 | I | V | | 1.3E-01 | 7.2E-02 | 4.5E-02 | 1.5E+03 | 4.2E+00 | 4.2E+00 | |
| Adiponitrile | 111-69-3 | | | | | | | 6.0E-03 | P | | | | | | | | | |
| Alachlor | 15972-60-8 | 5.6E-02 | C | | | 1.0E-02 | I | | | | | 1.2E+00 | | 1.2E+00 | 3.7E+02 | | 3.7E+02 | 2.0E+00 |
| Aldicarb | 116-06-3 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Aldicarb Sulfone | 1646-88-4 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I | | | | | 4.0E-03 | | 4.0E-03 | 1.1E+00 | | 1.1E+00 | |
| Ally | 74223-64-6 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | |
| Allyl Alcohol | 107-18-6 | | | | | 5.0E-03 | I | 1.0E-04 | X | | | | | | 1.8E+02 | | 1.8E+02 | |
| Allyl Chloride | 107-05-1 | 2.1E-02 | C | 6.0E-06 | C | | | 1.0E-03 | I | V | | 3.2E+00 | 8.1E-01 | 6.5E-01 | | 2.1E+00 | 2.1E+00 | |
| Aluminum | 7429-90-5 | | | | | 1.0E+00 | P | 5.0E-03 | P | | | | | | 3.7E+04 | | 3.7E+04 | |
| Aluminum Phosphide | 20859-73-8 | | | | | 4.0E-04 | I | | | | | | | | 1.5E+01 | | 1.5E+01 | |
| Amdro | 67485-29-4 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Ametryn | 834-12-8 | | | | | 9.0E-03 | I | | | | | | | | 3.3E+02 | | 3.3E+02 | |
| Aminobiphenyl, 4- | 92-67-1 | 2.1E+01 | C | 6.0E-03 | C | | | | | | | 3.2E-03 | | 3.2E-03 | | | | |
| Aminophenol, m- | 591-27-5 | | | | | 8.0E-02 | P | | | | | | | | 2.9E+03 | | 2.9E+03 | |
| Aminophenol, p- | 123-30-8 | | | | | 2.0E-02 | P | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Amitraz | 33089-61-1 | | | | | 2.5E-03 | I | | | | | | | | 9.1E+01 | | 9.1E+01 | |
| Ammonium Perchlorate | 7790-98-9 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Ammonium Sulfamate | 7773-06-0 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | |
| Aniline | 62-53-3 | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P | 1.0E-03 | I | | | 1.2E+01 | | 1.2E+01 | 2.6E+02 | | 2.6E+02 | |
| Antimony (metallic) | 7440-36-0 | | | | | 4.0E-04 | I | | | | | | | | 1.5E+01 | | 1.5E+01 | 6.0E+00 |
| Antimony Pentoxide | 1314-60-9 | | | | | 5.0E-04 | H | | | | | | | | 1.8E+01 | | 1.8E+01 | |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | 9.0E-04 | H | | | | | | | | 3.3E+01 | | 3.3E+01 | |
| Antimony Tetroxide | 1332-81-6 | | | | | 4.0E-04 | H | | | | | | | | 1.5E+01 | | 1.5E+01 | |
| Antimony Trioxide | 1309-64-4 | | | | | | | 2.0E-04 | I | | | | | | | | | |
| Apollo | 74115-24-5 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Aramite | 140-57-8 | 2.5E-02 | I | 7.1E-06 | I | 5.0E-02 | H | | | | | 2.7E+00 | | 2.7E+00 | 1.8E+03 | | 1.8E+03 | |
| Arsenic, Inorganic | 7440-38-2 | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I | 1.5E-05 | C | | | 4.5E-02 | | 4.5E-02 | 1.1E+01 | | 1.1E+01 | 1.0E+01 |
| Arsine | 7784-42-1 | | | | | 3.5E-06 | C | 5.0E-05 | I | | | | | | 1.3E-01 | | 1.3E-01 | |
| Assure | 76578-14-8 | | | | | 9.0E-03 | I | | | | | | | | 3.3E+02 | | 3.3E+02 | |
| Asulam | 3337-71-1 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Atrazine | 1912-24-9 | 2.3E-01 | C | | | 3.5E-02 | I | | | | | 2.9E-01 | | 2.9E-01 | 1.3E+03 | | 1.3E+03 | 3.0E+00 |
| Auramine | 492-80-8 | 8.8E-01 | C | 2.5E-04 | C | | | | | | | 7.6E-02 | | 7.6E-02 | | | | |
| Avermectin B1 | 65195-55-3 | | | | | 4.0E-04 | I | | | | | | | | 1.5E+01 | | 1.5E+01 | |
| Azobenzene | 103-33-3 | 1.1E-01 | I | 3.1E-05 | I | | | | | V | | 6.1E-01 | 1.6E-01 | 1.3E-01 | | | | |
| Barium | 7440-39-3 | | | | | 2.0E-01 | I | 5.0E-04 | H | | | | | | 7.3E+03 | | 7.3E+03 | 2.0E+03 |
| Baygon | 114-26-1 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| Bayleton | 43121-43-3 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Baythroid | 68359-37-5 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Benefin | 1861-40-1 | | | | | 3.0E-01 | I | | | | | | | | 1.1E+04 | | 1.1E+04 | |
| Benomyl | 17804-35-2 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Bentazon | 25057-89-0 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Benzaldehyde | 100-52-7 | | | | | 1.0E-01 | I | | | V | | | | | 3.7E+03 | | 3.7E+03 | |
| Benzene | 71-43-2 | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I | 3.0E-02 | I | V | | 1.2E+00 | 6.2E-01 | 4.1E-01 | 1.5E+02 | 6.3E+01 | 4.4E+01 | 5.0E+00 |
| Benzenethiol | 108-98-5 | | | | | 1.0E-05 | H | | | V | | | | | 3.7E-01 | | 3.7E-01 | |
| Benzidine | 92-87-5 | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I | | | | M | 9.4E-05 | | 9.4E-05 | 1.1E+02 | | 1.1E+02 | |
| Benzoic Acid | 65-85-0 | | | | | 4.0E+00 | I | | | | | | | | 1.5E+05 | | 1.5E+05 | |
| Benzotrichloride | 98-07-7 | 1.3E+01 | I | | | | | | | V | | 5.2E-03 | | 5.2E-03 | | | | |
| Benzyl Alcohol | 100-51-6 | | | | | 1.0E-01 | P | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Benzyl Chloride | 100-44-7 | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P | 1.0E-03 | P | V | | 4.0E-01 | 9.9E-02 | 7.9E-02 | 7.3E+01 | 2.1E+00 | 2.0E+00 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | mutagen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Beryllium and compounds | 7440-41-7 | | | 2.4E-03 | I | 2.0E-03 | I | 2.0E-05 | I | | | | | 7.3E+01 | | 7.3E+01 | 4.0E+00 |
| Bidrin | 141-66-2 | | | | | 1.0E-04 | I | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Bifenox | 42576-02-3 | | | | | 9.0E-03 | P | | | | | | | 3.3E+02 | | 3.3E+02 | |
| Biphenthrin | 82657-04-3 | | | | | 1.5E-02 | I | | | | | | | 5.5E+02 | | 5.5E+02 | |
| Biphenyl, 1,1'- | 92-52-4 | | | | | 5.0E-02 | I | | | V | | | | 1.8E+03 | | 1.8E+03 | |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 7.0E-02 | H | 1.0E-05 | H | 4.0E-02 | I | | | V | 9.6E-01 | 4.9E-01 | 3.2E-01 | 1.5E+03 | | 1.5E+03 | |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | 3.0E-03 | P | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | I | 3.3E-04 | I | | | | | V | 6.1E-02 | 1.5E-02 | 1.2E-02 | | | | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | I | 2.4E-06 | C | 2.0E-02 | I | | | | 4.8E+00 | | 4.8E+00 | 7.3E+02 | | 7.3E+02 | 6.0E+00 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | I | 6.2E-02 | I | | | | | V | 3.1E-04 | 7.9E-05 | 6.3E-05 | | | | |
| Bisphenol A | 80-05-7 | | | | | 5.0E-02 | I | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Boron And Borates Only | 7440-42-8 | | | | | 2.0E-01 | I | 2.0E-02 | H | | | | | 7.3E+03 | | 7.3E+03 | |
| Boron Trifluoride | 7637-07-2 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | 1.5E+03 | | 1.5E+03 | |
| Bromate | 15541-45-4 | 7.0E-01 | I | | | 4.0E-03 | I | | | | 9.6E-02 | | 9.6E-02 | 1.5E+02 | | 1.5E+02 | 1.0E+01 |
| Bromo-2-chloroethane, 1- | 107-04-0 | 2.0E+00 | X | 6.0E-04 | X | | | | | V | 3.4E-02 | 8.1E-03 | 6.5E-03 | | | | |
| Bromobenzene | 108-86-1 | | | | | 8.0E-03 | I | 6.0E-02 | I | V | | | | 2.9E+02 | 1.3E+02 | 8.8E+01 | |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I | | | V | 1.1E+00 | 1.3E-01 | 1.2E-01 | 7.3E+02 | | 7.3E+02 | |
| Bromoform | 75-25-2 | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I | | | | 8.5E+00 | | 8.5E+00 | 7.3E+02 | | 7.3E+02 | |
| Bromomethane | 74-83-9 | | | | | 1.4E-03 | I | 5.0E-03 | I | V | | | | 5.1E+01 | 1.0E+01 | 8.7E+00 | |
| Bromophos | 2104-96-3 | | | | | 5.0E-03 | H | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Bromoxynil | 1689-84-5 | | | | | 2.0E-02 | I | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Bromoxynil Octanoate | 1689-99-2 | | | | | 2.0E-02 | I | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Butadiene, 1,3- | 106-99-0 | 3.4E+00 | C | 3.0E-05 | I | | | 2.0E-03 | I | V | 2.0E-02 | 1.6E-01 | 1.8E-02 | | 4.2E+00 | 4.2E+00 | |
| Butanol, N- | 71-36-3 | | | | | 1.0E-01 | I | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Butyl Benzyl Phthlate | 85-68-7 | 1.9E-03 | P | | | 2.0E-01 | I | | | | 3.5E+01 | | 3.5E+01 | 7.3E+03 | | 7.3E+03 | |
| Butyl alcohol, sec- | 78-92-2 | | | | | 2.0E+00 | P | 3.0E+01 | P | | | | | 7.3E+04 | | 7.3E+04 | |
| Butylate | 2008-41-5 | | | | | 5.0E-02 | I | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Butylated hydroxyanisole | 25013-16-5 | 2.0E-04 | C | 5.7E-08 | C | | | | | | 3.4E+02 | | 3.4E+02 | | | | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | 1.0E+00 | I | | | | | | | 3.7E+04 | | 3.7E+04 | |
| Cacodylic Acid | 75-60-5 | | | | | 2.0E-02 | A | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Cadmium (Water) | 7440-43-9 | | | 1.8E-03 | I | 5.0E-04 | I | 1.0E-05 | A | | | | | 1.8E+01 | | 1.8E+01 | 5.0E+00 |
| Caprolactam | 105-60-2 | | | | | 5.0E-01 | I | | | | | | | 1.8E+04 | | 1.8E+04 | |
| Captafol | 2425-06-1 | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I | | | | 4.5E-01 | | 4.5E-01 | 7.3E+01 | | 7.3E+01 | |
| Captan | 133-06-2 | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I | | | | 2.9E+01 | | 2.9E+01 | 4.8E+03 | | 4.8E+03 | |
| Carbaryl | 63-25-2 | | | | | 1.0E-01 | I | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Carbofuran | 1563-66-2 | | | | | 5.0E-03 | I | | | | | | | 1.8E+02 | | 1.8E+02 | 4.0E+01 |
| Carbon Disulfide | 75-15-0 | | | | | 1.0E-01 | I | 7.0E-01 | I | V | | | | 3.7E+03 | 1.5E+03 | 1.0E+03 | |
| Carbon Tetrachloride | 56-23-5 | 1.3E-01 | I | 1.5E-05 | I | 7.0E-04 | I | 1.9E-01 | A | V | 5.2E-01 | 3.2E-01 | 2.0E-01 | 2.6E+01 | 3.9E+02 | 2.4E+01 | 5.0E+00 |
| Carbosulfan | 55285-14-8 | | | | | 1.0E-02 | I | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Carboxin | 5234-68-4 | | | | | 1.0E-01 | I | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Ceric oxide | 1306-38-3 | | | | | | | 9.0E-04 | I | | | | | | | | |
| Chloral Hydrate | 302-17-0 | | | | | 1.0E-01 | I | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Chloramben | 133-90-4 | | | | | 1.5E-02 | I | | | | | | | 5.5E+02 | | 5.5E+02 | |
| Chloranil | 118-75-2 | 4.0E-01 | H | | | | | | | | 1.7E-01 | | 1.7E-01 | | | | |
| Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I | 7.0E-04 | I | | 1.9E-01 | | 1.9E-01 | 1.8E+01 | | 1.8E+01 | 2.0E+00 |
| Chlordecone (Kepone) | 143-50-0 | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I | | | | 6.7E-03 | | 6.7E-03 | 1.1E+01 | | 1.1E+01 | |
| Chlorfenvinphos | 470-90-6 | | | | | 7.0E-04 | A | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | 2.0E-02 | I | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Chlorine | 7782-50-5 | | | | | 1.0E-01 | I | 1.5E-04 | A | | | | | 3.7E+03 | | 3.7E+03 | |
| Chlorine Dioxide | 10049-04-4 | | | | | 3.0E-02 | I | 2.0E-04 | I | | | | | 1.1E+03 | | 1.1E+03 | |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | 3.0E-02 | I | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | | | | | 5.0E+01 | I | V | | | | | 1.0E+05 | 1.0E+05 | |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | | | 2.0E-02 | H | 7.0E-03 | H | V | | | | 7.3E+02 | 1.5E+01 | 1.4E+01 | |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 4.6E-01 | H | | | | | | | | 1.5E-01 | | 1.5E-01 | | | | |
| Chloroacetic Acid | 79-11-8 | | | | | 2.0E-03 | H | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Chloroacetophenone, 2- | 532-27-4 | | | | | | | 3.0E-05 | I | | | | | | | | |
| Chloroaniline, p- | 106-47-8 | 2.0E-01 | P | | | 4.0E-03 | I | | | | 3.4E-01 | | 3.4E-01 | 1.5E+02 | | 1.5E+02 | |
| Chlorobenzene | 108-90-7 | | | | | 2.0E-02 | I | 5.0E-02 | P | V | | | | 7.3E+02 | 1.0E+02 | 9.1E+01 | 1.0E+02 |
| Chlorobenzilate | 510-15-6 | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I | | | | 6.1E-01 | | 6.1E-01 | 7.3E+02 | | 7.3E+02 | |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | 3.0E-02 | X | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | | | 3.0E-03 | P | 3.0E-01 | P | V | | | | 1.1E+02 | 6.3E+02 | 9.3E+01 | |
| Chlorobutane, 1- | 109-69-3 | | | | | 4.0E-02 | P | | | V | | | | 1.5E+03 | | 1.5E+03 | |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | mutagen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Chlorodifluoromethane | 75-45-6 | | | | | | | 5.0E+01 | I | V | | | | | 1.0E+05 | 1.0E+05 | |
| Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I | 9.8E-02 | A | V | 2.2E+00 | 2.1E-01 | 1.9E-01 | 3.7E+02 | 2.0E+02 | 1.3E+02 | |
| Chloromethane | 74-87-3 | | | | | | | 9.0E-02 | I | V | | | | | 1.9E+02 | 1.9E+02 | |
| Chloromethyl Methyl Ether | 107-30-2 | 2.4E+00 | C | 6.9E-04 | C | | | | | V | 2.8E-02 | 7.1E-03 | 5.6E-03 | | | | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | 8.0E-02 | I | | | V | | | | 2.9E+03 | | 2.9E+03 | |
| Chloronitrobenzene, o- | 88-73-3 | 3.0E-01 | P | | | 3.0E-03 | P | 1.0E-05 | X | | 2.2E-01 | | 2.2E-01 | 1.1E+02 | | 1.1E+02 | |
| Chloronitrobenzene, p- | 100-00-5 | 6.3E-03 | P | | | 1.0E-03 | P | 6.0E-04 | P | | 1.1E+01 | | 1.1E+01 | 3.7E+01 | | 3.7E+01 | |
| Chlorophenol, 2- | 95-57-8 | | | | | 5.0E-03 | I | | | V | | | | 1.8E+02 | | 1.8E+02 | |
| Chloropicrin | 76-06-2 | | | | | | | 4.0E-04 | C | | | | | | | | |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I | | | | 2.2E+01 | | 2.2E+01 | 5.5E+02 | | 5.5E+02 | |
| Chlorotoluene, o- | 95-49-8 | | | | | 2.0E-02 | I | | | V | | | | 7.3E+02 | | 7.3E+02 | |
| Chlorotoluene, p- | 106-43-4 | | | | | 7.0E-02 | P | | | V | | | | 2.6E+03 | | 2.6E+03 | |
| Chlorozotocin | 54749-90-5 | 2.4E+02 | C | 6.9E-02 | C | | | | | | 2.8E-04 | | 2.8E-04 | | | | |
| Chlorpropham | 101-21-3 | | | | | 2.0E-01 | I | | | | | | | 7.3E+03 | | 7.3E+03 | |
| Chlorpyrifos | 2921-88-2 | | | | | 3.0E-03 | I | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | 1.0E-02 | H | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Chlorsulfuron | 64902-72-3 | | | | | 5.0E-02 | I | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Chlorthiophos | 60238-56-4 | | | | | 8.0E-04 | H | | | | | | | 2.9E+01 | | 2.9E+01 | |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | 1.5E+00 | I | | | | | | | 5.5E+04 | | 5.5E+04 | |
| Chromium(VI) | 18540-29-9 | 5.0E-01 | J | 8.4E-02 | I | 3.0E-03 | I | 1.0E-04 | I | M | 4.3E-02 | | 4.3E-02 | 1.1E+02 | | 1.1E+02 | |
| Chromium, Total | 7440-47-3 | | | | | | | | | | | | | | | | 1.0E+02 |
| Cobalt | 7440-48-4 | | | 9.0E-03 | P | 3.0E-04 | P | 6.0E-06 | P | | | | | 1.1E+01 | | 1.1E+01 | |
| Copper | 7440-50-8 | | | | | 4.0E-02 | H | | | | | | | 1.5E+03 | | 1.5E+03 | 1.3E+03 |
| Cresol, m- | 108-39-4 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | | | 1.8E+03 | | 1.8E+03 | |
| Cresol, o- | 95-48-7 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | | | 1.8E+03 | | 1.8E+03 | |
| Cresol, p- | 106-44-5 | | | | | 5.0E-03 | H | 6.0E-01 | C | | | | | 1.8E+02 | | 1.8E+02 | |
| Cresol, p-chloro-m- | 59-50-7 | | | | | 1.0E-01 | X | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Cresols | 1319-77-3 | | | | | 1.0E-01 | A | 6.0E-01 | C | V | | | | 3.7E+03 | 1.3E+03 | 9.3E+02 | |
| Crotonaldehyde, trans- | 123-73-9 | 1.9E+00 | H | | | | | | | V | 3.5E-02 | | 3.5E-02 | | | | |
| Cumene | 98-82-8 | | | | | 1.0E-01 | I | 4.0E-01 | I | V | | | | 3.7E+03 | 8.3E+02 | 6.8E+02 | |
| Cupferron | 135-20-6 | 2.2E-01 | C | 6.3E-05 | C | | | | | | 3.1E-01 | | 3.1E-01 | | | | |
| Cyanazine | 21725-46-2 | 8.4E-01 | H | | | 2.0E-03 | H | | | | 8.0E-02 | | 8.0E-02 | 7.3E+01 | | 7.3E+01 | |
| **Cyanides** | | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | 4.0E-02 | I | | | | | | | 1.5E+03 | | 1.5E+03 | |
| ~Copper Cyanide | 544-92-3 | | | | | 5.0E-03 | I | | | | | | | 1.8E+02 | | 1.8E+02 | |
| ~Cyanide (CN-) | 57-12-5 | | | | | 2.0E-02 | I | | | V | | | | 7.3E+02 | | 7.3E+02 | 2.0E+02 |
| ~Cyanogen | 460-19-5 | | | | | 4.0E-02 | I | | | V | | | | 1.5E+03 | | 1.5E+03 | |
| ~Cyanogen Bromide | 506-68-3 | | | | | 9.0E-02 | I | | | V | | | | 3.3E+03 | | 3.3E+03 | |
| ~Cyanogen Chloride | 506-77-4 | | | | | 5.0E-02 | I | | | V | | | | 1.8E+03 | | 1.8E+03 | |
| ~Hydrogen Cyanide | 74-90-8 | | | | | 2.0E-02 | I | 3.0E-03 | I | V | | | | 7.3E+02 | 6.3E+00 | 6.2E+00 | |
| ~Potassium Cyanide | 151-50-8 | | | | | 5.0E-02 | I | | | | | | | 1.8E+03 | | 1.8E+03 | |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | 2.0E-01 | I | | | | | | | 7.3E+03 | | 7.3E+03 | |
| ~Silver Cyanide | 506-64-9 | | | | | 1.0E-01 | I | | | | | | | 3.7E+03 | | 3.7E+03 | |
| ~Sodium Cyanide | 143-33-9 | | | | | 4.0E-02 | I | | | | | | | 1.5E+03 | | 1.5E+03 | |
| ~Thiocyanate | 463-56-9 | | | | | 2.0E-04 | P | | | V | | | | 7.3E+00 | | 7.3E+00 | |
| ~Zinc Cyanide | 557-21-1 | | | | | 5.0E-02 | I | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Cyclohexane | 110-82-7 | | | | | | | 6.0E+00 | I | V | | | | | 1.3E+04 | 1.3E+04 | |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 2.3E-02 | H | | | | | | | | 2.9E+00 | | 2.9E+00 | | | | |
| Cyclohexanone | 108-94-1 | | | | | 5.0E+00 | I | | | | | | | 1.8E+05 | | 1.8E+05 | |
| Cyclohexylamine | 108-91-8 | | | | | 2.0E-01 | I | | | | | | | 7.3E+03 | | 7.3E+03 | |
| Cyhalothrin/karate | 68085-85-8 | | | | | 5.0E-03 | I | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Cypermethrin | 52315-07-8 | | | | | 1.0E-02 | I | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Cyromazine | 66215-27-8 | | | | | 7.5E-03 | I | | | | | | | 2.7E+02 | | 2.7E+02 | |
| DDD | 72-54-8 | 2.4E-01 | I | 6.9E-05 | C | | | | | | 2.8E-01 | | 2.8E-01 | | | | |
| DDE, p,p'- | 72-55-9 | 3.4E-01 | I | 9.7E-05 | C | | | | | | 2.0E-01 | | 2.0E-01 | | | | |
| DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I | | | | 2.0E-01 | | 2.0E-01 | 1.8E+01 | | 1.8E+01 | |
| Dacthal | 1861-32-1 | | | | | 1.0E-02 | I | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Dalapon | 75-99-0 | | | | | 3.0E-02 | I | | | | | | | 1.1E+03 | | 1.1E+03 | 2.0E+02 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 7.0E-04 | I | | | 7.0E-03 | I | | | | 9.6E+01 | | 9.6E+01 | 2.6E+02 | | 2.6E+02 | |
| Demeton | 8065-48-3 | | | | | 4.0E-05 | I | | | | | | | 1.5E+00 | | 1.5E+00 | |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | I | | | 6.0E-01 | I | | | | 5.6E+01 | | 5.6E+01 | 2.2E+04 | | 2.2E+04 | 4.0E+02 |
| Diallate | 2303-16-4 | 6.1E-02 | H | | | | | | | | 1.1E+00 | | 1.1E+00 | | | | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Diazinon | 333-41-5 | | | | | 7.0E-04 | A | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P | 2.0E-04 | I | V | M | 2.7E-02 | 3.2E-04 | 3.2E-04 | 7.3E+00 | 4.2E-01 | 4.0E-01 | 2.0E-01 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | I | 2.7E-05 | C | 2.0E-02 | I | | | V | | 8.0E-01 | 1.8E-01 | 1.5E-01 | 7.3E+02 | | 7.3E+02 | |
| Dibromoethane, 1,2- | 106-93-4 | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I | 9.0E-03 | I | V | | 3.4E-02 | 8.1E-03 | 6.5E-03 | 3.3E+02 | 1.9E+01 | 1.8E+01 | 5.0E-02 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | | | 1.0E-02 | H | 4.0E-03 | X | V | | | | | 3.7E+02 | 8.3E+00 | 8.2E+00 | |
| Dibutyl Phthalate | 84-74-2 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Dibutyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Dicamba | 1918-00-9 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Dichloro-2-butene, 1,4- | 764-41-0 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | |
| Dichloroacetic Acid | 79-43-6 | 5.0E-02 | I | | | 4.0E-03 | I | | | | | 1.3E+00 | | 1.3E+00 | 1.5E+02 | | 1.5E+02 | |
| Dichlorobenzene, 1,2- | 95-50-1 | | | | | 9.0E-02 | I | 2.0E-01 | H | V | | | | | 3.3E+03 | 4.2E+02 | 3.7E+02 | 6.0E+02 |
| Dichlorobenzene, 1,4- | 106-46-7 | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A | 8.0E-01 | I | V | | 1.3E+01 | 4.4E-01 | 4.3E-01 | 2.6E+03 | 1.7E+03 | 1.0E+03 | 7.5E+01 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 4.5E-01 | I | 3.4E-04 | C | | | | | | | 1.5E-01 | | 1.5E-01 | | | | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | 9.0E-03 | X | | | | | | | | 3.3E+02 | | 3.3E+02 | |
| Dichlorodifluoromethane | 75-71-8 | | | | | 2.0E-01 | I | 2.0E-01 | H | V | | | | | 7.3E+03 | 4.2E+02 | 4.0E+02 | |
| Dichloroethane, 1,1- | 75-34-3 | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P | | | V | | 1.2E+01 | 3.0E+00 | 2.4E+00 | 7.3E+03 | | 7.3E+03 | |
| Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 2.0E-02 | P | 2.4E+00 | A | V | | 7.4E-01 | 1.9E-01 | 1.5E-01 | 7.3E+02 | 5.1E+03 | 6.4E+02 | 5.0E+00 |
| Dichloroethylene, 1,1- | 75-35-4 | | | | | 5.0E-02 | I | 2.0E-01 | I | V | | | | | 1.8E+03 | 4.2E+02 | 3.4E+02 | 7.0E+00 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | 9.0E-03 | H | | | V | | | | | 3.3E+02 | | 3.3E+02 | |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 1.0E-02 | P | | | V | | | | | 3.7E+02 | | 3.7E+02 | 7.0E+01 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | | | 2.0E-02 | I | 6.0E-02 | P | V | | | | | 7.3E+02 | 1.3E+02 | 1.1E+02 | 1.0E+02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | 7.0E+01 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | |
| Dichloropropane, 1,2- | 78-87-5 | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A | 4.0E-03 | I | V | | 1.9E+00 | 4.9E-01 | 3.9E-01 | 3.3E+03 | 8.3E+00 | 8.3E+00 | 5.0E+00 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | 2.0E-02 | P | | | V | | | | | 7.3E+02 | | 7.3E+02 | |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Dichloropropene, 1,3- | 542-75-6 | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I | 2.0E-02 | I | V | | 6.7E-01 | 1.2E+00 | 4.3E-01 | 1.1E+03 | 4.2E+01 | 4.0E+01 | |
| Dichlorvos | 62-73-7 | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I | 5.0E-04 | I | | | 2.3E-01 | | 2.3E-01 | 1.8E+01 | | 1.8E+01 | |
| Dicyclopentadiene | 77-73-6 | | | | | 8.0E-03 | P | 7.0E-03 | P | V | | | | | 2.9E+02 | 1.5E+01 | 1.4E+01 | |
| Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I | | | | | 4.2E-03 | | 4.2E-03 | 1.8E+00 | | 1.8E+00 | |
| Diethanolamine | 111-42-2 | | | | | | | 3.0E-03 | C | | | | | | | | | |
| Diethyl Phthalate | 84-66-2 | | | | | 8.0E-01 | I | | | | | | | | 2.9E+04 | | 2.9E+04 | |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | | | 3.0E-02 | P | 1.0E-04 | P | | | | | | 1.1E+03 | | 1.1E+03 | |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | | | 6.0E-02 | P | 3.0E-04 | P | | | | | | 2.2E+03 | | 2.2E+03 | |
| Diethylformamide | 617-84-5 | | | | | 1.0E-03 | P | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Diethylstilbestrol | 56-53-1 | 3.5E+02 | C | 1.0E-01 | C | | | | | | | 1.9E-04 | | 1.9E-04 | | | | |
| Difenzoquat | 43222-48-6 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | |
| Diflubenzuron | 35367-38-5 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Difluoroethane, 1,1- | 75-37-6 | | | | | | | 4.0E+01 | I | V | | | | | | 8.3E+04 | 8.3E+04 | |
| Dihydrosafrole | 94-58-6 | 4.4E-02 | C | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | |
| Diisopropyl Ether | 108-20-3 | | | | | | | 4.0E-01 | P | V | | | | | | 8.3E+02 | 8.3E+02 | |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | 8.0E-02 | I | | | V | | | | | 2.9E+03 | | 2.9E+03 | |
| Dimethipin | 55290-64-7 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Dimethoate | 60-51-5 | | | | | 2.0E-04 | I | | | | | | | | 7.3E+00 | | 7.3E+00 | |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 1.4E-02 | H | | | | | | | | | 4.8E+00 | | 4.8E+00 | | | | |
| Dimethyl methylphosphonate | 756-79-6 | 1.7E-03 | P | | | 6.0E-02 | P | | | | | 4.0E+01 | | 4.0E+01 | 2.2E+03 | | 2.2E+03 | |
| Dimethylamino azobenzene [p-] | 60-11-7 | 4.6E+00 | C | 1.3E-03 | C | | | | | | | 1.5E-02 | | 1.5E-02 | | | | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 5.8E-01 | H | | | | | | | | | 1.2E-01 | | 1.2E-01 | | | | |
| Dimethylaniline, 2,4- | 95-68-1 | 7.5E-01 | H | | | | | | | | | 9.0E-02 | | 9.0E-02 | | | | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | 2.0E-03 | I | | | V | | | | | 7.3E+01 | | 7.3E+01 | |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 1.1E+01 | P | | | | | | | | | 6.1E-03 | | 6.1E-03 | | | | |
| Dimethylformamide | 68-12-2 | | | | | 1.0E-01 | P | 3.0E-02 | I | | | | | | 3.7E+03 | | 3.7E+03 | |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | | | 1.0E-04 | X | 2.0E-06 | X | | | | | | 3.7E+00 | | 3.7E+00 | |
| Dimethylhydrazine, 1,2- | 540-73-8 | 5.5E+02 | C | 1.6E-01 | C | | | | | | | 1.2E-04 | | 1.2E-04 | | | | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | 6.0E-04 | I | | | | | | | | 2.2E+01 | | 2.2E+01 | |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Dimethylterephthalate | 120-61-6 | | | | | 1.0E-01 | I | | | V | | | | | 3.7E+03 | | 3.7E+03 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Dimethylvinylchloride | 513-37-1 | 4.5E-02 | C | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 6.8E-01 | I | | | | | | | | | 9.9E-02 | | 9.9E-02 | | | | |
| Dinitrotoluene, 2,4- | 121-14-2 | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I | | | | | 2.2E-01 | | 2.2E-01 | 7.3E+01 | | 7.3E+01 | |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | 1.0E-03 | P | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | 2.0E-03 | S | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | 2.0E-03 | S | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Dinoseb | 88-85-7 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | 7.0E+00 |
| Dioxane, 1,4- | 123-91-1 | 1.1E-02 | I | 7.7E-06 | C | 1.0E-01 | A | 3.6E+00 | A | | | 6.1E+00 | | 6.1E+00 | 3.7E+03 | | 3.7E+03 | |
| **Dioxins** | | | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 6.2E+03 | I | 1.3E+00 | I | | | | | | | 1.1E-05 | | 1.1E-05 | | | | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 1.0E-09 | A | 4.0E-08 | C | | | 5.2E-07 | | 5.2E-07 | 3.7E-05 | | 3.7E-05 | 3.0E-05 |
| Diphenamid | 957-51-7 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Diphenyl Sulfone | 127-63-9 | | | | | 8.0E-04 | X | | | | | | | | 2.9E+01 | | 2.9E+01 | |
| Diphenylamine | 122-39-4 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Diphenylhydrazine, 1,2- | 122-66-7 | 8.0E-01 | I | 2.2E-04 | I | | | | | | | 8.4E-02 | | 8.4E-02 | | | | |
| Diquat | 85-00-7 | | | | | 2.2E-03 | I | | | | | | | | 8.0E+01 | | 8.0E+01 | 2.0E+01 |
| Direct Black 38 | 1937-37-7 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 9.1E-03 | | 9.1E-03 | | | | |
| Direct Blue 6 | 2602-46-2 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 9.1E-03 | | 9.1E-03 | | | | |
| Direct Brown 95 | 16071-86-6 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1.0E-02 | | 1.0E-02 | | | | |
| Disulfoton | 298-04-4 | | | | | 4.0E-05 | I | | | | | | | | 1.5E+00 | | 1.5E+00 | |
| Dithiane, 1,4- | 505-29-3 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Diuron | 330-54-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Dodine | 2439-10-3 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| EPTC | 759-94-4 | | | | | 2.5E-02 | I | | | V | | | | | 9.1E+02 | | 9.1E+02 | |
| Endosulfan | 115-29-7 | | | | | 6.0E-03 | I | | | | | | | | 2.2E+02 | | 2.2E+02 | |
| Endothall | 145-73-3 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | 1.0E+02 |
| Endrin | 72-20-8 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | 2.0E+00 |
| Epichlorohydrin | 106-89-8 | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P | 1.0E-03 | I | V | | 6.8E+00 | 4.1E+00 | 2.5E+00 | 2.2E+02 | 2.1E+00 | 2.1E+00 | |
| Epoxybutane, 1,2- | 106-88-7 | | | | | | | 2.0E-02 | I | V | | | | | | 4.2E+01 | 4.2E+01 | |
| Ethephon | 16672-87-0 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Ethion | 563-12-2 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | | | 3.0E-01 | H | 3.0E-01 | C | | | | | | 1.1E+04 | | 1.1E+04 | |
| Ethoxyethanol, 2- | 110-80-5 | | | | | 4.0E-01 | H | 2.0E-01 | I | | | | | | 1.5E+04 | | 1.5E+04 | |
| Ethyl Acetate | 141-78-6 | | | | | 9.0E-01 | I | | | V | | | | | 3.3E+04 | | 3.3E+04 | |
| Ethyl Acrylate | 140-88-5 | 4.8E-02 | H | | | | | | | V | | 1.4E+00 | | 1.4E+00 | | | | |
| Ethyl Chloride | 75-00-3 | | | | | | | 1.0E+01 | I | V | | | | | | 2.1E+04 | 2.1E+04 | |
| Ethyl Ether | 60-29-7 | | | | | 2.0E-01 | I | | | V | | | | | 7.3E+03 | | 7.3E+03 | |
| Ethyl Methacrylate | 97-63-2 | | | | | 9.0E-02 | H | | | V | | | | | 3.3E+03 | | 3.3E+03 | |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | 1.0E-05 | I | | | | | | | | 3.7E-01 | | 3.7E-01 | |
| Ethylbenzene | 100-41-4 | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I | 1.0E+00 | I | V | | 6.1E+00 | 2.0E+00 | 1.5E+00 | 3.7E+03 | 2.1E+03 | 1.3E+03 | 7.0E+02 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | 3.0E-02 | P | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Ethylene Diamine | 107-15-3 | | | | | 9.0E-02 | P | | | | | | | | 3.3E+03 | | 3.3E+03 | |
| Ethylene Glycol | 107-21-1 | | | | | 2.0E+00 | I | 4.0E-01 | C | | | | | | 7.3E+04 | | 7.3E+04 | |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | | | 5.0E-01 | I | 1.3E+01 | I | | | | | | 1.8E+04 | | 1.8E+04 | |
| Ethylene Oxide | 75-21-8 | 3.1E-01 | C | 8.8E-05 | C | | | 3.0E-02 | C | V | | 2.2E-01 | 5.5E-02 | 4.4E-02 | | 6.3E+01 | 6.3E+01 | |
| Ethylene Thiourea | 96-45-7 | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I | | | | | 1.5E+00 | | 1.5E+00 | 2.9E+00 | | 2.9E+00 | |
| Ethyleneimine | 151-56-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | 3.0E+00 | I | | | | | | | | 1.1E+05 | | 1.1E+05 | |
| Express | 101200-48-0 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | |
| Fenamiphos | 22224-92-6 | | | | | 2.5E-04 | I | | | | | | | | 9.1E+00 | | 9.1E+00 | |
| Fenpropathrin | 39515-41-8 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Fluometuron | 2164-17-2 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Fluoride | 16984-48-8 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | | 1.5E+03 | | 1.5E+03 | |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | | | 6.0E-02 | I | 1.3E-02 | C | | | | | | 2.2E+03 | | 2.2E+03 | 4.0E+03 |
| Fluridone | 59756-60-4 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | |
| Flurprimidol | 56425-91-3 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Flutolanil | 66332-96-5 | | | | | 6.0E-02 | I | | | | | | | | 2.2E+03 | | 2.2E+03 | |
| Fluvalinate | 69409-94-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Folpet | 133-07-3 | 3.5E-03 | I | | | 1.0E-01 | I | | | | | 1.9E+01 | | 1.9E+01 | 3.7E+03 | | 3.7E+03 | |
| Fomesafen | 72178-02-0 | 1.9E-01 | I | | | | | | | | | 3.5E-01 | | 3.5E-01 | | | | |
| Fonofos | 944-22-9 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Formaldehyde | 50-00-0 | | | 1.3E-05 | I | 2.0E-01 | I | 9.8E-03 | A | | | | | | 7.3E+03 | | 7.3E+03 | |
| Formic Acid | 64-18-6 | | | | | 2.0E+00 | H | 3.0E-03 | P | | | | | | 7.3E+04 | | 7.3E+04 | |
| Fosetyl-AL | 39148-24-8 | | | | | 3.0E+00 | I | | | | | | | | 1.1E+05 | | 1.1E+05 | |
| **Furans** | | | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | 1.0E-03 | X | | | V | | | | | 3.7E+01 | | 3.7E+01 | |
| ~Furan | 110-00-9 | | | | | 1.0E-03 | I | | | V | | | | | 3.7E+01 | | 3.7E+01 | |
| Furazolidone | 67-45-8 | 3.8E+00 | H | | | | | | | | | 1.8E-02 | | 1.8E-02 | | | | |
| Furfural | 98-01-1 | | | | | 3.0E-03 | I | 5.0E-02 | H | | | | | | 1.1E+02 | | 1.1E+02 | |
| Furium | 531-82-8 | 1.5E+00 | C | 4.3E-04 | C | | | | | | | 4.5E-02 | | 4.5E-02 | | | | |
| Furmecyclox | 60568-05-0 | 3.0E-02 | I | 8.6E-06 | C | | | | | | | 2.2E+00 | | 2.2E+00 | | | | |
| Glufosinate, Ammonium | 77182-82-2 | | | | | 4.0E-04 | I | | | | | | | | 1.5E+01 | | 1.5E+01 | |
| Glutaraldehyde | 111-30-8 | | | | | | | 8.0E-05 | C | | | | | | | | | |
| Glycidyl | 765-34-4 | | | | | 4.0E-04 | I | 1.0E-03 | H | | | | | | 1.5E+01 | | 1.5E+01 | |
| Glyphosate | 1071-83-6 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | 7.0E+02 |
| Goal | 42874-03-3 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Guthion | 86-50-0 | | | | | 3.0E-03 | A | 1.0E-02 | A | | | | | | 1.1E+02 | | 1.1E+02 | |
| Haloxyfop, Methyl | 69806-40-2 | | | | | 5.0E-05 | I | | | | | | | | 1.8E+00 | | 1.8E+00 | |
| Harmony | 79277-27-3 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Heptachlor | 76-44-8 | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I | | | | | 1.5E-02 | | 1.5E-02 | 1.8E+01 | | 1.8E+01 | 4.0E-01 |
| Heptachlor Epoxide | 1024-57-3 | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I | | | | | 7.4E-03 | | 7.4E-03 | 4.8E-01 | | 4.8E-01 | 2.0E-01 |
| Hexabromobenzene | 87-82-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | 2.0E-04 | I | | | | | | | | 7.3E+00 | | 7.3E+00 | |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I | | | | | 4.2E-02 | | 4.2E-02 | 2.9E+01 | | 2.9E+01 | 1.0E+00 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P | | | | | 8.6E-01 | | 8.6E-01 | 3.7E+01 | | 3.7E+01 | |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A | | | | | 1.1E-02 | | 1.1E-02 | 2.9E+02 | | 2.9E+02 | |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 1.8E+00 | I | 5.3E-04 | I | | | | | | | 3.7E-02 | | 3.7E-02 | | | | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I | | | | | 6.1E-02 | | 6.1E-02 | 1.1E+01 | | 1.1E+01 | 2.0E-01 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.8E+00 | I | 5.1E-04 | I | | | | | | | 3.7E-02 | | 3.7E-02 | | | | |
| Hexachlorocyclopentadiene | 77-47-4 | | | | | 6.0E-03 | I | 2.0E-04 | I | | | | | | 2.2E+02 | | 2.2E+02 | 5.0E+01 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | I | 4.0E-06 | I | 1.0E-03 | I | | | | | 4.8E+00 | | 4.8E+00 | 3.7E+01 | | 3.7E+01 | |
| Hexachlorophene | 70-30-4 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 1.1E-01 | I | | | 3.0E-03 | I | | | | | 6.1E-01 | | 6.1E-01 | 1.1E+02 | | 1.1E+02 | |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | | | | | 1.0E-05 | I | V | | | | | | 2.1E-02 | 2.1E-02 | |
| Hexane, N- | 110-54-3 | | | | | 6.0E-02 | H | 7.0E-01 | I | V | | | | | 2.2E+03 | 1.5E+03 | 8.8E+02 | |
| Hexanedioic Acid | 124-04-9 | | | | | 2.0E+00 | P | | | | | | | | 7.3E+04 | | 7.3E+04 | |
| Hexanone, 2- | 591-78-6 | | | | | 5.0E-03 | I | 3.0E-02 | I | V | | | | | 1.8E+02 | 6.3E+01 | 4.7E+01 | |
| Hexazinone | 51235-04-2 | | | | | 3.3E-02 | I | | | | | | | | 1.2E+03 | | 1.2E+03 | |
| Hydrazine | 302-01-2 | 3.0E+00 | I | 4.9E-03 | I | | | 3.0E-05 | P | | | 2.2E-02 | | 2.2E-02 | | | | |
| Hydrazine Sulfate | 10034-93-2 | 3.0E+00 | I | 4.9E-03 | I | | | | | | | 2.2E-02 | | 2.2E-02 | | | | |
| Hydrogen Chloride | 7647-01-0 | | | | | | | 2.0E-02 | I | | | | | | | | | |
| Hydrogen Fluoride | 7664-39-3 | | | | | 4.0E-02 | C | 1.4E-02 | C | | | | | | 1.5E+03 | | 1.5E+03 | |
| Hydrogen Sulfide | 7783-06-4 | | | | | | | 2.0E-03 | I | | | | | | | | | |
| Hydroquinone | 123-31-9 | 6.0E-02 | P | | | 4.0E-02 | P | | | | | 1.1E+00 | | 1.1E+00 | 1.5E+03 | | 1.5E+03 | |
| Imazalil | 35554-44-0 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Imazaquin | 81335-37-7 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | |
| Iodine | 7553-56-2 | | | | | 1.0E-02 | A | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Iprodione | 36734-19-7 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | |
| Iron | 7439-89-6 | | | | | 7.0E-01 | P | | | | | | | | 2.6E+04 | | 2.6E+04 | |
| Isobutyl Alcohol | 78-83-1 | | | | | 3.0E-01 | I | | | V | | | | | 1.1E+04 | | 1.1E+04 | |
| Isophorone | 78-59-1 | 9.5E-04 | I | | | 2.0E-01 | I | 2.0E+00 | C | | | 7.1E+01 | | 7.1E+01 | 7.3E+03 | | 7.3E+03 | |
| Isopropalin | 33820-53-0 | | | | | 1.5E-02 | I | | | | | | | | 5.5E+02 | | 5.5E+02 | |
| Isopropanol | 67-63-0 | | | | | | | 7.0E+00 | C | | | | | | | | | |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Isoxaben | 82558-50-7 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| JP-7 | NA | | | | | | | 3.0E-01 | A | V | | | | | | 6.3E+02 | 6.3E+02 | |
| Kerb | 23950-58-5 | | | | | 7.5E-02 | I | | | | | | | | 2.7E+03 | | 2.7E+03 | |
| Lactofen | 77501-63-4 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |



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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| **Lead Compounds** | | | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | | | | | | | | | | 1.5E+01 |
| ~Tetraethyl Lead | 78-00-2 | | | | | 1.0E-07 | I | | | | | | | | 3.7E-03 | | 3.7E-03 | |
| Lead acetate | 301-04-2 | 2.8E-01 | C | 8.0E-05 | C | | | | | | | 2.4E-01 | | 2.4E-01 | | | | |
| Lead subacetate | 1335-32-6 | 3.8E-02 | C | 1.1E-05 | C | | | | | | | 1.8E+00 | | 1.8E+00 | | | | |
| Linuron | 330-55-2 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Lithium | 7439-93-2 | | | | | 2.0E-03 | P | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Lithium Perchlorate | 7791-03-9 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Londax | 83055-99-6 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | |
| MCPA | 94-74-6 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | |
| MCPB | 94-81-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| MCPP | 93-65-2 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Malathion | 121-75-5 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Maleic Anhydride | 108-31-6 | | | | | 1.0E-01 | I | 7.0E-04 | C | | | | | | 3.7E+03 | | 3.7E+03 | |
| Maleic Hydrazide | 123-33-1 | | | | | 5.0E-01 | I | | | | | | | | 1.8E+04 | | 1.8E+04 | |
| Malononitrile | 109-77-3 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Mancozeb | 8018-01-7 | | | | | 3.0E-02 | H | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Maneb | 12427-38-2 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Manganese (Water) | 7439-96-5 | | | | | 2.4E-02 | I | 5.0E-05 | I | | | | | | 8.8E+02 | | 8.8E+02 | |
| Mephosfolan | 950-10-7 | | | | | 9.0E-05 | H | | | | | | | | 3.3E+00 | | 3.3E+00 | |
| Mepiquat Chloride | 24307-26-4 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| **Mercury Compounds** | | | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | | | 3.0E-04 | I | 3.0E-05 | C | | | | | | 1.1E+01 | | 1.1E+01 | |
| ~Mercuric Sulfide | 1344-48-5 | | | | | 3.0E-04 | S | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| ~Mercury (elemental) | 7439-97-6 | | | | | 1.6E-04 | C | 3.0E-04 | I | V | | | | | 5.8E+00 | 6.3E-01 | 5.7E-01 | 2.0E+00 |
| ~Mercury, Inorganic Salts | NA | | | | | 3.0E-04 | S | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| ~Methyl Mercury | 22967-92-6 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | 8.0E-05 | I | | | | | | | | 2.9E+00 | | 2.9E+00 | |
| Merphos | 150-50-5 | | | | | 3.0E-05 | I | | | | | | | | 1.1E+00 | | 1.1E+00 | |
| Merphos Oxide | 78-48-8 | | | | | 3.0E-05 | I | | | | | | | | 1.1E+00 | | 1.1E+00 | |
| Metalaxyl | 57837-19-1 | | | | | 6.0E-02 | I | | | | | | | | 2.2E+03 | | 2.2E+03 | |
| Methacrylonitrile | 126-98-7 | | | | | 1.0E-04 | I | 7.0E-04 | H | V | | | | | 3.7E+00 | 1.5E+00 | 1.0E+00 | |
| Methamidophos | 10265-92-6 | | | | | 5.0E-05 | I | | | | | | | | 1.8E+00 | | 1.8E+00 | |
| Methanol | 67-56-1 | | | | | 5.0E-01 | I | 4.0E+00 | C | | | | | | 1.8E+04 | | 1.8E+04 | |
| Methidathion | 950-37-8 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Methomyl | 16752-77-5 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 4.9E-02 | C | 1.4E-05 | C | | | | | | | 1.4E+00 | | 1.4E+00 | | | | |
| Methoxychlor | 72-43-5 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | 4.0E+01 |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | | | 2.0E-03 | H | 9.0E-02 | C | | | | | | 7.3E+01 | | 7.3E+01 | |
| Methoxyethanol, 2- | 109-86-4 | | | | | 3.0E-03 | P | 2.0E-02 | I | | | | | | 1.1E+02 | | 1.1E+02 | |
| Methyl Acetate | 79-20-9 | | | | | 1.0E+00 | H | | | V | | | | | 3.7E+04 | | 3.7E+04 | |
| Methyl Acrylate | 96-33-3 | | | | | 3.0E-02 | H | | | V | | | | | 1.1E+03 | | 1.1E+03 | |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | | | 6.0E-01 | I | 5.0E+00 | I | V | | | | | 2.2E+04 | 1.0E+04 | 7.1E+03 | |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | | | 8.0E-02 | H | 3.0E+00 | I | V | | | | | 2.9E+03 | 6.3E+03 | 2.0E+03 | |
| Methyl Isocyanate | 624-83-9 | | | | | | | 1.0E-03 | C | | | | | | | | | |
| Methyl Methacrylate | 80-62-6 | | | | | 1.4E+00 | I | 7.0E-01 | I | V | | | | | 5.1E+04 | 1.5E+03 | 1.4E+03 | |
| Methyl Parathion | 298-00-0 | | | | | 2.5E-04 | I | | | | | | | | 9.1E+00 | | 9.1E+00 | |
| Methyl Phosphonic Acid | 993-13-5 | | | | | 6.0E-02 | X | | | | | | | | 2.2E+03 | | 2.2E+03 | |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | | | 6.0E-03 | H | 4.0E-02 | H | V | | | | | 2.2E+02 | 8.3E+01 | 6.0E+01 | |
| Methyl methanesulfonate | 66-27-3 | 9.9E-02 | C | 2.8E-05 | C | | | | | | | 6.8E-01 | | 6.8E-01 | | | | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 1.8E-03 | C | 2.6E-07 | C | | | 3.0E+00 | I | V | | 3.7E+01 | 1.9E+01 | 1.3E+01 | | 6.3E+03 | 6.3E+03 | |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 3.3E-02 | H | | | | | | | | | 2.0E+00 | | 2.0E+00 | | | | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 8.3E+00 | C | 2.4E-03 | C | | | | | | | 8.1E-03 | | 8.1E-03 | | | | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 1.3E-01 | C | 3.7E-05 | C | | | | | | | 5.2E-01 | | 5.2E-01 | | | | |
| Methylarsonic acid | 124-58-3 | | | | | 1.0E-02 | A | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Methylcholanthrene, 3- | 56-49-5 | 2.2E+01 | C | 6.3E-03 | C | | | | | | | 3.1E-03 | | 3.1E-03 | | | | |
| Methylene Chloride | 75-09-2 | 7.5E-03 | I | 4.7E-07 | I | 6.0E-02 | I | 1.0E+00 | A | V | | 9.0E+00 | 1.0E+01 | 4.8E+00 | 2.2E+03 | 2.2E+03 | 1.1E+03 | 5.0E+00 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P | | | | M | 2.2E-01 | | 2.2E-01 | 7.3E+01 | | 7.3E+01 | |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 4.6E-02 | I | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 1.6E+00 | C | 4.6E-04 | C | | | 2.0E-02 | C | | | 4.2E-02 | | 4.2E-02 | | | | |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | | | | | 6.0E-04 | I | | | | | | | | | |
| Methylstyrene, Alpha- | 98-83-9 | | | | | 7.0E-02 | H | | | V | | | | | 2.6E+03 | | 2.6E+03 | |



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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Metolachlor | 51218-45-2 | | | | | 1.5E-01 | I | | | | | | | | 5.5E+03 | | 5.5E+03 | |
| Metribuzin | 21087-64-9 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Mineral oils | 8012-95-1 | | | | | 3.0E+00 | P | | | | | | | | 1.1E+05 | | 1.1E+05 | |
| Mirex | 2385-85-5 | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I | | | | | 3.7E-03 | | 3.7E-03 | 7.3E+00 | | 7.3E+00 | |
| Molinate | 2212-67-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Molybdenum | 7439-98-7 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Monochloramine | 10599-90-3 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Monomethylaniline | 100-61-8 | | | | | 2.0E-03 | P | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | 3.0E-04 | X | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Naled | 300-76-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | 3.0E-02 | X | 1.0E-01 | P | V | | | | | 1.1E+03 | 2.1E+02 | 1.8E+02 | |
| Naphthylamine, 2- | 91-59-8 | 1.8E+00 | C | 0.0E+00 | C | | | | | | | 3.7E-02 | | 3.7E-02 | | | | |
| Napropamide | 15299-99-7 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Nickel Carbonyl | 13463-39-3 | | | | | 5.0E-02 | C | 5.0E-05 | C | | | | | | 1.8E+03 | | 1.8E+03 | |
| Nickel Oxide | 1313-99-1 | | | | | 5.0E-02 | C | 1.0E-04 | C | | | | | | 1.8E+03 | | 1.8E+03 | |
| Nickel Refinery Dust | NA | | | 2.4E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | | | | 1.8E+03 | | 1.8E+03 | |
| Nickel Soluble Salts | 7440-02-0 | | | 2.6E-04 | C | 2.0E-02 | I | 9.0E-05 | A | | | | | | 7.3E+02 | | 7.3E+02 | |
| Nickel Subsulfide | 12035-72-2 | 1.7E+00 | C | 4.8E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 4.0E-02 | | 4.0E-02 | 1.8E+03 | | 1.8E+03 | |
| Nitrate | 14797-55-8 | | | | | 1.6E+00 | I | | | | | | | | 5.8E+04 | | 5.8E+04 | 1.0E+04 |
| Nitrite | 14797-65-0 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | 1.0E+03 |
| Nitroaniline, 2- | 88-74-4 | | | | | 1.0E-02 | X | 5.0E-05 | X | | | | | | 3.7E+02 | | 3.7E+02 | |
| Nitroaniline, 4- | 100-01-6 | 2.0E-02 | P | | | 4.0E-03 | P | 6.0E-03 | P | | | 3.4E+00 | | 3.4E+00 | 1.5E+02 | | 1.5E+02 | |
| Nitrobenzene | 98-95-3 | | | 4.0E-05 | I | 2.0E-03 | I | 9.0E-03 | I | V | | | 1.2E-01 | 1.2E-01 | 7.3E+01 | 1.9E+01 | 1.5E+01 | |
| Nitrocellulose | 9004-70-0 | | | | | 3.0E+03 | P | | | | | | | | 1.1E+08 | | 1.1E+08 | |
| Nitrofurantoin | 67-20-9 | | | | | 7.0E-02 | H | | | | | | | | 2.6E+03 | | 2.6E+03 | |
| Nitrofurazone | 59-87-0 | 1.3E+00 | C | 3.7E-04 | C | | | | | | | 5.2E-02 | | 5.2E-02 | | | | |
| Nitroglycerin | 55-63-0 | 1.7E-02 | P | | | 1.0E-04 | P | | | | | 4.0E+00 | | 4.0E+00 | 3.7E+00 | | 3.7E+00 | |
| Nitroguanidine | 556-88-7 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Nitromethane | 75-52-5 | | | 9.0E-06 | P | | | 2.0E-02 | P | V | | | 5.4E-01 | 5.4E-01 | | 4.2E+01 | 4.2E+01 | |
| Nitropropane, 2- | 79-46-9 | | | 2.7E-03 | H | | | 2.0E-02 | I | V | | | 1.8E-03 | 1.8E-03 | | 4.2E+01 | 4.2E+01 | |
| Nitroso-N-ethylurea, N- | 759-73-9 | 2.7E+01 | C | 7.7E-03 | C | | | | | | | 2.5E-03 | | 2.5E-03 | | | | |
| Nitroso-N-methylurea, N- | 684-93-5 | 1.2E+02 | C | 3.4E-02 | C | | | | | | | 5.6E-04 | | 5.6E-04 | | | | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 5.4E+00 | I | 1.6E-03 | I | | | | | V | | 1.3E-02 | 3.0E-03 | 2.4E-03 | | | | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 7.0E+00 | I | 2.0E-03 | C | | | | | | | 9.6E-03 | | 9.6E-03 | | | | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 2.8E+00 | I | 8.0E-04 | C | | | | | | | 2.4E-02 | | 2.4E-02 | | | | |
| Nitrosodiethylamine, N- | 55-18-5 | 1.5E+02 | I | 4.3E-02 | I | | | | | | M | 1.4E-04 | | 1.4E-04 | | | | |
| Nitrosodimethylamine, N- | 62-75-9 | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P | 4.0E-05 | X | | M | 4.2E-04 | | 4.2E-04 | 2.9E-01 | | 2.9E-01 | |
| Nitrosodiphenylamine, N- | 86-30-6 | 4.9E-03 | I | 2.6E-06 | C | | | | | | | 1.4E+01 | | 1.4E+01 | | | | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 2.2E+01 | I | 6.3E-03 | C | | | | | | | 3.1E-03 | | 3.1E-03 | | | | |
| Nitrosomorpholine [N-] | 59-89-2 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1.0E-02 | | 1.0E-02 | | | | |
| Nitrosopiperidine [N-] | 100-75-4 | 9.4E+00 | C | 2.7E-03 | C | | | | | | | 7.2E-03 | | 7.2E-03 | | | | |
| Nitrosopyrrolidine, N- | 930-55-2 | 2.1E+00 | I | 6.1E-04 | I | | | | | | | 3.2E-02 | | 3.2E-02 | | | | |
| Nitrotoluene, m- | 99-08-1 | | | | | 1.0E-04 | X | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Nitrotoluene, o- | 88-72-2 | 2.2E-01 | P | | | 9.0E-04 | P | | | V | | 3.1E-01 | | 3.1E-01 | 3.3E+01 | | 3.3E+01 | |
| Nitrotoluene, p- | 99-99-0 | 1.6E-02 | P | | | 4.0E-03 | P | | | | | 4.2E+00 | | 4.2E+00 | 1.5E+02 | | 1.5E+02 | |
| Nonane, n- | 111-84-2 | | | | | 3.0E-04 | X | 2.0E-01 | P | V | | | | | 1.1E+01 | 4.2E+02 | 1.1E+01 | |
| Norflurazon | 27314-13-2 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | |
| Nustar | 85509-19-9 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | 2.0E-03 | H | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Oryzalin | 19044-88-3 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Oxadiazon | 19666-30-9 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Oxamyl | 23135-22-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | 2.0E+02 |
| Paclobutrazol | 76738-62-0 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Paraquat Dichloride | 1910-42-5 | | | | | 4.5E-03 | I | | | | | | | | 1.6E+02 | | 1.6E+02 | |
| Parathion | 56-38-2 | | | | | 6.0E-03 | H | | | | | | | | 2.2E+02 | | 2.2E+02 | |
| Pebulate | 1114-71-2 | | | | | 5.0E-02 | H | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Pendimethalin | 40487-42-1 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Pentachlorobenzene | 608-93-5 | | | | | 8.0E-04 | I | | | | | | | | 2.9E+01 | | 2.9E+01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Pentachloroethane | 76-01-7 | 9.0E-02 | P | | | | | | | | | 7.5E-01 | | 7.5E-01 | | | | |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | H | | | 3.0E-03 | I | | | | | 2.6E-01 | | 2.6E-01 | 1.1E+02 | | 1.1E+02 | |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | I | 5.1E-06 | C | 3.0E-02 | I | | | | | 5.6E-01 | | 5.6E-01 | 1.1E+03 | | 1.1E+03 | 1.0E+00 |
| Pentane, n- | 109-66-0 | | | | | | | 1.0E+00 | P | V | | | | | | 2.1E+03 | 2.1E+03 | |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | 15 (F) |
| Permethrin | 52645-53-1 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Phenacetin | 62-44-2 | 2.2E-03 | C | 6.3E-07 | C | | | | | | | 3.1E+01 | | 3.1E+01 | | | | |
| Phenmedipham | 13684-63-4 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | |
| Phenol | 108-95-2 | | | | | 3.0E-01 | I | 2.0E-01 | C | | | | | | 1.1E+04 | | 1.1E+04 | |
| Phenylenediamine, m- | 108-45-2 | | | | | 6.0E-03 | I | | | | | | | | 2.2E+02 | | 2.2E+02 | |
| Phenylenediamine, o- | 95-54-5 | 4.7E-02 | H | | | | | | | | | 1.4E+00 | | 1.4E+00 | | | | |
| Phenylenediamine, p- | 106-50-3 | | | | | 1.9E-01 | H | | | | | | | | 6.9E+03 | | 6.9E+03 | |
| Phenylphenol, 2- | 90-43-7 | 1.9E-03 | H | | | | | | | | | 3.5E+01 | | 3.5E+01 | | | | |
| Phorate | 298-02-2 | | | | | 2.0E-04 | H | | | | | | | | 7.3E+00 | | 7.3E+00 | |
| Phosmet | 732-11-6 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Phosphine | 7803-51-2 | | | | | 3.0E-04 | I | 3.0E-04 | I | | | | | | 1.1E+01 | | 1.1E+01 | |
| Phosphoric Acid | 7664-38-2 | | | | | | | 1.0E-02 | I | | | | | | | | | |
| Phosphorus, White | 7723-14-0 | | | | | 2.0E-05 | I | | | | | | | | 7.3E-01 | | 7.3E-01 | |
| Phthalic Acid, P- | 100-21-0 | | | | | 1.0E+00 | H | | | | | | | | 3.7E+04 | | 3.7E+04 | |
| Phthalic Anhydride | 85-44-9 | | | | | 2.0E+00 | I | 2.0E-02 | C | | | | | | 7.3E+04 | | 7.3E+04 | |
| Picloram | 1918-02-1 | | | | | 7.0E-02 | I | | | | | | | | 2.6E+03 | | 2.6E+03 | 5.0E+02 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | 1.0E-04 | X | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Pirimiphos, Methyl | 29232-93-7 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Polybrominated Biphenyls | 59536-65-1 | 3.0E+01 | C | 8.6E-03 | C | 7.0E-06 | H | | | | | 2.2E-03 | | 2.2E-03 | 2.6E-01 | | 2.6E-01 | |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 7.0E-02 | I | 2.0E-05 | I | 7.0E-05 | I | | | | | 9.6E-01 | | 9.6E-01 | 2.6E+00 | | 2.6E+00 | |
| ~Aroclor 1221 | 11104-28-2 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 3.4E-02 | 8.5E-03 | 6.8E-03 | | | | |
| ~Aroclor 1232 | 11141-16-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 3.4E-02 | 8.5E-03 | 6.8E-03 | | | | |
| ~Aroclor 1242 | 53469-21-9 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | |
| ~Aroclor 1248 | 12672-29-6 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | |
| ~Aroclor 1254 | 11097-69-1 | 2.0E+00 | I | 5.7E-04 | I | 2.0E-05 | I | | | | | 3.4E-02 | | 3.4E-02 | 7.3E-01 | | 7.3E-01 | |
| ~Aroclor 1260 | 11096-82-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 1.3E+00 | C | 3.8E-04 | C | | | | | | | 5.2E-02 | | 5.2E-02 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 1.3E+03 | C | 3.8E-01 | C | | | | | | | 5.2E-05 | | 5.2E-05 | | | | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 6.5E+02 | C | 1.9E-02 | C | | | | | | | 1.0E-04 | | 1.0E-04 | | | | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 1.3E+04 | C | 3.8E+00 | C | | | | | | | 5.2E-06 | | 5.2E-06 | | | | |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 4.0E-01 | I | 1.0E-04 | I | | | | | | | 1.7E-01 | | 1.7E-01 | | | | 5.0E-01 |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | | | | | 6.0E-04 | I | | | | | | | | | |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | 6.0E-02 | I | | | V | | | | | 2.2E+03 | | 2.2E+03 | |
| ~Anthracene | 120-12-7 | | | | | 3.0E-01 | I | | | V | | | | | 1.1E+04 | | 1.1E+04 | |
| ~Benz[a]anthracene | 56-55-3 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 3.0E-02 | | | | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 5.6E-02 | | 5.6E-02 | | | | |
| ~Benzo[a]pyrene | 50-32-8 | 7.3E+00 | I | 1.1E-03 | C | | | | | | M | 3.0E-03 | | 3.0E-03 | | | | 2.0E-01 |
| ~Benzo[b]fluoranthene | 205-99-2 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 3.0E-02 | | | | |
| ~Benzo[k]fluoranthene | 207-08-9 | 7.3E-02 | E | 1.1E-04 | C | | | | | | M | 3.0E-01 | | 3.0E-01 | | | | |
| ~Chrysene | 218-01-9 | 7.3E-03 | E | 1.1E-05 | C | | | | | | M | 3.0E+00 | | 3.0E+00 | | | | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 7.3E+00 | E | 1.2E-03 | C | | | | | | M | 3.0E-03 | | 3.0E-03 | | | | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.2E+01 | C | 1.1E-03 | C | | | | | | | 5.6E-03 | | 5.6E-03 | | | | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 2.5E+02 | C | 7.1E-02 | C | | | | | | | 2.7E-04 | | 2.7E-04 | | | | |
| ~Fluoranthene | 206-44-0 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | |
| ~Fluorene | 86-73-7 | | | | | 4.0E-02 | I | | | V | | | | | 1.5E+03 | | 1.5E+03 | |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 3.0E-02 | | | | |
| ~Methylnaphthalene, 1- | 90-12-0 | 2.9E-02 | P | | | 7.0E-02 | A | | | V | | 2.3E+00 | | 2.3E+00 | 2.6E+03 | | 2.6E+03 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | 4.0E-03 | I | | | V | | | | | 1.5E+02 | | 1.5E+02 | |
| ~Naphthalene | 91-20-3 | | | 3.4E-05 | C | 2.0E-02 | I | 3.0E-03 | I | V | | | 1.4E-01 | 1.4E-01 | 7.3E+02 | 6.3E+00 | 6.2E+00 | |
| ~Nitropyrene, 4- | 57835-92-4 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 5.6E-02 | | 5.6E-02 | | | | |
| ~Pyrene | 129-00-0 | | | | | 3.0E-02 | I | | | V | | | | | 1.1E+03 | | 1.1E+03 | |
| Potassium Perchlorate | 7778-74-7 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Prochloraz | 67747-09-5 | 1.5E-01 | I | | | 9.0E-03 | I | | | | | 4.5E-01 | | 4.5E-01 | 3.3E+02 | | 3.3E+02 | |
| Profluralin | 26399-36-0 | | | | | 6.0E-03 | H | | | | | | | | 2.2E+02 | | 2.2E+02 | |
| Prometon | 1610-18-0 | | | | | 1.5E-02 | I | | | | | | | | 5.5E+02 | | 5.5E+02 | |
| Prometryn | 7287-19-6 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| Propachlor | 1918-16-7 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Propanil | 709-98-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Propargite | 2312-35-8 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Propargyl Alcohol | 107-19-7 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | |
| Propazine | 139-40-2 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Propham | 122-42-9 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Propiconazole | 60207-90-1 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Propionaldehyde | 123-38-6 | | | | | | | 8.0E-03 | I | V | | | | | | 1.7E+01 | 1.7E+01 | |
| Propyl benzene | 103-65-1 | | | | | 1.0E-01 | X | 1.0E+00 | X | V | | | | | 3.7E+03 | 2.1E+03 | 1.3E+03 | |
| Propylene | 115-07-1 | | | | | | | 3.0E+00 | C | | | | | | | | | |
| Propylene Glycol | 57-55-6 | | | | | 2.0E+01 | P | | | | | | | | 7.3E+05 | | 7.3E+05 | |
| Propylene Glycol Dinitrate | 6423-43-4 | | | | | | | 2.7E-04 | A | V | | | | | | 5.7E-01 | 5.7E-01 | |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | 7.0E-01 | H | | | | | | | | 2.6E+04 | | 2.6E+04 | |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | | | 7.0E-01 | H | 2.0E+00 | I | | | | | | 2.6E+04 | | 2.6E+04 | |
| Propylene Oxide | 75-56-9 | 2.4E-01 | I | 3.7E-06 | I | | | 3.0E-02 | I | V | | 2.8E-01 | 1.3E+00 | 2.3E-01 | | 6.3E+01 | 6.3E+01 | |
| Pursuit | 81335-77-5 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | |
| Pydrin | 51630-58-1 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Pyridine | 110-86-1 | | | | | 1.0E-03 | I | | | V | | | | | 3.7E+01 | | 3.7E+01 | |
| Quinalphos | 13593-03-8 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | |
| Quinoline | 91-22-5 | 3.0E+00 | I | | | | | | | | | 2.2E-02 | | 2.2E-02 | | | | |
| Refractory Ceramic Fibers | NA | | | | | | | 3.0E-02 | A | | | | | | | | | |
| Resmethrin | 10453-86-8 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Ronnel | 299-84-3 | | | | | 5.0E-02 | H | | | | | | | | 1.8E+03 | | 1.8E+03 | |
| Rotenone | 83-79-4 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| Safrole | 94-59-7 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 3.1E-01 | | 3.1E-01 | | | | |
| Savey | 78587-05-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Selenious Acid | 7783-00-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Selenium | 7782-49-2 | | | | | 5.0E-03 | I | 2.0E-02 | C | | | | | | 1.8E+02 | | 1.8E+02 | 5.0E+01 |
| Selenium Sulfide | 7446-34-6 | | | | | 5.0E-03 | C | 2.0E-02 | C | | | | | | 1.8E+02 | | 1.8E+02 | |
| Sethoxydim | 74051-80-2 | | | | | 9.0E-02 | I | | | | | | | | 3.3E+03 | | 3.3E+03 | |
| Silica (crystalline, respirable) | 7631-86-9 | | | | | | | 3.0E-03 | C | | | | | | | | | |
| Silver | 7440-22-4 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Simazine | 122-34-9 | 1.2E-01 | H | | | 5.0E-03 | I | | | | | 5.6E-01 | | 5.6E-01 | 1.8E+02 | | 1.8E+02 | 4.0E+00 |
| Sodium Acifluorfen | 62476-59-9 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Sodium Azide | 26628-22-8 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| Sodium Diethyldithiocarbamate | 148-18-5 | 2.7E-01 | H | | | 3.0E-02 | I | | | | | 2.5E-01 | | 2.5E-01 | 1.1E+03 | | 1.1E+03 | |
| Sodium Fluoride | 7681-49-4 | | | | | 5.0E-02 | A | 1.3E-02 | C | | | | | | 1.8E+03 | | 1.8E+03 | |
| Sodium Fluoroacetate | 62-74-8 | | | | | 2.0E-05 | I | | | | | | | | 7.3E-01 | | 7.3E-01 | |
| Sodium Metavanadate | 13718-26-8 | | | | | 1.0E-03 | H | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Sodium Perchlorate | 7601-89-0 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 2.4E-02 | H | | | 3.0E-02 | I | | | | | 2.8E+00 | | 2.8E+00 | 1.1E+03 | | 1.1E+03 | |
| Strontium, Stable | 7440-24-6 | | | | | 6.0E-01 | I | | | | | | | | 2.2E+04 | | 2.2E+04 | |
| Strychnine | 57-24-9 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Styrene | 100-42-5 | | | | | 2.0E-01 | I | 1.0E+00 | I | V | | | | | 7.3E+03 | 2.1E+03 | 1.6E+03 | 1.0E+02 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | 8.0E-04 | P | | | | | | | | 2.9E+01 | | 2.9E+01 | |
| Sulfuric Acid | 7664-93-9 | | | | | | | 1.0E-03 | C | | | | | | | | | |
| Systhane | 88671-89-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| TCMTB | 21564-17-0 | | | | | 3.0E-02 | H | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Tebuthiuron | 34014-18-1 | | | | | 7.0E-02 | I | | | | | | | | 2.6E+03 | | 2.6E+03 | |
| Temephos | 3383-96-8 | | | | | 2.0E-02 | H | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Terbacil | 5902-51-2 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Terbufos | 13071-79-9 | | | | | 2.5E-05 | H | | | | | | | | 9.1E-01 | | 9.1E-01 | |
| Terbutryn | 886-50-0 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta-gen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 2.6E-02 | I | 7.4E-06 | I | 3.0E-02 | I | | | V | | 2.6E+00 | 6.6E-01 | 5.2E-01 | 1.1E+03 | | 1.1E+03 | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 2.0E-01 | I | 5.8E-05 | I | 4.0E-03 | P | | | V | | 3.4E-01 | 8.4E-02 | 6.7E-02 | 1.5E+02 | | 1.5E+02 | |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | C | 5.9E-06 | C | 1.0E-02 | I | 2.7E-01 | A | V | | 1.3E-01 | 8.3E-01 | 1.1E-01 | 3.7E+02 | 5.7E+02 | 2.2E+02 | 5.0E+00 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 2.0E+01 | H | | | | | | | | | 3.4E-03 | | 3.4E-03 | | | | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | | | | | 8.0E+01 | I | V | | | | | | 1.7E+05 | 1.7E+05 | |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | 4.0E-03 | P | | | | | | | | 1.5E+02 | | 1.5E+02 | |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | | | | | | | | | | 2.0E+00 |
| Thiobencarb | 28249-77-6 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Thiodiglycol | 111-48-8 | | | | | 7.0E-02 | X | | | | | | | | 2.6E+03 | | 2.6E+03 | |
| Thiofanox | 39196-18-4 | | | | | 3.0E-04 | H | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Thiophanate, Methyl | 23564-05-8 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | |
| Thiram | 137-26-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Tin | 7440-31-5 | | | | | 6.0E-01 | H | | | | | | | | 2.2E+04 | | 2.2E+04 | |
| Titanium Tetrachloride | 7550-45-0 | | | | | | | 1.0E-04 | A | | | | | | | | | |
| Toluene | 108-88-3 | | | | | 8.0E-02 | I | 5.0E+00 | I | V | | | | | 2.9E+03 | 1.0E+04 | 2.3E+03 | 1.0E+03 |
| Toluidine, p- | 106-49-0 | 1.9E-01 | H | | | | | | | | | 3.5E-01 | | 3.5E-01 | | | | |
| Toxaphene | 8001-35-2 | 1.1E+00 | I | 3.2E-04 | I | | | | | | | 6.1E-02 | | 6.1E-02 | | | | 3.0E+00 |
| Tralomethrin | 66841-25-6 | | | | | 7.5E-03 | I | | | | | | | | 2.7E+02 | | 2.7E+02 | |
| Tri-n-butyltin | 688-73-3 | | | | | 3.0E-04 | A | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Triallate | 2303-17-5 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.8E+02 | |
| Triasulfuron | 82097-50-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Tributyl Phosphate | 126-73-8 | 9.2E-03 | P | | | 2.0E-01 | P | | | | | 7.3E+00 | | 7.3E+00 | 7.3E+03 | | 7.3E+03 | |
| Tributyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Tributyltin Oxide | 56-35-9 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | | | 3.0E+01 | I | 3.0E+01 | H | V | | | | | 1.1E+06 | 6.3E+04 | 5.9E+04 | |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 2.9E-02 | H | | | | | | | | | 2.3E+00 | | 2.3E+00 | | | | |
| Trichloroaniline, 2,4,6- | 634-93-5 | 3.4E-02 | H | | | | | | | | | 2.0E+00 | | 2.0E+00 | | | | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | 8.0E-04 | X | | | V | | | | | 2.9E+01 | | 2.9E+01 | |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 2.9E-02 | P | | | 1.0E-02 | I | 2.0E-03 | P | V | | 2.3E+00 | | 2.3E+00 | 3.7E+02 | 4.2E+00 | 4.1E+00 | 7.0E+01 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | | | 2.0E+00 | I | 5.0E+00 | I | V | | | | | 7.3E+04 | 1.0E+04 | 9.1E+03 | 2.0E+02 |
| Trichloroethane, 1,1,2- | 79-00-5 | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I | | | V | | 1.2E+00 | 3.0E-01 | 2.4E-01 | 1.5E+02 | | 1.5E+02 | 5.0E+00 |
| Trichloroethylene | 79-01-6 | 5.9E-03 | C | 2.0E-06 | C | | | | | V | | 1.1E+01 | 2.4E+00 | 2.0E+00 | | | | 5.0E+00 |
| Trichlorofluoromethane | 75-69-4 | | | | | 3.0E-01 | I | 7.0E-01 | H | V | | | | | 1.1E+04 | 1.5E+03 | 1.3E+03 | |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P | | | | | 6.1E+00 | | 6.1E+00 | 3.7E+01 | | 3.7E+01 | |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | 5.0E+01 |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | 5.0E-03 | I | | | V | | | | | 1.8E+02 | | 1.8E+02 | |
| Trichloropropane, 1,2,3- | 96-18-4 | 3.0E+01 | I | | | 4.0E-03 | I | 3.0E-04 | I | V | M | 7.2E-04 | | 7.2E-04 | 1.5E+02 | 6.3E-01 | 6.2E-01 | |
| Trichloropropene, 1,2,3- | 96-19-5 | | | | | 3.0E-03 | X | 3.0E-04 | P | V | | | | | 1.1E+02 | 6.3E-01 | 6.2E-01 | |
| Tridiphane | 58138-08-2 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | |
| Triethylamine | 121-44-8 | | | | | | | 7.0E-03 | I | V | | | | | | 1.5E+01 | 1.5E+01 | |
| Trifluralin | 1582-09-8 | 7.7E-03 | I | | | 7.5E-03 | I | | | | | 8.7E+00 | | 8.7E+00 | 2.7E+02 | | 2.7E+02 | |
| Trimethyl Phosphate | 512-56-1 | 3.7E-02 | H | | | | | | | | | 1.8E+00 | | 1.8E+00 | | | | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | | | | | 7.0E-03 | P | V | | | | | | 1.5E+01 | 1.5E+01 | |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | 1.0E-02 | X | | | V | | | | | 3.7E+02 | | 3.7E+02 | |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.0E-02 | I | | | 5.0E-04 | I | | | | | 2.2E+00 | | 2.2E+00 | 1.8E+01 | | 1.8E+01 | |
| Triphenylphosphine Oxide | 791-28-6 | | | | | 2.0E-02 | P | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 2.0E-02 | P | | | 7.0E-03 | P | | | | | 3.4E+00 | | 3.4E+00 | 2.6E+02 | | 2.6E+02 | |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 3.2E-03 | P | | | 1.0E-01 | P | | | | | 2.1E+01 | | 2.1E+01 | 3.7E+03 | | 3.7E+03 | |
| Uranium (Soluble Salts) | NA | | | | | 3.0E-03 | I | 3.0E-04 | A | | | | | | 1.1E+02 | | 1.1E+02 | |
| Urethane | 51-79-6 | 1.0E+00 | C | 2.9E-04 | C | | | | | | | 6.7E-02 | | 6.7E-02 | | | | |
| Vanadium Pentoxide | 1314-62-1 | | | 8.3E-03 | P | 9.0E-03 | I | 7.0E-06 | P | | | | | | 3.3E+02 | | 3.3E+02 | |
| Vanadium Sulfate | 36907-42-3 | | | | | 2.0E-02 | H | | | | | | | | 7.3E+02 | | 7.3E+02 | |
| Vanadium and Compounds | NA | | | | | 5.0E-03 | S | | | | | | | | 1.8E+02 | | 1.8E+02 | |
| Vanadium, Metallic | 7440-62-2 | | | | | 7.0E-05 | P | | | | | | | | 2.6E+00 | | 2.6E+00 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | mutagen | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L |
| Vernolate | 1929-77-7 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | |
| Vinclozolin | 50471-44-8 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | |
| Vinyl Acetate | 108-05-4 | | | | | 1.0E+00 | H | 2.0E-01 | I | V | | | | | 3.7E+04 | 4.2E+02 | 4.1E+02 | |
| Vinyl Bromide | 593-60-2 | | | 3.2E-05 | H | | | 3.0E-03 | I | V | | | 1.5E-01 | 1.5E-01 | | 6.3E+00 | 6.3E+00 | |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I | 1.0E-01 | I | V | M | 1.7E-02 | 3.2E-01 | 1.6E-02 | 1.1E+02 | 2.1E+02 | 7.2E+01 | 2.0E+00 |
| Warfarin | 81-81-2 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | | | | 7.3E+03 | 2.1E+02 | 2.0E+02 | 1.0E+04 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | | | | 1.1E+04 | | 1.1E+04 | |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | vol | muta-gen | | | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | | | | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| ALAR | 1596-84-5 | 1.8E-02 | C | 5.1E-06 | C | 1.5E-01 | I | | | | | | | 3.7E+00 | | 3.7E+00 | 5.5E+03 | | 5.5E+03 | | 8.2E-04 | |
| Acephate | 30560-19-1 | 8.7E-03 | I | | | 4.0E-03 | I | | | | | | | 7.7E+00 | | 7.7E+00 | 1.5E+02 | | 1.5E+02 | | 1.7E-03 | |
| Acetaldehyde | 75-07-0 | | | 2.2E-06 | I | | | 9.0E-03 | I | V | | | | | 2.2E+00 | 2.2E+00 | | 1.9E+01 | 1.9E+01 | | 4.5E-04 | |
| Acetochlor | 34256-82-1 | | | | | 2.0E-02 | I | | | | | | | | | | 7.3E+02 | | 7.3E+02 | | 5.8E-01 | |
| Acetone | 67-64-1 | | | | | 9.0E-01 | I | 3.1E+01 | A | V | | | | | | | 3.3E+04 | 6.4E+04 | 2.2E+04 | | 4.5E+00 | |
| Acetone Cyanohydrin | 75-86-5 | | | | | 3.0E-03 | P | 6.0E-02 | P | V | | | | | | | 1.1E+02 | 1.3E+02 | 5.8E+01 | | 1.2E-02 | |
| Acetonitrile | 75-05-8 | | | | | | | 6.0E-02 | I | V | | | | | | | | 1.3E+02 | 1.3E+02 | | 2.6E-02 | |
| Acetophenone | 98-86-2 | | | | | 1.0E-01 | I | | | V | | | | | | | 3.7E+03 | | 3.7E+03 | | 1.1E+00 | |
| Acetylaminofluorene, 2- | 53-96-3 | 3.8E+00 | C | 1.3E-03 | C | | | | | | | | | 1.8E-02 | | 1.8E-02 | | | | | 8.2E-05 | |
| Acrolein | 107-02-8 | | | | | 5.0E-04 | I | 2.0E-05 | I | V | | | | | | | 1.8E+01 | 4.2E-02 | 4.2E-02 | | 8.4E-06 | |
| Acrylamide | 79-06-1 | 4.5E+00 | I | 1.3E-03 | I | 2.0E-04 | I | | | | | | | 1.5E-02 | | 1.5E-02 | 7.3E+00 | | 7.3E+00 | | 3.2E-06 | |
| Acrylic Acid | 79-10-7 | | | | | 5.0E-01 | I | 1.0E-03 | I | | | | | | | | 1.8E+04 | | 1.8E+04 | | 3.7E+00 | |
| Acrylonitrile | 107-13-1 | 5.4E-01 | I | 6.8E-05 | I | 4.0E-02 | A | 2.0E-03 | I | V | | | | 1.3E-01 | 7.2E-02 | 4.5E-02 | 1.5E+03 | 4.2E+00 | 4.2E+00 | | 9.9E-06 | |
| Adiponitrile | 111-69-3 | | | | | | | 6.0E-03 | P | | | | | | | | | | | | | |
| Alachlor | 15972-60-8 | 5.6E-02 | C | | | 1.0E-02 | I | | | | | | | 1.2E+00 | | 1.2E+00 | 3.7E+02 | | 3.7E+02 | 2.0E+00 | 9.9E-04 | 1.7E-03 |
| Aldicarb | 116-06-3 | | | | | 1.0E-03 | I | | | | | | | | | | 3.7E+01 | | 3.7E+01 | | 9.1E-03 | |
| Aldicarb Sulfone | 1646-88-4 | | | | | 1.0E-03 | I | | | | | | | | | | 3.7E+01 | | 3.7E+01 | | 8.0E-03 | |
| Aldrin | 309-00-2 | 1.7E+01 | I | 4.9E-03 | I | 3.0E-05 | I | | | | | | | 4.0E-03 | | 4.0E-03 | 1.1E+00 | | 1.1E+00 | | 6.5E-04 | |
| Ally | 74223-64-6 | | | | | 2.5E-01 | I | | | | | | | | | | 9.1E+03 | | 9.1E+03 | | 3.5E+00 | |
| Allyl Alcohol | 107-18-6 | | | | | 5.0E-03 | I | 1.0E-04 | X | | | | | | | | 1.8E+02 | | 1.8E+02 | | 3.7E-02 | |
| Allyl Chloride | 107-05-1 | 2.1E-02 | C | 6.0E-06 | C | | | 1.0E-03 | I | V | | | | 3.2E+00 | 8.1E-01 | 6.5E-01 | | 2.1E+00 | 2.1E+00 | | 2.1E-04 | |
| Aluminum | 7429-90-5 | | | | | 1.0E+00 | P | 5.0E-03 | P | | | | | | | | 3.7E+04 | | 3.7E+04 | | 5.5E+04 | |
| Aluminum Phosphide | 20859-73-8 | | | | | 4.0E-04 | I | | | | | | | | | | 1.5E+01 | | 1.5E+01 | | | |
| Amdro | 67485-29-4 | | | | | 3.0E-04 | I | | | | | | | | | | 1.1E+01 | | 1.1E+01 | | 3.9E+03 | |
| Ametryn | 834-12-8 | | | | | 9.0E-03 | I | | | | | | | | | | 3.3E+02 | | 3.3E+02 | | 3.5E-01 | |
| Aminobiphenyl, 4- | 92-67-1 | 2.1E+01 | C | 6.0E-03 | C | | | | | | | | | 3.2E-03 | | 3.2E-03 | | | | | 1.7E-05 | |
| Aminophenol, m- | 591-27-5 | | | | | 8.0E-02 | P | | | | | | | | | | 2.9E+03 | | 2.9E+03 | | 1.1E+00 | |
| Aminophenol, p- | 123-30-8 | | | | | 2.0E-02 | P | | | | | | | | | | 7.3E+02 | | 7.3E+02 | | 2.8E-01 | |
| Amitraz | 33089-61-1 | | | | | 2.5E-03 | I | | | | | | | | | | 9.1E+01 | | 9.1E+01 | | 4.7E+01 | |
| Ammonium Perchlorate | 7790-98-9 | | | | | 7.0E-04 | I | | | | | | | | | | 2.6E+01 | | 2.6E+01 | | | |
| Ammonium Sulfamate | 7773-06-0 | | | | | 2.0E-01 | I | | | | | | | | | | 7.3E+03 | | 7.3E+03 | | | |
| Aniline | 62-53-3 | 5.7E-03 | I | 1.6E-06 | C | 7.0E-03 | P | 1.0E-03 | I | | | | | 1.2E+01 | | 1.2E+01 | 2.6E+02 | | 2.6E+02 | | 4.0E-03 | |
| Antimony (metallic) | 7440-36-0 | | | | | 4.0E-04 | I | | | | | | | | | | 1.5E+01 | | 1.5E+01 | 6.0E+00 | 6.6E-01 | 2.7E-01 |
| Antimony Pentoxide | 1314-60-9 | | | | | 5.0E-04 | H | | | | | | | | | | 1.8E+01 | | 1.8E+01 | | | |
| Antimony Potassium Tartrate | 11071-15-1 | | | | | 9.0E-04 | H | | | | | | | | | | 3.3E+01 | | 3.3E+01 | | | |
| Antimony Tetroxide | 1332-81-6 | | | | | 4.0E-04 | H | | | | | | | | | | 1.5E+01 | | 1.5E+01 | | | |
| Antimony Trioxide | 1309-64-4 | | | | | | | 2.0E-04 | I | | | | | | | | | | | | | |
| Apollo | 74115-24-5 | | | | | 1.3E-02 | I | | | | | | | | | | 4.8E+02 | | 4.7E+02 | | 2.9E+01 | |
| Aramite | 140-57-8 | 2.5E-02 | I | 7.1E-06 | I | 5.0E-02 | H | | | | | | | 2.7E+00 | | 2.7E+00 | 1.8E+03 | | 1.8E+03 | | 3.0E-02 | |
| Arsenic, Inorganic | 7440-38-2 | 1.5E+00 | I | 4.3E-03 | I | 3.0E-04 | I | 1.5E-05 | C | | | | | 4.5E-02 | | 4.5E-02 | 1.1E+01 | | 1.1E+01 | 1.0E+01 | 1.3E-03 | 2.9E-01 |
| Arsine | 7784-42-1 | | | | | 3.5E-06 | C | 5.0E-05 | I | | | | | | | | 1.3E-01 | | 1.3E-01 | | | |
| Assure | 76578-14-8 | | | | | 9.0E-03 | I | | | | | | | | | | 3.3E+02 | | 3.3E+02 | | 5.2E+00 | |
| Asulam | 3337-71-1 | | | | | 5.0E-02 | I | | | | | | | | | | 1.8E+03 | | 1.8E+03 | | 4.7E-01 | |
| Atrazine | 1912-24-9 | 2.3E-01 | C | | | 3.5E-02 | I | | | | | | | 2.9E-01 | | 2.9E-01 | 1.3E+03 | | 1.3E+03 | 3.0E+00 | 1.9E-04 | 2.0E-03 |
| Auramine | 492-80-8 | 8.8E-01 | C | 2.5E-04 | C | | | | | | | | | 7.6E-02 | | 7.6E-02 | | | | | 7.0E-04 | |
| Avermectin B1 | 65195-55-3 | | | | | 4.0E-04 | I | | | | | | | | | | 1.5E+01 | | 1.5E+01 | | 2.6E+01 | |
| Azobenzene | 103-33-3 | 1.1E-01 | I | 3.1E-05 | I | | | | | V | | | | 6.1E-01 | 1.6E-01 | 1.2E-01 | | | | | 9.6E-04 | |
| Barium | 7440-39-3 | | | | | 2.0E-01 | I | 5.0E-04 | H | | | | | | | | 7.3E+03 | | 7.3E+03 | 2.0E+03 | 3.0E+02 | 8.2E+01 |
| Baygon | 114-26-1 | | | | | 4.0E-03 | I | | | | | | | | | | 1.5E+02 | | 1.5E+02 | | 4.7E-02 | |
| Bayleton | 43121-43-3 | | | | | 3.0E-02 | I | | | | | | | | | | 1.1E+03 | | 1.1E+03 | | 8.7E-01 | |
| Baythroid | 68359-37-5 | | | | | 2.5E-02 | I | | | | | | | | | | 9.1E+02 | | 9.1E+02 | | 2.4E+02 | |
| Benefin | 1861-40-1 | | | | | 3.0E-01 | I | | | | | | | | | | 1.1E+04 | | 1.1E+04 | | 3.6E+02 | |
| Benomyl | 17804-35-2 | | | | | 5.0E-02 | I | | | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.6E+00 | |
| Bentazon | 25057-89-0 | | | | | 3.0E-02 | I | | | | | | | | | | 1.1E+03 | | 1.1E+03 | | 2.4E-01 | |
| Benzaldehyde | 100-52-7 | | | | | 1.0E-01 | I | | | V | | | | | | | 3.7E+03 | | 3.7E+03 | | 8.1E-01 | |
| Benzene | 71-43-2 | 5.5E-02 | I | 7.8E-06 | I | 4.0E-03 | I | 3.0E-02 | I | V | | | | 1.2E+00 | 6.2E-01 | 4.1E-01 | 1.5E+02 | 6.3E+01 | 4.4E+01 | 5.0E+00 | 2.1E-04 | 2.6E-03 |
| Benzenethiol | 108-98-5 | | | | | 1.0E-05 | H | | | V | | | | | | | 3.7E-01 | | 3.7E-01 | | 2.4E-04 | |
| Benzidine | 92-87-5 | 2.3E+02 | I | 6.7E-02 | I | 3.0E-03 | I | | | | M | | | 9.4E-05 | | 9.4E-05 | 1.1E+02 | | 1.1E+02 | | 2.4E-07 | |
| Benzoic Acid | 65-85-0 | | | | | 4.0E+00 | I | | | | | | | | | | 1.5E+05 | | 1.5E+05 | | 3.4E+01 | |
| Benzotrichloride | 98-07-7 | 1.3E+01 | I | | | | | | | V | | | | 5.2E-03 | | 5.2E-03 | | | | | 1.1E-05 | |
| Benzyl Alcohol | 100-51-6 | | | | | 1.0E-01 | P | | | | | | | | | | 3.7E+03 | | 3.7E+03 | | 8.9E-01 | |
| Benzyl Chloride | 100-44-7 | 1.7E-01 | I | 4.9E-05 | C | 2.0E-03 | P | 1.0E-03 | P | V | | | | 4.0E-01 | 9.9E-02 | 7.9E-02 | 7.3E+01 | 2.1E+00 | 2.0E+00 | | 8.7E-05 | |
| Beryllium and compounds | 7440-41-7 | | | 2.4E-03 | I | 2.0E-03 | I | 2.0E-05 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | 4.0E+00 | 5.8E+01 | 3.2E+00 |
| Bidrin | 141-66-2 | | | | | 1.0E-04 | I | | | | | | | | | | 3.7E+00 | | 3.7E+00 | | 8.5E-04 | |
| Bifenox | 42576-02-3 | | | | | 9.0E-03 | P | | | | | | | | | | 3.3E+02 | | 3.3E+02 | | 2.5E+00 | |
| Biphenthrin | 82657-04-3 | | | | | 1.5E-02 | I | | | | | | | | | | 5.5E+02 | | 5.5E+02 | | 2.5E+03 | |



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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Biphenyl, 1,1'- | 92-52-4 | | | | | 5.0E-02 | I | | | V | | | | | 1.8E+03 | | 1.8E+03 | | 1.9E+01 | |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 7.0E-02 | H | 1.0E-05 | H | 4.0E-02 | I | | | V | | 9.6E-01 | 4.9E-01 | 3.2E-01 | 1.5E+03 | | 1.5E+03 | | 1.2E-04 | |
| Bis(2-chloroethoxy)methane | 111-91-1 | | | | | 3.0E-03 | P | | | | | | | | 1.1E+02 | | 1.1E+02 | | 2.5E-02 | |
| Bis(2-chloroethyl)ether | 111-44-4 | 1.1E+00 | I | 3.3E-04 | I | | | | | V | | 6.1E-02 | 1.5E-02 | 1.2E-02 | | | | | 3.1E-06 | |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 1.4E-02 | I | 2.4E-06 | C | 2.0E-02 | I | | | | | 4.8E+00 | | 4.8E+00 | 7.3E+02 | | 7.3E+02 | 6.0E+00 | 1.2E+00 | 1.4E+00 |
| Bis(chloromethyl)ether | 542-88-1 | 2.2E+02 | I | 6.2E-02 | I | | | | | V | | 3.1E-04 | 7.9E-05 | 6.3E-05 | | | | | 1.5E-08 | |
| Bisphenol A | 80-05-7 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.4E+02 | |
| Boron And Borates Only | 7440-42-8 | | | | | 2.0E-01 | I | 2.0E-02 | H | | | | | | 7.3E+03 | | 7.3E+03 | | 2.3E+01 | |
| Boron Trifluoride | 7637-07-2 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | | 1.5E+03 | | 1.5E+03 | | | |
| Bromate | 15541-45-4 | 7.0E-01 | I | | | 4.0E-03 | I | | | | | 9.6E-02 | | 9.6E-02 | 1.5E+02 | | 1.5E+02 | 1.0E+01 | 7.4E-04 | 7.7E-02 |
| Bromo-2-chloroethane, 1- | 107-04-0 | 2.0E+00 | X | 6.0E-04 | X | | | | | V | | 3.4E-02 | 8.1E-03 | 6.5E-03 | | | | | 1.9E-06 | |
| Bromobenzene | 108-86-1 | | | | | 8.0E-03 | I | 6.0E-02 | I | V | | | | | 2.9E+02 | 1.3E+02 | 8.8E+01 | | 5.9E-02 | |
| Bromodichloromethane | 75-27-4 | 6.2E-02 | I | 3.7E-05 | C | 2.0E-02 | I | | | V | | 1.1E+00 | 1.3E-01 | 1.2E-01 | 7.3E+02 | | 7.3E+02 | | 3.2E-05 | |
| Bromoform | 75-25-2 | 7.9E-03 | I | 1.1E-06 | I | 2.0E-02 | I | | | | | 8.5E+00 | | 8.5E+00 | 7.3E+02 | | 7.3E+02 | | 2.3E-03 | |
| Bromomethane | 74-83-9 | | | | | 1.4E-03 | I | 5.0E-03 | I | V | | | | | 5.1E+01 | 1.0E+01 | 8.7E+00 | | 2.2E-03 | |
| Bromophos | 2104-96-3 | | | | | 5.0E-03 | H | | | | | | | | 1.8E+02 | | 1.8E+02 | | 7.7E-01 | |
| Bromoxynil | 1689-84-5 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 6.3E-01 | |
| Bromoxynil Octanoate | 1689-99-2 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 6.4E+00 | |
| Butadiene, 1,3- | 106-99-0 | 3.4E+00 | C | 3.0E-05 | I | | | 2.0E-03 | I | V | | 2.0E-02 | 1.6E-01 | 1.8E-02 | | 4.2E+00 | 4.2E+00 | | 9.7E-06 | |
| Butanol, N- | 71-36-3 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 7.6E-01 | |
| Butyl Benzyl Phthlate | 85-68-7 | 1.9E-03 | P | | | 2.0E-01 | I | | | | | 3.5E+01 | | 3.5E+01 | 7.3E+03 | | 7.3E+03 | | 5.1E-01 | |
| Butyl alcohol, sec- | 78-92-2 | | | | | 2.0E+00 | P | 3.0E+01 | P | | | | | | 7.3E+04 | | 7.3E+04 | | 1.5E+01 | |
| Butylate | 2008-41-5 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.8E+00 | |
| Butylated hydroxyanisole | 25013-16-5 | 2.0E-04 | C | 5.7E-08 | C | | | | | | | 3.4E+02 | | 3.4E+02 | | | | | 6.3E-01 | |
| Butylphthalyl Butylglycolate | 85-70-1 | | | | | 1.0E+00 | I | | | | | | | | 3.7E+04 | | 3.7E+04 | | 8.3E+02 | |
| Cacodylic Acid | 75-60-5 | | | | | 2.0E-02 | A | | | | | | | | 7.3E+02 | | 7.3E+02 | | | |
| Cadmium (Water) | 7440-43-9 | | | 1.8E-03 | I | 5.0E-04 | I | 1.0E-05 | A | | | | | | 1.8E+01 | | 1.8E+01 | 5.0E+00 | 1.4E+00 | 3.8E-01 |
| Caprolactam | 105-60-2 | | | | | 5.0E-01 | I | | | | | | | | 1.8E+04 | | 1.8E+04 | | 4.5E+00 | |
| Captafol | 2425-06-1 | 1.5E-01 | C | 4.3E-05 | C | 2.0E-03 | I | | | | | 4.5E-01 | | 4.5E-01 | 7.3E+01 | | 7.3E+01 | | 7.9E-04 | |
| Captan | 133-06-2 | 2.3E-03 | C | 6.6E-07 | C | 1.3E-01 | I | | | | | 2.9E+01 | | 2.9E+01 | 4.8E+03 | | 4.7E+03 | | 2.1E-02 | |
| Carbaryl | 63-25-2 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 3.3E+00 | |
| Carbofuran | 1563-66-2 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | 4.0E+01 | 7.1E-02 | 1.6E-02 |
| Carbon Disulfide | 75-15-0 | | | | | 1.0E-01 | I | 7.0E-01 | I | V | | | | | 3.7E+03 | 1.5E+03 | 1.0E+03 | | 3.1E-01 | |
| Carbon Tetrachloride | 56-23-5 | 1.3E-01 | I | 1.5E-05 | I | 7.0E-04 | I | 1.9E-01 | A | V | | 5.2E-01 | 3.2E-01 | 2.0E-01 | 2.6E+01 | 3.9E+02 | 2.4E+01 | 5.0E+00 | 7.8E-05 | 1.9E-03 |
| Carbosulfan | 55285-14-8 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 8.8E+00 | |
| Carboxin | 5234-68-4 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 2.0E+00 | |
| Ceric oxide | 1306-38-3 | | | | | | | 9.0E-04 | I | | | | | | | | | | | |
| Chloral Hydrate | 302-17-0 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 7.4E-01 | |
| Chloramben | 133-90-4 | | | | | 1.5E-02 | I | | | | | | | | 5.5E+02 | | 5.5E+02 | | 1.3E-01 | |
| Chloranil | 118-75-2 | 4.0E-01 | H | | | | | | | | | 1.7E-01 | | 1.7E-01 | | | | | 1.4E-04 | |
| Chlordane | 12789-03-6 | 3.5E-01 | I | 1.0E-04 | I | 5.0E-04 | I | 7.0E-04 | I | | | 1.9E-01 | | 1.9E-01 | 1.8E+01 | | 1.8E+01 | 2.0E+00 | 1.3E-02 | 1.4E-01 |
| Chlordecone (Kepone) | 143-50-0 | 1.0E+01 | I | 4.6E-03 | C | 3.0E-04 | I | | | | | 6.7E-03 | | 6.7E-03 | 1.1E+01 | | 1.1E+01 | | 2.4E-04 | |
| Chlorfenvinphos | 470-90-6 | | | | | 7.0E-04 | A | | | | | | | | 2.6E+01 | | 2.6E+01 | | 7.0E-02 | |
| Chlorimuron, Ethyl- | 90982-32-4 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 2.5E-01 | |
| Chlorine | 7782-50-5 | | | | | 1.0E-01 | I | 1.5E-04 | A | | | | | | 3.7E+03 | | 3.7E+03 | | 1.6E+00 | |
| Chlorine Dioxide | 10049-04-4 | | | | | 3.0E-02 | I | 2.0E-04 | I | | | | | | 1.1E+03 | | 1.1E+03 | | | |
| Chlorite (Sodium Salt) | 7758-19-2 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | | |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | | | | | | | 5.0E+01 | I | V | | | | | | 1.0E+05 | 1.0E+05 | | 5.2E+01 | |
| Chloro-1,3-butadiene, 2- | 126-99-8 | | | | | 2.0E-02 | H | 7.0E-03 | H | V | | | | | 7.3E+02 | 1.5E+01 | 1.4E+01 | | 7.5E-03 | |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 4.6E-01 | H | | | | | | | | | 1.5E-01 | | 1.5E-01 | | | | | 8.3E-05 | |
| Chloroacetic Acid | 79-11-8 | | | | | 2.0E-03 | H | | | | | | | | 7.3E+01 | | 7.3E+01 | | 1.5E-02 | |
| Chloroacetophenone, 2- | 532-27-4 | | | | | | | 3.0E-05 | I | | | | | | | | | | | |
| Chloroaniline, p- | 106-47-8 | 2.0E-01 | P | | | 4.0E-03 | I | | | | | 3.4E-01 | | 3.4E-01 | 1.5E+02 | | 1.5E+02 | | 1.4E-04 | |
| Chlorobenzene | 108-90-7 | | | | | 2.0E-02 | I | 5.0E-02 | P | V | | | | | 7.3E+02 | 1.0E+02 | 9.1E+01 | 1.0E+02 | 6.2E-02 | 6.8E-02 |
| Chlorobenzilate | 510-15-6 | 1.1E-01 | C | 3.1E-05 | C | 2.0E-02 | I | | | | | 6.1E-01 | | 6.1E-01 | 7.3E+02 | | 7.3E+02 | | 2.0E-03 | |
| Chlorobenzoic Acid, p- | 74-11-3 | | | | | 3.0E-02 | X | | | | | | | | 1.1E+03 | | 1.1E+03 | | 2.8E-01 | |
| Chlorobenzotrifluoride, 4- | 98-56-6 | | | | | 3.0E-03 | P | 3.0E-01 | P | V | | | | | 1.1E+02 | 6.3E+02 | 9.3E+01 | | 3.3E-01 | |
| Chlorobutane, 1- | 109-69-3 | | | | | 4.0E-02 | P | | | V | | | | | 1.5E+03 | | 1.5E+03 | | 5.9E-01 | |
| Chlorodifluoromethane | 75-45-6 | | | | | | | 5.0E+01 | I | V | | | | | | 1.0E+05 | 1.0E+05 | | 4.3E+01 | |
| Chloroform | 67-66-3 | 3.1E-02 | C | 2.3E-05 | I | 1.0E-02 | I | 9.8E-02 | A | V | | 2.2E+00 | 2.1E-01 | 1.9E-01 | 3.7E+02 | 2.0E+02 | 1.3E+02 | | 5.3E-05 | |
| Chloromethane | 74-87-3 | | | | | | | 9.0E-02 | I | V | | | | | | 1.9E+02 | 1.9E+02 | | 4.9E-02 | |
| Chloromethyl Methyl Ether | 107-30-2 | 2.4E+00 | C | 6.9E-04 | C | | | | | V | | 2.8E-02 | 7.1E-03 | 5.6E-03 | | | | | 1.2E-06 | |
| Chloronaphthalene, Beta- | 91-58-7 | | | | | 8.0E-02 | I | | | V | | | | | 2.9E+03 | | 2.9E+03 | | 1.5E+01 | |
| Chloronitrobenzene, o- | 88-73-3 | 3.0E-01 | P | | | 3.0E-03 | P | 1.0E-05 | X | | | 2.2E-01 | | 2.2E-01 | 1.1E+02 | | 1.1E+02 | | 2.1E-04 | |
| Chloronitrobenzene, p- | 100-00-5 | 6.3E-03 | P | | | 1.0E-03 | P | 6.0E-04 | P | | | 1.1E+01 | | 1.1E+01 | 3.7E+01 | | 3.7E+01 | | 9.9E-03 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Chlorophenol, 2- | 95-57-8 | | | | | 5.0E-03 | I | | | V | | | | | 1.8E+02 | | 1.8E+02 | | 1.5E-01 | |
| Chloropicrin | 76-06-2 | | | | | | | 4.0E-04 | C | | | | | | | | | | | |
| Chlorothalonil | 1897-45-6 | 3.1E-03 | C | 8.9E-07 | C | 1.5E-02 | I | | | | | 2.2E+01 | | 2.2E+01 | 5.5E+02 | | 5.5E+02 | | 5.0E-02 | |
| Chlorotoluene, o- | 95-49-8 | | | | | 2.0E-02 | I | | | V | | | | | 7.3E+02 | | 7.3E+02 | | 7.2E-01 | |
| Chlorotoluene, p- | 106-43-4 | | | | | 7.0E-02 | P | | | V | | | | | 2.6E+03 | | 2.6E+03 | | 2.5E+00 | |
| Chlorozotocin | 54749-90-5 | 2.4E+02 | C | 6.9E-02 | C | | | | | | | 2.8E-04 | | 2.8E-04 | | | | | 6.2E-08 | |
| Chlorpropham | 101-21-3 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | | 6.6E+00 | |
| Chlorpyrifos | 2921-88-2 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 1.6E+00 | |
| Chlorpyrifos Methyl | 5598-13-0 | | | | | 1.0E-02 | H | | | | | | | | 3.7E+02 | | 3.7E+02 | | 1.7E+00 | |
| Chlorsulfuron | 64902-72-3 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.5E+00 | |
| Chlorthiophos | 60238-56-4 | | | | | 8.0E-04 | H | | | | | | | | 2.9E+01 | | 2.9E+01 | | 7.5E-01 | |
| Chromium(III), Insoluble Salts | 16065-83-1 | | | | | 1.5E+00 | I | | | | | | | | 5.5E+04 | | 5.5E+04 | | 9.9E+07 | |
| Chromium(VI) | 18540-29-9 | 5.0E-01 | J | 8.4E-02 | I | 3.0E-03 | I | 1.0E-04 | I | | M | 4.3E-02 | | 4.3E-02 | 1.1E+02 | | 1.1E+02 | | 8.3E-04 | |
| Chromium, Total | 7440-47-3 | | | | | | | | | | | | | | | | | 1.0E+02 | | 1.8E+05 |
| Cobalt | 7440-48-4 | | | 9.0E-03 | P | 3.0E-04 | P | 6.0E-06 | P | | | | | | 1.1E+01 | | 1.1E+01 | | 5.0E-01 | |
| Copper | 7440-50-8 | | | | | 4.0E-02 | H | | | | | | | | 1.5E+03 | | 1.5E+03 | 1.3E+03 | 5.1E+01 | 4.6E+01 |
| Cresol, m- | 108-39-4 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | | | | 1.8E+03 | | 1.8E+03 | | 1.5E+00 | |
| Cresol, o- | 95-48-7 | | | | | 5.0E-02 | I | 6.0E-01 | C | | | | | | 1.8E+03 | | 1.8E+03 | | 1.5E+00 | |
| Cresol, p- | 106-44-5 | | | | | 5.0E-03 | H | 6.0E-01 | C | | | | | | 1.8E+02 | | 1.8E+02 | | 1.5E-01 | |
| Cresol, p-chloro-m- | 59-50-7 | | | | | 1.0E-01 | X | | | | | | | | 3.7E+03 | | 3.7E+03 | | 4.3E+00 | |
| Cresols | 1319-77-3 | | | | | 1.0E-01 | A | 6.0E-01 | C | V | | | | | 3.7E+03 | 1.3E+03 | 9.3E+02 | | 7.6E-01 | |
| Crotonaldehyde, trans- | 123-73-9 | 1.9E+00 | H | | | | | | | V | | 3.5E-02 | | 3.5E-02 | | | | | 7.2E-06 | |
| Cumene | 98-82-8 | | | | | 1.0E-01 | I | 4.0E-01 | I | V | | | | | 3.7E+03 | 8.3E+02 | 6.8E+02 | | 1.1E+00 | |
| Cupferron | 135-20-6 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 3.1E-01 | | 3.1E-01 | | | | | 5.3E-04 | |
| Cyanazine | 21725-46-2 | 8.4E-01 | H | | | 2.0E-03 | H | | | | | 8.0E-02 | | 8.0E-02 | 7.3E+01 | | 7.3E+01 | | 3.8E-05 | |
| **Cyanides** | | | | | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | | |
| ~Copper Cyanide | 544-92-3 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | | |
| ~Cyanide (CN-) | 57-12-5 | | | | | 2.0E-02 | I | | | V | | | | | 7.3E+02 | | 7.3E+02 | 2.0E+02 | 7.4E+00 | 2.0E+00 |
| ~Cyanogen | 460-19-5 | | | | | 4.0E-02 | I | | | V | | | | | 1.5E+03 | | 1.5E+03 | | 3.0E-01 | |
| ~Cyanogen Bromide | 506-68-3 | | | | | 9.0E-02 | I | | | V | | | | | 3.3E+03 | | 3.3E+03 | | 6.9E-01 | |
| ~Cyanogen Chloride | 506-77-4 | | | | | 5.0E-02 | I | | | V | | | | | 1.8E+03 | | 1.8E+03 | | 3.8E-01 | |
| ~Hydrogen Cyanide | 74-90-8 | | | | | 2.0E-02 | I | 3.0E-03 | I | V | | | | | 7.3E+02 | 6.3E+00 | 6.2E+00 | | 1.3E-03 | |
| ~Potassium Cyanide | 151-50-8 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| ~Potassium Silver Cyanide | 506-61-6 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | | | |
| ~Silver Cyanide | 506-64-9 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | | |
| ~Sodium Cyanide | 143-33-9 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | | |
| ~Thiocyanate | 463-56-9 | | | | | 2.0E-04 | P | | | V | | | | | 7.3E+00 | | 7.3E+00 | | 1.5E-03 | |
| ~Zinc Cyanide | 557-21-1 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| Cyclohexane | 110-82-7 | | | | | | | 6.0E+00 | I | V | | | | | | 1.3E+04 | 1.3E+04 | | 1.3E+01 | |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 2.3E-02 | H | | | | | | | | | 2.9E+00 | | 2.9E+00 | | | | | 1.7E-02 | |
| Cyclohexanone | 108-94-1 | | | | | 5.0E+00 | I | | | | | | | | 1.8E+05 | | 1.8E+05 | | 4.3E+01 | |
| Cyclohexylamine | 108-91-8 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | | 1.9E+00 | |
| Cyhalothrin/karate | 68085-85-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 1.3E+02 | |
| Cypermethrin | 52315-07-8 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 5.8E+01 | |
| Cyromazine | 66215-27-8 | | | | | 7.5E-03 | I | | | | | | | | 2.7E+02 | | 2.7E+02 | | 7.1E-02 | |
| DDD | 72-54-8 | 2.4E-01 | I | 6.9E-05 | C | | | | | | | 2.8E-01 | | 2.8E-01 | | | | | 6.6E-02 | |
| DDE, p,p'- | 72-55-9 | 3.4E-01 | I | 9.7E-05 | C | | | | | | | 2.0E-01 | | 2.0E-01 | | | | | 4.7E-02 | |
| DDT | 50-29-3 | 3.4E-01 | I | 9.7E-05 | I | 5.0E-04 | I | | | | | 2.0E-01 | | 2.0E-01 | 1.8E+01 | | 1.8E+01 | | 6.7E-02 | |
| Dacthal | 1861-32-1 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 4.5E-01 | |
| Dalapon | 75-99-0 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | 2.0E+02 | 2.3E-01 | 4.1E-02 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 7.0E-04 | I | | | 7.0E-03 | I | | | | | 9.6E+01 | | 9.6E+01 | 2.6E+02 | | 2.6E+02 | | 5.3E+01 | |
| Demeton | 8065-48-3 | | | | | 4.0E-05 | I | | | | | | | | 1.5E+00 | | 1.5E+00 | | | |
| Di(2-ethylhexyl)adipate | 103-23-1 | 1.2E-03 | I | | | 6.0E-01 | I | | | | | 5.6E+01 | | 5.6E+01 | 2.2E+04 | | 2.2E+04 | 4.0E+02 | 4.1E+00 | 2.9E+01 |
| Diallate | 2303-16-4 | 6.1E-02 | H | | | | | | | | | 1.1E+00 | | 1.1E+00 | | | | | 1.6E-03 | |
| Diazinon | 333-41-5 | | | | | 7.0E-04 | A | | | | | | | | 2.6E+01 | | 2.6E+01 | | 1.6E-01 | |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 8.0E-01 | P | 6.0E-03 | P | 2.0E-04 | P | 2.0E-04 | I | V | M | 2.7E-02 | 3.2E-04 | 3.2E-04 | 7.3E+00 | 4.2E-01 | 3.9E-01 | 2.0E-01 | 1.4E-07 | 8.6E-05 |
| Dibromobenzene, 1,4- | 106-37-6 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 3.5E-01 | |
| Dibromochloromethane | 124-48-1 | 8.4E-02 | I | 2.7E-05 | C | 2.0E-02 | I | | | V | | 8.0E-01 | 1.8E-01 | 1.5E-01 | 7.3E+02 | | 7.3E+02 | | 3.9E-05 | |
| Dibromoethane, 1,2- | 106-93-4 | 2.0E+00 | I | 6.0E-04 | I | 9.0E-03 | I | 9.0E-03 | I | V | | 3.4E-02 | 8.1E-03 | 6.5E-03 | 3.3E+02 | 1.9E+01 | 1.8E+01 | 5.0E-02 | 1.8E-06 | 1.4E-05 |
| Dibromomethane (Methylene Bromide) | 74-95-3 | | | | | 1.0E-02 | H | 4.0E-03 | X | V | | | | | 3.7E+02 | 8.3E+00 | 8.2E+00 | | 2.0E-03 | |
| Dibutyl Phthalate | 84-74-2 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 9.2E+00 | |
| Dibutyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| Dicamba | 1918-00-9 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 2.8E-01 | |
| Dichloro-2-butene, 1,4- | 764-41-0 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | | 5.4E-07 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | vol | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | | 5.4E-07 | |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | | | 4.2E-03 | P | | | | | V | | | 1.2E-03 | 1.2E-03 | | | | | 5.4E-07 | |
| Dichloroacetic Acid | 79-43-6 | 5.0E-02 | I | | | 4.0E-03 | I | | | | | 1.3E+00 | | 1.3E+00 | 1.5E+02 | | 1.5E+02 | | 2.8E-04 | |
| Dichlorobenzene, 1,2- | 95-50-1 | | | | | 9.0E-02 | I | 2.0E-01 | H | V | | | | | 3.3E+03 | 4.2E+02 | 3.7E+02 | 6.0E+02 | 3.6E-01 | 5.8E-01 |
| Dichlorobenzene, 1,4- | 106-46-7 | 5.4E-03 | C | 1.1E-05 | C | 7.0E-02 | A | 8.0E-01 | I | V | | 1.3E+01 | 4.4E-01 | 4.3E-01 | 2.6E+03 | 1.7E+03 | 1.0E+03 | 7.5E+01 | 4.1E-04 | 7.2E-02 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 4.5E-01 | I | 3.4E-04 | C | | | | | | | 1.5E-01 | | 1.5E-01 | | | | | 9.8E-04 | |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | | | | | 9.0E-03 | X | | | | | | | | 3.3E+02 | | 3.3E+02 | | 2.0E+00 | |
| Dichlorodifluoromethane | 75-71-8 | | | | | 2.0E-01 | I | 2.0E-01 | H | V | | | | | 7.3E+03 | 4.2E+02 | 3.9E+02 | | 6.1E-01 | |
| Dichloroethane, 1,1- | 75-34-3 | 5.7E-03 | C | 1.6E-06 | C | 2.0E-01 | P | | | V | | 1.2E+01 | 3.0E+00 | 2.4E+00 | 7.3E+03 | | 7.3E+03 | | 6.9E-04 | |
| Dichloroethane, 1,2- | 107-06-2 | 9.1E-02 | I | 2.6E-05 | I | 2.0E-02 | P | 2.4E+00 | A | V | | 7.4E-01 | 1.9E-01 | 1.5E-01 | 7.3E+02 | 5.1E+03 | 6.4E+02 | 5.0E+00 | 4.2E-05 | 1.4E-03 |
| Dichloroethylene, 1,1- | 75-35-4 | | | | | 5.0E-02 | I | 2.0E-01 | I | V | | | | | 1.8E+03 | 4.2E+02 | 3.4E+02 | 7.0E+00 | 1.2E-01 | 2.5E-03 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | | | | | 9.0E-03 | H | | | V | | | | | 3.3E+02 | | 3.3E+02 | | 9.7E-02 | |
| Dichloroethylene, 1,2-cis- | 156-59-2 | | | | | 1.0E-02 | P | | | V | | | | | 3.7E+02 | | 3.7E+02 | 7.0E+01 | 1.1E-01 | 2.1E-02 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | | | | | 2.0E-02 | I | 6.0E-02 | P | V | | | | | 7.3E+02 | 1.3E+02 | 1.1E+02 | 1.0E+02 | 3.1E-02 | 2.9E-02 |
| Dichlorophenol, 2,4- | 120-83-2 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 1.3E-01 | |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | 7.0E+01 | 9.5E-02 | 1.8E-02 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | | 1.2E-01 | |
| Dichloropropane, 1,2- | 78-87-5 | 3.6E-02 | C | 1.0E-05 | C | 9.0E-02 | A | 4.0E-03 | I | V | | 1.9E+00 | 4.9E-01 | 3.9E-01 | 3.3E+03 | 8.3E+00 | 8.3E+00 | 5.0E+00 | 1.3E-04 | 1.7E-03 |
| Dichloropropane, 1,3- | 142-28-9 | | | | | 2.0E-02 | P | | | V | | | | | 7.3E+02 | | 7.3E+02 | | 2.5E-01 | |
| Dichloropropanol, 2,3- | 616-23-9 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 2.3E-02 | |
| Dichloropropene, 1,3- | 542-75-6 | 1.0E-01 | I | 4.0E-06 | I | 3.0E-02 | I | 2.0E-02 | I | V | | 6.7E-01 | 1.2E+00 | 4.3E-01 | 1.1E+03 | 4.2E+01 | 4.0E+01 | | 1.6E-04 | |
| Dichlorvos | 62-73-7 | 2.9E-01 | I | 8.3E-05 | C | 5.0E-04 | I | 5.0E-04 | I | | | 2.3E-01 | | 2.3E-01 | 1.8E+01 | | 1.8E+01 | | 7.1E-05 | |
| Dicyclopentadiene | 77-73-6 | | | | | 8.0E-03 | P | 7.0E-03 | P | V | | | | | 2.9E+02 | 1.5E+01 | 1.4E+01 | | 4.8E-02 | |
| Dieldrin | 60-57-1 | 1.6E+01 | I | 4.6E-03 | I | 5.0E-05 | I | | | | | 4.2E-03 | | 4.2E-03 | 1.8E+00 | | 1.8E+00 | | 1.7E-04 | |
| Diethanolamine | 111-42-2 | | | | | | | 3.0E-03 | C | | | | | | | | | | | |
| Diethyl Phthalate | 84-66-2 | | | | | 8.0E-01 | I | | | | | | | | 2.9E+04 | | 2.9E+04 | | 1.2E+01 | |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | | | | | 3.0E-02 | P | 1.0E-04 | P | | | | | | 1.1E+03 | | 1.1E+03 | | 2.4E-01 | |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | | | | | 6.0E-02 | P | 3.0E-04 | P | | | | | | 2.2E+03 | | 2.2E+03 | | 4.4E-01 | |
| Diethylformamide | 617-84-5 | | | | | 1.0E-03 | P | | | | | | | | 3.7E+01 | | 3.7E+01 | | 7.5E-03 | |
| Diethylstilbestrol | 56-53-1 | 3.5E+02 | C | 1.0E-01 | C | | | | | | | 1.9E-04 | | 1.9E-04 | | | | | 1.1E-04 | |
| Difenzoquat | 43222-48-6 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | | | |
| Diflubenzuron | 35367-38-5 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 8.2E-01 | |
| Difluoroethane, 1,1- | 75-37-6 | | | | | | | 4.0E+01 | I | V | | | | | | 8.3E+04 | 8.3E+04 | | 2.8E+01 | |
| Dihydrosafrole | 94-58-6 | 4.4E-02 | C | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | | 1.9E-03 | |
| Diisopropyl Ether | 108-20-3 | | | | | | | 4.0E-01 | P | V | | | | | | 8.3E+02 | 8.3E+02 | | 2.1E-01 | |
| Diisopropyl Methylphosphonate | 1445-75-6 | | | | | 8.0E-02 | I | | | V | | | | | 2.9E+03 | | 2.9E+03 | | 8.3E-01 | |
| Dimethipin | 55290-64-7 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 1.6E-01 | |
| Dimethoate | 60-51-5 | | | | | 2.0E-04 | I | | | | | | | | 7.3E+00 | | 7.3E+00 | | 1.7E-03 | |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 1.4E-02 | H | | | | | | | | | 4.8E+00 | | 4.8E+00 | | | | | 5.9E-03 | |
| Dimethyl methylphosphonate | 756-79-6 | 1.7E-03 | P | | | 6.0E-02 | P | | | | | 4.0E+01 | | 4.0E+01 | 2.2E+03 | | 2.2E+03 | | 8.3E-03 | |
| Dimethylamino azobenzene [p-] | 60-11-7 | 4.6E+00 | C | 1.3E-03 | C | | | | | | | 1.5E-02 | | 1.5E-02 | | | | | 6.2E-05 | |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 5.8E-01 | H | | | | | | | | | 1.2E-01 | | 1.2E-01 | | | | | 6.6E-05 | |
| Dimethylaniline, 2,4- | 95-68-1 | 7.5E-01 | H | | | | | | | | | 9.0E-02 | | 9.0E-02 | | | | | 5.1E-05 | |
| Dimethylaniline, N,N- | 121-69-7 | | | | | 2.0E-03 | I | | | V | | | | | 7.3E+01 | | 7.3E+01 | | 2.6E-02 | |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 1.1E+01 | P | | | | | | | | | 6.1E-03 | | 6.1E-03 | | | | | 4.0E-05 | |
| Dimethylformamide | 68-12-2 | | | | | 1.0E-01 | P | 3.0E-02 | I | | | | | | 3.7E+03 | | 3.7E+03 | | 7.4E-01 | |
| Dimethylhydrazine, 1,1- | 57-14-7 | | | | | 1.0E-04 | X | 2.0E-06 | X | | | | | | 3.7E+00 | | 3.7E+00 | | 8.2E-04 | |
| Dimethylhydrazine, 1,2- | 540-73-8 | 5.5E+02 | C | 1.6E-01 | C | | | | | | | 1.2E-04 | | 1.2E-04 | | | | | 2.8E-08 | |
| Dimethylphenol, 2,4- | 105-67-9 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 8.6E-01 | |
| Dimethylphenol, 2,6- | 576-26-1 | | | | | 6.0E-04 | I | | | | | | | | 2.2E+01 | | 2.2E+01 | | 2.6E-02 | |
| Dimethylphenol, 3,4- | 95-65-8 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | | 4.3E-02 | |
| Dimethylterephthalate | 120-61-6 | | | | | 1.0E-01 | I | | | V | | | | | 3.7E+03 | | 3.7E+03 | | 9.6E-01 | |
| Dimethylvinylchloride | 513-37-1 | 4.5E-02 | C | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | | 9.2E-04 | |
| Dinitro-o-cresol, 4,6- | 534-52-1 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | | 6.2E-03 | |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 2.4E+00 | |
| Dinitrobenzene, 1,2- | 528-29-0 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | | 3.4E-03 | |
| Dinitrobenzene, 1,3- | 99-65-0 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | | 3.3E-03 | |
| Dinitrobenzene, 1,4- | 100-25-4 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | | 3.3E-03 | |
| Dinitrophenol, 2,4- | 51-28-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 8.2E-02 | |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 6.8E-01 | I | | | | | | | | | 9.9E-02 | | 9.9E-02 | | | | | 1.4E-04 | |
| Dinitrotoluene, 2,4- | 121-14-2 | 3.1E-01 | C | 8.9E-05 | C | 2.0E-03 | I | | | | | 2.2E-01 | | 2.2E-01 | 7.3E+01 | | 7.3E+01 | | 2.9E-04 | |
| Dinitrotoluene, 2,6- | 606-20-2 | | | | | 1.0E-03 | P | | | | | | | | 3.7E+01 | | 3.7E+01 | | 5.0E-02 | |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | | | | | 2.0E-03 | S | | | | | | | | 7.3E+01 | | 7.3E+01 | | 5.6E-02 | |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | | | | | 2.0E-03 | S | | | | | | | | 7.3E+01 | | 7.3E+01 | | 5.6E-02 | |
| Dinoseb | 88-85-7 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | 7.0E+00 | 3.2E-01 | 6.2E-02 |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | vol | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Dioxane, 1,4- | 123-91-1 | 1.1E-02 | I | 7.7E-06 | C | 1.0E-01 | A | 3.6E+00 | A | | | 6.1E+00 | | 6.1E+00 | 3.7E+03 | | 3.7E+03 | | 1.3E-03 | |
| **Dioxins** | | | | | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 6.2E+03 | I | 1.3E+00 | I | | | | | | | 1.1E-05 | | 1.1E-05 | | | | | 9.0E-06 | |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 1.3E+05 | C | 3.8E+01 | C | 1.0E-09 | A | 4.0E-08 | C | | | 5.2E-07 | | 5.2E-07 | 3.7E-05 | | 3.7E-05 | 3.0E-05 | 2.6E-07 | 1.5E-05 |
| Diphenamid | 957-51-7 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 1.1E+01 | |
| Diphenyl Sulfone | 127-63-9 | | | | | 8.0E-04 | X | | | | | | | | 2.9E+01 | | 2.9E+01 | | 7.1E-02 | |
| Diphenylamine | 122-39-4 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 1.7E+00 | |
| Diphenylhydrazine, 1,2- | 122-66-7 | 8.0E-01 | I | 2.2E-04 | I | | | | | | | 8.4E-02 | | 8.4E-02 | | | | | 2.7E-04 | |
| Diquat | 85-00-7 | | | | | 2.2E-03 | I | | | | | | | | 8.0E+01 | | 8.0E+01 | 2.0E+01 | 1.5E+00 | 3.8E-01 |
| Direct Black 38 | 1937-37-7 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 9.1E-03 | | 9.1E-03 | | | | | 4.4E+00 | |
| Direct Blue 6 | 2602-46-2 | 7.4E+00 | C | 2.1E-03 | C | | | | | | | 9.1E-03 | | 9.1E-03 | | | | | 1.4E+01 | |
| Direct Brown 95 | 16071-86-6 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1.0E-02 | | 1.0E-02 | | | | | | |
| Disulfoton | 298-04-4 | | | | | 4.0E-05 | I | | | | | | | | 1.5E+00 | | 1.5E+00 | | 2.7E-03 | |
| Dithiane, 1,4- | 505-29-3 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 1.8E-01 | |
| Diuron | 330-54-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 3.1E-02 | |
| Dodine | 2439-10-3 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | | 7.5E-01 | |
| EPTC | 759-94-4 | | | | | 2.5E-02 | I | | | V | | | | | 9.1E+02 | | 9.1E+02 | | 4.8E-01 | |
| Endosulfan | 115-29-7 | | | | | 6.0E-03 | I | | | | | | | | 2.2E+02 | | 2.2E+02 | | 3.0E+00 | |
| Endothall | 145-73-3 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | 1.0E+02 | 1.7E-01 | 2.4E-02 |
| Endrin | 72-20-8 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | 2.0E+00 | 4.4E-01 | 8.1E-02 |
| Epichlorohydrin | 106-89-8 | 9.9E-03 | I | 1.2E-06 | I | 6.0E-03 | P | 1.0E-03 | I | V | | 6.8E+00 | 4.1E+00 | 2.5E+00 | 2.2E+02 | 2.1E+00 | 2.1E+00 | | 4.5E-04 | |
| Epoxybutane, 1,2- | 106-88-7 | | | | | | | 2.0E-02 | I | V | | | | | | 4.2E+01 | 4.2E+01 | | 9.2E-03 | |
| Ethephon | 16672-87-0 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 3.8E-02 | |
| Ethion | 563-12-2 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | | 3.6E-02 | |
| Ethoxyethanol Acetate, 2- | 111-15-9 | | | | | 3.0E-01 | H | 3.0E-01 | C | | | | | | 1.1E+04 | | 1.1E+04 | | 2.3E+00 | |
| Ethoxyethanol, 2- | 110-80-5 | | | | | 4.0E-01 | H | 2.0E-01 | I | | | | | | 1.5E+04 | | 1.5E+04 | | 3.0E+00 | |
| Ethyl Acetate | 141-78-6 | | | | | 9.0E-01 | I | | | V | | | | | 3.3E+04 | | 3.3E+04 | | 7.0E+00 | |
| Ethyl Acrylate | 140-88-5 | 4.8E-02 | H | | | | | | | V | | 1.4E+00 | | 1.4E+00 | | | | | 3.1E-04 | |
| Ethyl Chloride | 75-00-3 | | | | | | | 1.0E+01 | I | V | | | | | | 2.1E+04 | 2.1E+04 | | 5.9E+00 | |
| Ethyl Ether | 60-29-7 | | | | | 2.0E-01 | I | | | V | | | | | 7.3E+03 | | 7.3E+03 | | 1.6E+00 | |
| Ethyl Methacrylate | 97-63-2 | | | | | 9.0E-02 | H | | | V | | | | | 3.3E+03 | | 3.3E+03 | | 7.7E-01 | |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | | | | | 1.0E-05 | I | | | | | | | | 3.7E-01 | | 3.7E-01 | | 1.1E-02 | |
| Ethylbenzene | 100-41-4 | 1.1E-02 | C | 2.5E-06 | C | 1.0E-01 | I | 1.0E+00 | I | V | | 6.1E+00 | 2.0E+00 | 1.5E+00 | 3.7E+03 | 2.1E+03 | 1.3E+03 | 7.0E+02 | 1.7E-03 | 7.9E-01 |
| Ethylene Cyanohydrin | 109-78-4 | | | | | 3.0E-02 | P | | | | | | | | 1.1E+03 | | 1.1E+03 | | 2.2E-01 | |
| Ethylene Diamine | 107-15-3 | | | | | 9.0E-02 | P | | | | | | | | 3.3E+03 | | 3.3E+03 | | 7.6E-01 | |
| Ethylene Glycol | 107-21-1 | | | | | 2.0E+00 | I | 4.0E-01 | C | | | | | | 7.3E+04 | | 7.3E+04 | | 1.5E+01 | |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | | | | | 5.0E-01 | I | 1.3E+01 | I | | | | | | 1.8E+04 | | 1.8E+04 | | 3.8E+00 | |
| Ethylene Oxide | 75-21-8 | 3.1E-01 | C | 8.8E-05 | C | | | 3.0E-02 | C | V | | 2.2E-01 | 5.5E-02 | 4.4E-02 | | 6.3E+01 | 6.3E+01 | | 9.1E-06 | |
| Ethylene Thiourea | 96-45-7 | 4.5E-02 | C | 1.3E-05 | C | 8.0E-05 | I | | | | | 1.5E+00 | | 1.5E+00 | 2.9E+00 | | 2.9E+00 | | 3.4E-04 | |
| Ethyleneimine | 151-56-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | | 2.3E-07 | |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | | | | | 3.0E+00 | I | | | | | | | | 1.1E+05 | | 1.1E+05 | | 2.5E+02 | |
| Express | 101200-48-0 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | | 1.1E-01 | |
| Fenamiphos | 22224-92-6 | | | | | 2.5E-04 | I | | | | | | | | 9.1E+00 | | 9.1E+00 | | 9.1E-03 | |
| Fenpropathrin | 39515-41-8 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 4.1E+01 | |
| Fluometuron | 2164-17-2 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 3.7E-01 | |
| Fluoride | 16984-48-8 | | | | | 4.0E-02 | C | 1.3E-02 | C | | | | | | 1.5E+03 | | 1.5E+03 | | | |
| Fluorine (Soluble Fluoride) | 7782-41-4 | | | | | 6.0E-02 | I | 1.3E-02 | C | | | | | | 2.2E+03 | | 2.2E+03 | 4.0E+03 | 3.3E+02 | 6.0E+02 |
| Fluridone | 59756-60-4 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | | 3.3E+02 | |
| Flurprimidol | 56425-91-3 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 3.3E+00 | |
| Flutolanil | 66332-96-5 | | | | | 6.0E-02 | I | | | | | | | | 2.2E+03 | | 2.2E+03 | | 1.2E+01 | |
| Fluvalinate | 69409-94-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 5.3E+02 | |
| Folpet | 133-07-3 | 3.5E-03 | I | | | 1.0E-01 | I | | | | | 1.9E+01 | | 1.9E+01 | 3.7E+03 | | 3.7E+03 | | 4.5E-03 | |
| Fomesafen | 72178-02-0 | 1.9E-01 | I | | | | | | | | | 3.5E-01 | | 3.5E-01 | | | | | 1.2E-03 | |
| Fonofos | 944-22-9 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 1.4E-01 | |
| Formaldehyde | 50-00-0 | | | 1.3E-05 | I | 2.0E-01 | I | 9.8E-03 | A | | | | | | 7.3E+03 | | 7.3E+03 | | 1.5E+00 | |
| Formic Acid | 64-18-6 | | | | | 2.0E+00 | H | 3.0E-03 | P | | | | | | 7.3E+04 | | 7.3E+04 | | 1.5E+01 | |
| Fosetyl-AL | 39148-24-8 | | | | | 3.0E+00 | I | | | | | | | | 1.1E+05 | | 1.1E+05 | | | |
| **Furans** | | | | | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | | | | | 1.0E-03 | X | | | V | | | | | 3.7E+01 | | 3.7E+01 | | 6.8E-01 | |
| ~Furan | 110-00-9 | | | | | 1.0E-03 | I | | | V | | | | | 3.7E+01 | | 3.7E+01 | | 1.4E-02 | |
| Furazolidone | 67-45-8 | 3.8E+00 | H | | | | | | | | | 1.8E-02 | | 1.8E-02 | | | | | 3.4E-05 | |
| Furfural | 98-01-1 | | | | | 3.0E-03 | I | 5.0E-02 | H | | | | | | 1.1E+02 | | 1.1E+02 | | 2.3E-02 | |
| Furium | 531-82-8 | 1.5E+00 | C | 4.3E-04 | C | | | | | | | 4.5E-02 | | 4.5E-02 | | | | | 6.1E-05 | |
| Furmecyclox | 60568-05-0 | 3.0E-02 | I | 8.6E-06 | C | | | | | | | 2.2E+00 | | 2.2E+00 | | | | | 2.4E-03 | |
| Glufosinate, Ammonium | 77182-82-2 | | | | | 4.0E-04 | I | | | | | | | | 1.5E+01 | | 1.5E+01 | | 3.2E-03 | |



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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Glutaraldehyde | 111-30-8 | | | | | | | 8.0E-05 | C | | | | | | | | | | | |
| Glycidyl | 765-34-4 | | | | | 4.0E-04 | I | 1.0E-03 | H | | | | | | 1.5E+01 | | 1.5E+01 | | 3.0E-03 | |
| Glyphosate | 1071-83-6 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | 7.0E+02 | 7.4E-01 | 1.4E-01 |
| Goal | 42874-03-3 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 8.8E+00 | |
| Guthion | 86-50-0 | | | | | 3.0E-03 | A | 1.0E-02 | A | | | | | | 1.1E+02 | | 1.1E+02 | | 3.3E-02 | |
| Haloxyfop, Methyl | 69806-40-2 | | | | | 5.0E-05 | I | | | | | | | | 1.8E+00 | | 1.8E+00 | | 2.0E-02 | |
| Harmony | 79277-27-3 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 1.4E-01 | |
| Heptachlor | 76-44-8 | 4.5E+00 | I | 1.3E-03 | I | 5.0E-04 | I | | | | | 1.5E-02 | | 1.5E-02 | 1.8E+01 | | 1.8E+01 | 4.0E-01 | 1.2E-03 | 3.3E-02 |
| Heptachlor Epoxide | 1024-57-3 | 9.1E+00 | I | 2.6E-03 | I | 1.3E-05 | I | | | | | 7.4E-03 | | 7.4E-03 | 4.8E-01 | | 4.7E-01 | 2.0E-01 | 1.5E-04 | 4.1E-03 |
| Hexabromobenzene | 87-82-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 4.2E-01 | |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | 2.0E-04 | I | | | | | | | | 7.3E+00 | | 7.3E+00 | | | |
| Hexachlorobenzene | 118-74-1 | 1.6E+00 | I | 4.6E-04 | I | 8.0E-04 | I | | | | | 4.2E-02 | | 4.2E-02 | 2.9E+01 | | 2.9E+01 | 1.0E+00 | 5.3E-04 | 1.3E-02 |
| Hexachlorobutadiene | 87-68-3 | 7.8E-02 | I | 2.2E-05 | I | 1.0E-03 | P | | | | | 8.6E-01 | | 8.6E-01 | 3.7E+01 | | 3.7E+01 | | 1.7E-03 | |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 6.3E+00 | I | 1.8E-03 | I | 8.0E-03 | A | | | | | 1.1E-02 | | 1.1E-02 | 2.9E+02 | | 2.9E+02 | | 6.2E-05 | |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 1.8E+00 | I | 5.3E-04 | I | | | | | | | 3.7E-02 | | 3.7E-02 | | | | | 2.2E-04 | |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 1.1E+00 | C | 3.1E-04 | C | 3.0E-04 | I | | | | | 6.1E-02 | | 6.1E-02 | 1.1E+01 | | 1.1E+01 | 2.0E-01 | 3.6E-04 | 1.2E-03 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 1.8E+00 | I | 5.1E-04 | I | | | | | | | 3.7E-02 | | 3.7E-02 | | | | | 2.2E-04 | |
| Hexachlorocyclopentadiene | 77-47-4 | | | | | 6.0E-03 | I | 2.0E-04 | I | | | | | | 2.2E+02 | | 2.2E+02 | 5.0E+01 | 6.8E-01 | 1.6E-01 |
| Hexachloroethane | 67-72-1 | 1.4E-02 | I | 4.0E-06 | I | 1.0E-03 | I | | | | | 4.8E+00 | | 4.8E+00 | 3.7E+01 | | 3.7E+01 | | 2.9E-03 | |
| Hexachlorophene | 70-30-4 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | 1.5E+01 | |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 1.1E-01 | I | | | 3.0E-03 | I | | | | | 6.1E-01 | | 6.1E-01 | 1.1E+02 | | 1.1E+02 | | 2.3E-04 | |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | | | | | | | 1.0E-05 | I | V | | | | | | 2.1E-02 | 2.1E-02 | | 2.1E-04 | |
| Hexane, N- | 110-54-3 | | | | | 6.0E-02 | H | 7.0E-01 | I | V | | | | | 2.2E+03 | 1.5E+03 | 8.8E+02 | | 6.2E+00 | |
| Hexanedioic Acid | 124-04-9 | | | | | 2.0E+00 | P | | | | | | | | 7.3E+04 | | 7.3E+04 | | 1.8E+01 | |
| Hexanone, 2- | 591-78-6 | | | | | 5.0E-03 | I | 3.0E-02 | I | V | | | | | 1.8E+02 | 6.3E+01 | 4.7E+01 | | 1.1E-02 | |
| Hexazinone | 51235-04-2 | | | | | 3.3E-02 | I | | | | | | | | 1.2E+03 | | 1.2E+03 | | 5.5E-01 | |
| Hydrazine | 302-01-2 | 3.0E+00 | I | 4.9E-03 | I | | | 3.0E-05 | P | | | 2.2E-02 | | 2.2E-02 | | | | | | |
| Hydrazine Sulfate | 10034-93-2 | 3.0E+00 | I | 4.9E-03 | I | | | | | | | 2.2E-02 | | 2.2E-02 | | | | | | |
| Hydrogen Chloride | 7647-01-0 | | | | | | | 2.0E-02 | I | | | | | | | | | | | |
| Hydrogen Fluoride | 7664-39-3 | | | | | 4.0E-02 | C | 1.4E-02 | C | | | | | | 1.5E+03 | | 1.5E+03 | | | |
| Hydrogen Sulfide | 7783-06-4 | | | | | | | 2.0E-03 | I | | | | | | | | | | | |
| Hydroquinone | 123-31-9 | 6.0E-02 | P | | | 4.0E-02 | P | | | | | 1.1E+00 | | 1.1E+00 | 1.5E+03 | | 1.5E+03 | | 7.6E-04 | |
| Imazalil | 35554-44-0 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 8.2E+00 | |
| Imazaquin | 81335-37-7 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | | 4.5E+01 | |
| Iodine | 7553-56-2 | | | | | 1.0E-02 | A | | | | | | | | 3.7E+02 | | 3.7E+02 | | | |
| Iprodione | 36734-19-7 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | 4.5E-01 | |
| Iron | 7439-89-6 | | | | | 7.0E-01 | P | | | | | | | | 2.6E+04 | | 2.6E+04 | | 6.4E+02 | |
| Isobutyl Alcohol | 78-83-1 | | | | | 3.0E-01 | I | | | V | | | | | 1.1E+04 | | 1.1E+04 | | 2.3E+00 | |
| Isophorone | 78-59-1 | 9.5E-04 | I | | | 2.0E-01 | I | 2.0E+00 | C | | | 7.1E+01 | | 7.1E+01 | 7.3E+03 | | 7.3E+03 | | 2.3E-02 | |
| Isopropalin | 33820-53-0 | | | | | 1.5E-02 | I | | | | | | | | 5.5E+02 | | 5.5E+02 | | 1.3E+01 | |
| Isopropanol | 67-63-0 | | | | | | | 7.0E+00 | C | | | | | | | | | | | |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 7.9E-01 | |
| Isoxaben | 82558-50-7 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 5.0E+00 | |
| JP-7 | NA | | | | | | | 3.0E-01 | A | V | | | | | | 6.3E+02 | 6.3E+02 | | | |
| Kerb | 23950-58-5 | | | | | 7.5E-02 | I | | | | | | | | 2.7E+03 | | 2.7E+03 | | 2.8E+00 | |
| Lactofen | 77501-63-4 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 3.4E+00 | |
| **Lead Compounds** | | | | | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | | | | | | | | | | | | | | | | | 1.5E+01 | | 1.4E+01 |
| ~Tetraethyl Lead | 78-00-2 | | | | | 1.0E-07 | I | | | | | | | | 3.7E-03 | | 3.7E-03 | | 1.3E-05 | |
| Lead acetate | 301-04-2 | 2.8E-01 | C | 8.0E-05 | C | | | | | | | 2.4E-01 | | 2.4E-01 | | | | | | |
| Lead subacetate | 1335-32-6 | 3.8E-02 | C | 1.1E-05 | C | | | | | | | 1.8E+00 | | 1.8E+00 | | | | | | |
| Linuron | 330-55-2 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 6.4E-02 | |
| Lithium | 7439-93-2 | | | | | 2.0E-03 | P | | | | | | | | 7.3E+01 | | 7.3E+01 | | 2.2E+01 | |
| Lithium Perchlorate | 7791-03-9 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | | | |
| Londax | 83055-99-6 | | | | | 2.0E-01 | I | | | | | | | | 7.3E+03 | | 7.3E+03 | | 1.9E+00 | |
| MCPA | 94-74-6 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | | 4.7E-03 | |
| MCPB | 94-81-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 1.5E-01 | |
| MCPP | 93-65-2 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | | 1.1E-02 | |
| Malathion | 121-75-5 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 1.9E-01 | |
| Maleic Anhydride | 108-31-6 | | | | | 1.0E-01 | I | 7.0E-04 | C | | | | | | 3.7E+03 | | 3.7E+03 | | 7.4E-01 | |
| Maleic Hydrazide | 123-33-1 | | | | | 5.0E-01 | I | | | | | | | | 1.8E+04 | | 1.8E+04 | | 3.8E+00 | |
| Malononitrile | 109-77-3 | | | | | 1.0E-04 | P | | | | | | | | 3.7E+00 | | 3.7E+00 | | 7.5E-04 | |
| Mancozeb | 8018-01-7 | | | | | 3.0E-02 | H | | | | | | | | 1.1E+03 | | 1.1E+03 | | 1.6E+00 | |
| Maneb | 12427-38-2 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 2.6E-01 | |
| Manganese (Water) | 7439-96-5 | | | | | 2.4E-02 | I | 5.0E-05 | I | | | | | | 8.8E+02 | | 8.8E+02 | | 5.7E+01 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Mephosfolan | 950-10-7 | | | | | 9.0E-05 | H | | | | | | | | 3.3E+00 | | 3.3E+00 | | 4.8E-03 | |
| Mepiquat Chloride | 24307-26-4 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 3.6E-01 | |
| **Mercury Compounds** | | | | | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | | | | | 3.0E-04 | I | 3.0E-05 | C | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| ~Mercuric Sulfide | 1344-48-5 | | | | | 3.0E-04 | S | | | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| ~Mercury (elemental) | 7439-97-6 | | | | | 1.6E-04 | C | 3.0E-04 | I | V | | | | | 5.8E+00 | 6.3E-01 | 5.7E-01 | 2.0E+00 | 3.0E-02 | 1.0E-01 |
| ~Mercury, Inorganic Salts | NA | | | | | 3.0E-04 | S | | | | | | | | 1.1E+01 | | 1.1E+01 | | 5.7E-01 | |
| ~Methyl Mercury | 22967-92-6 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | | | |
| ~Phenylmercuric Acetate | 62-38-4 | | | | | 8.0E-05 | I | | | | | | | | 2.9E+00 | | 2.9E+00 | | 9.1E-04 | |
| Merphos | 150-50-5 | | | | | 3.0E-05 | I | | | | | | | | 1.1E+00 | | 1.1E+00 | | 1.1E-01 | |
| Merphos Oxide | 78-48-8 | | | | | 3.0E-05 | I | | | | | | | | 1.1E+00 | | 1.1E+00 | | 5.4E-03 | |
| Metalaxyl | 57837-19-1 | | | | | 6.0E-02 | I | | | | | | | | 2.2E+03 | | 2.2E+03 | | 6.1E-01 | |
| Methacrylonitrile | 126-98-7 | | | | | 1.0E-04 | I | 7.0E-04 | H | V | | | | | 3.7E+00 | 1.5E+00 | 1.0E+00 | | 2.4E-04 | |
| Methamidophos | 10265-92-6 | | | | | 5.0E-05 | I | | | | | | | | 1.8E+00 | | 1.8E+00 | | 3.9E-04 | |
| Methanol | 67-56-1 | | | | | 5.0E-01 | I | 4.0E+00 | C | | | | | | 1.8E+04 | | 1.8E+04 | | 3.7E+00 | |
| Methidathion | 950-37-8 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | | 8.9E-03 | |
| Methomyl | 16752-77-5 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 2.0E-01 | |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 4.9E-02 | C | 1.4E-05 | C | | | | | | | 1.4E+00 | | 1.4E+00 | | | | | 4.7E-04 | |
| Methoxychlor | 72-43-5 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | 4.0E+01 | 9.9E+00 | 2.2E+00 |
| Methoxyethanol Acetate, 2- | 110-49-6 | | | | | 2.0E-03 | H | 9.0E-02 | C | | | | | | 7.3E+01 | | 7.3E+01 | | 1.5E-02 | |
| Methoxyethanol, 2- | 109-86-4 | | | | | 3.0E-03 | P | 2.0E-02 | I | | | | | | 1.1E+02 | | 1.1E+02 | | 2.2E-02 | |
| Methyl Acetate | 79-20-9 | | | | | 1.0E+00 | H | | | V | | | | | 3.7E+04 | | 3.7E+04 | | 7.5E+00 | |
| Methyl Acrylate | 96-33-3 | | | | | 3.0E-02 | H | | | V | | | | | 1.1E+03 | | 1.1E+03 | | 2.3E-01 | |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | | | | | 6.0E-01 | I | 5.0E+00 | I | V | | | | | 2.2E+04 | 1.0E+04 | 7.1E+03 | | 1.5E+00 | |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | | | | | 8.0E-02 | H | 3.0E+00 | I | V | | | | | 2.9E+03 | 6.3E+03 | 2.0E+03 | | 4.5E-01 | |
| Methyl Isocyanate | 624-83-9 | | | | | | | 1.0E-03 | C | | | | | | | | | | | |
| Methyl Methacrylate | 80-62-6 | | | | | 1.4E+00 | I | 7.0E-01 | I | V | | | | | 5.1E+04 | 1.5E+03 | 1.4E+03 | | 3.1E-01 | |
| Methyl Parathion | 298-00-0 | | | | | 2.5E-04 | I | | | | | | | | 9.1E+00 | | 9.1E+00 | | 1.5E-02 | |
| Methyl Phosphonic Acid | 993-13-5 | | | | | 6.0E-02 | X | | | | | | | | 2.2E+03 | | 2.2E+03 | | 4.4E-01 | |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | | | | | 6.0E-03 | H | 4.0E-02 | H | V | | | | | 2.2E+02 | 8.3E+01 | 6.0E+01 | | 9.7E-02 | |
| Methyl methanesulfonate | 66-27-3 | 9.9E-02 | C | 2.8E-05 | C | | | | | | | 6.8E-01 | | 6.8E-01 | | | | | 1.4E-04 | |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 1.8E-03 | C | 2.6E-07 | C | | | 3.0E+00 | I | V | | 3.7E+01 | 1.9E+01 | 1.2E+01 | | 6.3E+03 | 6.3E+03 | | 2.8E-03 | |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 3.3E-02 | H | | | | | | | | | 2.0E+00 | | 2.0E+00 | | | | | 1.1E-03 | |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 8.3E+00 | C | 2.4E-03 | C | | | | | | | 8.1E-03 | | 8.1E-03 | | | | | 2.8E-06 | |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 1.3E-01 | C | 3.7E-05 | C | | | | | | | 5.2E-01 | | 5.2E-01 | | | | | 2.2E-04 | |
| Methylarsonic acid | 124-58-3 | | | | | 1.0E-02 | A | | | | | | | | 3.7E+02 | | 3.7E+02 | | | |
| Methylcholanthrene, 3- | 56-49-5 | 2.2E+01 | C | 6.3E-03 | C | | | | | | | 3.1E-03 | | 3.1E-03 | | | | | 5.9E-03 | |
| Methylene Chloride | 75-09-2 | 7.5E-03 | I | 4.7E-07 | I | 6.0E-02 | I | 1.0E+00 | A | V | | 9.0E+00 | 1.0E+01 | 4.8E+00 | 2.2E+03 | 2.2E+03 | 1.1E+03 | 5.0E+00 | 1.2E-03 | 1.3E-03 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 1.0E-01 | P | 4.3E-04 | C | 2.0E-03 | P | | | | M | 2.2E-01 | | 2.2E-01 | 7.3E+01 | | 7.3E+01 | | 2.5E-03 | |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 4.6E-02 | I | 1.3E-05 | C | | | | | | | 1.5E+00 | | 1.5E+00 | | | | | 8.1E-03 | |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 1.6E+00 | C | 4.6E-04 | C | | | 2.0E-02 | C | | | 4.2E-02 | | 4.2E-02 | | | | | 1.9E-04 | |
| Methylenediphenyl Diisocyanate | 101-68-8 | | | | | | | 6.0E-04 | I | | | | | | | | | | | |
| Methylstyrene, Alpha- | 98-83-9 | | | | | 7.0E-02 | H | | | V | | | | | 2.6E+03 | | 2.6E+03 | | 4.1E+00 | |
| Metolachlor | 51218-45-2 | | | | | 1.5E-01 | I | | | | | | | | 5.5E+03 | | 5.5E+03 | | 6.4E+00 | |
| Metribuzin | 21087-64-9 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 2.8E-01 | |
| Mineral oils | 8012-95-1 | | | | | 3.0E+00 | P | | | | | | | | 1.1E+05 | | 1.1E+05 | | 4.4E+03 | |
| Mirex | 2385-85-5 | 1.8E+01 | C | 5.1E-03 | C | 2.0E-04 | I | | | | | 3.7E-03 | | 3.7E-03 | 7.3E+00 | | 7.3E+00 | | 2.7E-03 | |
| Molinate | 2212-67-1 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 4.1E-02 | |
| Molybdenum | 7439-98-7 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 3.7E+00 | |
| Monochloramine | 10599-90-3 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | | |
| Monomethylaniline | 100-61-8 | | | | | 2.0E-03 | P | | | | | | | | 7.3E+01 | | 7.3E+01 | | 2.7E-02 | |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | | | | | 3.0E-04 | X | | | | | | | | 1.1E+01 | | 1.1E+01 | | 1.1E+00 | |
| Naled | 300-76-5 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 3.3E-02 | |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | 3.0E-02 | X | 1.0E-01 | P | V | | | | | 1.1E+03 | 2.1E+02 | 1.8E+02 | | | |
| Naphthylamine, 2- | 91-59-8 | 1.8E+00 | C | 0.0E+00 | C | | | | | | | 3.7E-02 | | 3.7E-02 | | | | | 1.9E-04 | |
| Napropamide | 15299-99-7 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 2.4E+01 | |
| Nickel Carbonyl | 13463-39-3 | | | | | 5.0E-02 | C | 5.0E-05 | C | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| Nickel Oxide | 1313-99-1 | | | | | 5.0E-02 | C | 1.0E-04 | C | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| Nickel Refinery Dust | NA | | | 2.4E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| Nickel Soluble Salts | 7440-02-0 | | | 2.6E-04 | C | 2.0E-02 | I | 9.0E-05 | A | | | | | | 7.3E+02 | | 7.3E+02 | | 4.8E+01 | |
| Nickel Subsulfide | 12035-72-2 | 1.7E+00 | C | 4.8E-04 | I | 5.0E-02 | C | 5.0E-05 | C | | | 4.0E-02 | | 4.0E-02 | 1.8E+03 | | 1.8E+03 | | | |
| Nitrate | 14797-55-8 | | | | | 1.6E+00 | I | | | | | | | | 5.8E+04 | | 5.8E+04 | 1.0E+04 | | |
| Nitrite | 14797-65-0 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | 1.0E+03 | | |
| Nitroaniline, 2- | 88-74-4 | | | | | 1.0E-02 | X | 5.0E-05 | X | | | | | | 3.7E+02 | | 3.7E+02 | | 1.5E-01 | |
| Nitroaniline, 4- | 100-01-6 | 2.0E-02 | P | | | 4.0E-03 | P | 6.0E-03 | P | | | 3.4E+00 | | 3.4E+00 | 1.5E+02 | | 1.5E+02 | | 1.4E-03 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | vol | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Nitrobenzene | 98-95-3 | | | 4.0E-05 | I | 2.0E-03 | I | 9.0E-03 | I | V | | | 1.2E-01 | 1.2E-01 | 7.3E+01 | 1.9E+01 | 1.5E+01 | | 7.9E-05 | |
| Nitrocellulose | 9004-70-0 | | | | | 3.0E+03 | P | | | | | | | | 1.1E+08 | | 1.1E+08 | | 2.4E+04 | |
| Nitrofurantoin | 67-20-9 | | | | | 7.0E-02 | H | | | | | | | | 2.6E+03 | | 2.6E+03 | | 1.1E+00 | |
| Nitrofurazone | 59-87-0 | 1.3E+00 | C | 3.7E-04 | C | | | | | | | 5.2E-02 | | 5.2E-02 | | | | | 4.7E-05 | |
| Nitroglycerin | 55-63-0 | 1.7E-02 | P | | | 1.0E-04 | P | | | | | 4.0E+00 | | 4.0E+00 | 3.7E+00 | | 3.7E+00 | | 1.6E-03 | |
| Nitroguanidine | 556-88-7 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 8.8E-01 | |
| Nitromethane | 75-52-5 | | | 9.0E-06 | P | | | 2.0E-02 | P | V | | | 5.4E-01 | 5.4E-01 | | 4.2E+01 | 4.2E+01 | | 1.2E-04 | |
| Nitropropane, 2- | 79-46-9 | | | 2.7E-03 | H | | | 2.0E-02 | I | V | | | 1.8E-03 | 1.8E-03 | | 4.2E+01 | 4.2E+01 | | 4.7E-07 | |
| Nitroso-N-ethylurea, N- | 759-73-9 | 2.7E+01 | C | 7.7E-03 | C | | | | | | | 2.5E-03 | | 2.5E-03 | | | | | 6.0E-07 | |
| Nitroso-N-methylurea, N- | 684-93-5 | 1.2E+02 | C | 3.4E-02 | C | | | | | | | 5.6E-04 | | 5.6E-04 | | | | | 1.2E-07 | |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 5.4E+00 | I | 1.6E-03 | I | | | | | V | | 1.3E-02 | 3.0E-03 | 2.4E-03 | | | | | 5.0E-06 | |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 7.0E+00 | I | 2.0E-03 | C | | | | | | | 9.6E-03 | | 9.6E-03 | | | | | 7.2E-06 | |
| Nitrosodiethanolamine, N- | 1116-54-7 | 2.8E+00 | I | 8.0E-04 | C | | | | | | | 2.4E-02 | | 2.4E-02 | | | | | 4.9E-06 | |
| Nitrosodiethylamine, N- | 55-18-5 | 1.5E+02 | I | 4.3E-02 | I | | | | | | M | 1.4E-04 | | 1.4E-04 | | | | | 5.3E-08 | |
| Nitrosodimethylamine, N- | 62-75-9 | 5.1E+01 | I | 1.4E-02 | I | 8.0E-06 | P | 4.0E-05 | X | | M | 4.2E-04 | | 4.2E-04 | 2.9E-01 | | 2.9E-01 | | 1.0E-07 | |
| Nitrosodiphenylamine, N- | 86-30-6 | 4.9E-03 | I | 2.6E-06 | C | | | | | | | 1.4E+01 | | 1.4E+01 | | | | | 7.5E-02 | |
| Nitrosomethylethylamine, N- | 10595-95-6 | 2.2E+01 | I | 6.3E-03 | C | | | | | | | 3.1E-03 | | 3.1E-03 | | | | | 8.8E-07 | |
| Nitrosomorpholine [N-] | 59-89-2 | 6.7E+00 | C | 1.9E-03 | C | | | | | | | 1.0E-02 | | 1.0E-02 | | | | | 2.5E-06 | |
| Nitrosopiperidine [N-] | 100-75-4 | 9.4E+00 | C | 2.7E-03 | C | | | | | | | 7.2E-03 | | 7.2E-03 | | | | | 3.8E-06 | |
| Nitrosopyrrolidine, N- | 930-55-2 | 2.1E+00 | I | 6.1E-04 | I | | | | | | | 3.2E-02 | | 3.2E-02 | | | | | 1.2E-05 | |
| Nitrotoluene, m- | 99-08-1 | | | | | 1.0E-04 | X | | | | | | | | 3.7E+00 | | 3.7E+00 | | 3.4E-03 | |
| Nitrotoluene, o- | 88-72-2 | 2.2E-01 | P | | | 9.0E-04 | P | | | V | | 3.1E-01 | | 3.1E-01 | 3.3E+01 | | 3.3E+01 | | 2.9E-04 | |
| Nitrotoluene, p- | 99-99-0 | 1.6E-02 | P | | | 4.0E-03 | P | | | | | 4.2E+00 | | 4.2E+00 | 1.5E+02 | | 1.5E+02 | | 3.9E-03 | |
| Nonane, n- | 111-84-2 | | | | | 3.0E-04 | X | 2.0E-01 | P | V | | | | | 1.1E+01 | 4.2E+02 | 1.1E+01 | | 1.5E-01 | |
| Norflurazon | 27314-13-2 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | 9.4E+00 | |
| Nustar | 85509-19-9 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | | 4.2E+00 | |
| Octabromodiphenyl Ether | 32536-52-0 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 2.2E+01 | |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 2.3E+00 | |
| Octamethylpyrophosphoramide | 152-16-9 | | | | | 2.0E-03 | H | | | | | | | | 7.3E+01 | | 7.3E+01 | | 1.8E-02 | |
| Oryzalin | 19044-88-3 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 3.4E+00 | |
| Oxadiazon | 19666-30-9 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 1.9E+00 | |
| Oxamyl | 23135-22-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | 2.0E+02 | 2.0E-01 | 4.4E-02 |
| Paclobutrazol | 76738-62-0 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 9.7E-01 | |
| Paraquat Dichloride | 1910-42-5 | | | | | 4.5E-03 | I | | | | | | | | 1.6E+02 | | 1.6E+02 | | 2.3E+00 | |
| Parathion | 56-38-2 | | | | | 6.0E-03 | H | | | | | | | | 2.2E+02 | | 2.2E+02 | | 1.1E+00 | |
| Pebulate | 1114-71-2 | | | | | 5.0E-02 | H | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.5E+00 | |
| Pendimethalin | 40487-42-1 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | 1.7E+01 | |
| Pentabromodiphenyl Ether | 32534-81-9 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 3.2E+00 | |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | | 1.6E-01 | |
| Pentachlorobenzene | 608-93-5 | | | | | 8.0E-04 | I | | | | | | | | 2.9E+01 | | 2.9E+01 | | 2.2E-01 | |
| Pentachloroethane | 76-01-7 | 9.0E-02 | P | | | | | | | | | 7.5E-01 | | 7.5E-01 | | | | | 3.6E-04 | |
| Pentachloronitrobenzene | 82-68-8 | 2.6E-01 | H | | | 3.0E-03 | I | | | | | 2.6E-01 | | 2.6E-01 | 1.1E+02 | | 1.1E+02 | | 3.2E-03 | |
| Pentachlorophenol | 87-86-5 | 1.2E-01 | I | 5.1E-06 | C | 3.0E-02 | I | | | | | 5.6E-01 | | 5.6E-01 | 1.1E+03 | | 1.1E+03 | 1.0E+00 | 5.7E-03 | 1.0E-02 |
| Pentane, n- | 109-66-0 | | | | | | | 1.0E+00 | P | V | | | | | | 2.1E+03 | 2.1E+03 | | 1.0E+01 | |
| Perchlorate and Perchlorate Salts | 14797-73-0 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | 15 (F) | | |
| Permethrin | 52645-53-1 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 4.3E+02 | |
| Phenacetin | 62-44-2 | 2.2E-03 | C | 6.3E-07 | C | | | | | | | 3.1E+01 | | 3.1E+01 | | | | | 8.6E-03 | |
| Phenmedipham | 13684-63-4 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | | 4.9E+01 | |
| Phenol | 108-95-2 | | | | | 3.0E-01 | I | 2.0E-01 | C | | | | | | 1.1E+04 | | 1.1E+04 | | 6.3E+00 | |
| Phenylenediamine, m- | 108-45-2 | | | | | 6.0E-03 | I | | | | | | | | 2.2E+02 | | 2.2E+02 | | 5.9E-02 | |
| Phenylenediamine, o- | 95-54-5 | 4.7E-02 | H | | | | | | | | | 1.4E+00 | | 1.4E+00 | | | | | 3.9E-04 | |
| Phenylenediamine, p- | 106-50-3 | | | | | 1.9E-01 | H | | | | | | | | 6.9E+03 | | 6.9E+03 | | 1.9E+00 | |
| Phenylphenol, 2- | 90-43-7 | 1.9E-03 | H | | | | | | | | | 3.5E+01 | | 3.5E+01 | | | | | 4.7E-01 | |
| Phorate | 298-02-2 | | | | | 2.0E-04 | H | | | | | | | | 7.3E+00 | | 7.3E+00 | | 8.2E-03 | |
| Phosmet | 732-11-6 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 1.6E-01 | |
| Phosphine | 7803-51-2 | | | | | 3.0E-04 | I | 3.0E-04 | I | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| Phosphoric Acid | 7664-38-2 | | | | | | | 1.0E-02 | I | | | | | | | | | | | |
| Phosphorus, White | 7723-14-0 | | | | | 2.0E-05 | I | | | | | | | | 7.3E-01 | | 7.3E-01 | | 2.7E-03 | |
| Phthalic Acid, P- | 100-21-0 | | | | | 1.0E+00 | H | | | | | | | | 3.7E+04 | | 3.7E+04 | | 1.3E+01 | |
| Phthalic Anhydride | 85-44-9 | | | | | 2.0E+00 | I | 2.0E-02 | C | | | | | | 7.3E+04 | | 7.3E+04 | | 1.6E+01 | |
| Picloram | 1918-02-1 | | | | | 7.0E-02 | I | | | | | | | | 2.6E+03 | | 2.6E+03 | 5.0E+02 | 7.1E-01 | 1.4E-01 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | | | | | 1.0E-04 | X | | | | | | | | 3.7E+00 | | 3.7E+00 | | 2.4E-03 | |
| Pirimiphos, Methyl | 29232-93-7 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 3.5E-01 | |
| Polybrominated Biphenyls | 59536-65-1 | 3.0E+01 | C | 8.6E-03 | C | 7.0E-06 | H | | | | | 2.2E-03 | | 2.2E-03 | 2.6E-01 | | 2.6E-01 | | | |
| **Polychlorinated Biphenyls (PCBs)** | | | | | | | | | | | | | | | | | | | | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| ~Aroclor 1016 | 12674-11-2 | 7.0E-02 | I | 2.0E-05 | I | 7.0E-05 | I | | | | | 9.6E-01 | | 9.6E-01 | 2.6E+00 | | 2.6E+00 | | 9.2E-02 | |
| ~Aroclor 1221 | 11104-28-2 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 3.4E-02 | 8.5E-03 | 6.8E-03 | | | | | 1.2E-04 | |
| ~Aroclor 1232 | 11141-16-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | V | | 3.4E-02 | 8.5E-03 | 6.8E-03 | | | | | 1.2E-04 | |
| ~Aroclor 1242 | 53469-21-9 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | | 5.3E-03 | |
| ~Aroclor 1248 | 12672-29-6 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | | 5.2E-03 | |
| ~Aroclor 1254 | 11097-69-1 | 2.0E+00 | I | 5.7E-04 | I | 2.0E-05 | I | | | | | 3.4E-02 | | 3.4E-02 | 7.3E-01 | | 7.3E-01 | | 8.8E-03 | |
| ~Aroclor 1260 | 11096-82-5 | 2.0E+00 | I | 5.7E-04 | I | | | | | | | 3.4E-02 | | 3.4E-02 | | | | | 2.4E-02 | |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 3.6E-03 | |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 1.3E+00 | C | 3.8E-04 | C | | | | | | | 5.2E-02 | | 5.2E-02 | | | | | 2.2E-02 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | | 4.4E-04 | |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 6.5E+01 | C | 1.9E-02 | C | | | | | | | 1.0E-03 | | 1.0E-03 | | | | | 4.4E-04 | |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 1.3E+03 | C | 3.8E-01 | C | | | | | | | 5.2E-05 | | 5.2E-05 | | | | | 2.2E-05 | |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 1.4E-03 | |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 1.3E-03 | |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 1.4E-03 | |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 6.5E+02 | C | 1.9E-02 | C | | | | | | | 1.0E-04 | | 1.0E-04 | | | | | 2.7E-05 | |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 1.3E+04 | C | 3.8E+00 | C | | | | | | | 5.2E-06 | | 5.2E-06 | | | | | 1.3E-06 | |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 4.0E-01 | I | 1.0E-04 | I | | | | | | | 1.7E-01 | | 1.7E-01 | | | | 5.0E-01 | 2.6E-02 | 7.8E-02 |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 8.1E-04 | |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 1.3E+01 | C | 3.8E-03 | C | | | | | | | 5.2E-03 | | 5.2E-03 | | | | | 8.1E-04 | |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | | | | | | | 6.0E-04 | I | | | | | | | | | | | |
| **Polynuclear Aromatic Hydrocarbons (PAHs)** | | | | | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | | | | | 6.0E-02 | I | | | V | | | | | 2.2E+03 | | 2.2E+03 | | 2.3E+01 | |
| ~Anthracene | 120-12-7 | | | | | 3.0E-01 | I | | | V | | | | | 1.1E+04 | | 1.1E+04 | | 3.6E+02 | |
| ~Benz[a]anthracene | 56-55-3 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 2.9E-02 | | | | | 1.0E-02 | |
| ~Benzo(j)fluoranthene | 205-82-3 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 5.6E-02 | | 5.6E-02 | | | | | 6.7E-02 | |
| ~Benzo[a]pyrene | 50-32-8 | 7.3E+00 | I | 1.1E-03 | C | | | | | | M | 3.0E-03 | | 2.9E-03 | | | | 2.0E-01 | 3.5E-03 | 2.4E-01 |
| ~Benzo[b]fluoranthene | 205-99-2 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 2.9E-02 | | | | | 3.5E-02 | |
| ~Benzo[k]fluoranthene | 207-08-9 | 7.3E-02 | E | 1.1E-04 | C | | | | | | M | 3.0E-01 | | 2.9E-01 | | | | | 3.5E-01 | |
| ~Chrysene | 218-01-9 | 7.3E-03 | E | 1.1E-05 | C | | | | | | M | 3.0E+00 | | 2.9E+00 | | | | | 1.1E+00 | |
| ~Dibenz[a,h]anthracene | 53-70-3 | 7.3E+00 | E | 1.2E-03 | C | | | | | | M | 3.0E-03 | | 2.9E-03 | | | | | 1.1E-02 | |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 1.2E+01 | C | 1.1E-03 | C | | | | | | | 5.6E-03 | | 5.6E-03 | | | | | 7.3E-02 | |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 2.5E+02 | C | 7.1E-02 | C | | | | | | | 2.7E-04 | | 2.7E-04 | | | | | 2.7E-04 | |
| ~Fluoranthene | 206-44-0 | | | | | 4.0E-02 | I | | | | | | | | 1.5E+03 | | 1.5E+03 | | 1.6E+02 | |
| ~Fluorene | 86-73-7 | | | | | 4.0E-02 | I | | | V | | | | | 1.5E+03 | | 1.5E+03 | | 2.7E+01 | |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 7.3E-01 | E | 1.1E-04 | C | | | | | | M | 3.0E-02 | | 2.9E-02 | | | | | 1.2E-01 | |
| ~Methylnaphthalene, 1- | 90-12-0 | 2.9E-02 | P | | | 7.0E-02 | A | | | V | | 2.3E+00 | | 2.3E+00 | 2.6E+03 | | 2.6E+03 | | 1.2E-02 | |
| ~Methylnaphthalene, 2- | 91-57-6 | | | | | 4.0E-03 | I | | | V | | | | | 1.5E+02 | | 1.5E+02 | | 7.5E-01 | |
| ~Naphthalene | 91-20-3 | | | 3.4E-05 | C | 2.0E-02 | I | 3.0E-03 | I | V | | | 1.4E-01 | 1.4E-01 | 7.3E+02 | 6.3E+00 | 6.2E+00 | | 4.7E-04 | |
| ~Nitropyrene, 4- | 57835-92-4 | 1.2E+00 | C | 1.1E-04 | C | | | | | | | 5.6E-02 | | 5.6E-02 | | | | | 9.7E-03 | |
| ~Pyrene | 129-00-0 | | | | | 3.0E-02 | I | | | V | | | | | 1.1E+03 | | 1.1E+03 | | 1.2E+02 | |
| Potassium Perchlorate | 7778-74-7 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | | | |
| Prochloraz | 67747-09-5 | 1.5E-01 | I | | | 9.0E-03 | I | | | | | 4.5E-01 | | 4.5E-01 | 3.3E+02 | | 3.3E+02 | | 2.3E-03 | |
| Profluralin | 26399-36-0 | | | | | 6.0E-03 | H | | | | | | | | 2.2E+02 | | 2.2E+02 | | 1.3E+01 | |
| Prometon | 1610-18-0 | | | | | 1.5E-02 | I | | | | | | | | 5.5E+02 | | 5.5E+02 | | 2.6E-01 | |
| Prometryn | 7287-19-6 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | | 2.2E-01 | |
| Propachlor | 1918-16-7 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 2.9E-01 | |
| Propanil | 709-98-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 1.0E-01 | |
| Propargite | 2312-35-8 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 5.4E+01 | |
| Propargyl Alcohol | 107-19-7 | | | | | 2.0E-03 | I | | | | | | | | 7.3E+01 | | 7.3E+01 | | 1.5E-02 | |
| Propazine | 139-40-2 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 6.5E-01 | |
| Propham | 122-42-9 | | | | | 2.0E-02 | I | | | | | | | | 7.3E+02 | | 7.3E+02 | | 4.7E-01 | |
| Propiconazole | 60207-90-1 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 1.6E+00 | |
| Propionaldehyde | 123-38-6 | | | | | | | 8.0E-03 | I | V | | | | | | 1.7E+01 | 1.7E+01 | | 3.4E-03 | |
| Propyl benzene | 103-65-1 | | | | | 1.0E-01 | X | 1.0E+00 | X | V | | | | | 3.7E+03 | 2.1E+03 | 1.3E+03 | | 2.5E+00 | |
| Propylene | 115-07-1 | | | | | | | 3.0E+00 | C | | | | | | | | | | | |
| Propylene Glycol | 57-55-6 | | | | | 2.0E+01 | P | | | | | | | | 7.3E+05 | | 7.3E+05 | | 1.5E+02 | |
| Propylene Glycol Dinitrate | 6423-43-4 | | | | | | | 2.7E-04 | A | V | | | | | | 5.7E-01 | 5.7E-01 | | 1.8E-04 | |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | | | | | 7.0E-01 | H | | | | | | | | 2.6E+04 | | 2.6E+04 | | 5.2E+00 | |
| Propylene Glycol Monomethyl Ether | 107-98-2 | | | | | 7.0E-01 | H | 2.0E+00 | I | | | | | | 2.6E+04 | | 2.6E+04 | | 5.2E+00 | |
| Propylene Oxide | 75-56-9 | 2.4E-01 | I | 3.7E-06 | I | | | 3.0E-02 | I | V | | 2.8E-01 | 1.3E+00 | 2.3E-01 | | 6.3E+01 | 6.3E+01 | | 4.9E-05 | |
| Pursuit | 81335-77-5 | | | | | 2.5E-01 | I | | | | | | | | 9.1E+03 | | 9.1E+03 | | 8.0E+00 | |
| Pydrin | 51630-58-1 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 5.8E+02 | |
| Pyridine | 110-86-1 | | | | | 1.0E-03 | I | | | V | | | | | 3.7E+01 | | 3.7E+01 | | 1.3E-02 | |
| Quinalphos | 13593-03-8 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | | 1.6E-01 | |

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| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | muta-gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Quinoline | 91-22-5 | 3.0E+00 | I | | | | | | | | | 2.2E-02 | | 2.2E-02 | | | | | 7.4E-05 | |
| Refractory Ceramic Fibers | NA | | | | | | | 3.0E-02 | A | | | | | | | | | | | |
| Resmethrin | 10453-86-8 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 6.8E+02 | |
| Ronnel | 299-84-3 | | | | | 5.0E-02 | H | | | | | | | | 1.8E+03 | | 1.8E+03 | | 1.7E+01 | |
| Rotenone | 83-79-4 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | | 7.6E+01 | |
| Safrole | 94-59-7 | 2.2E-01 | C | 6.3E-05 | C | | | | | | | 3.1E-01 | | 3.1E-01 | | | | | 1.9E-04 | |
| Savey | 78587-05-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 4.1E+00 | |
| Selenious Acid | 7783-00-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | | |
| Selenium | 7782-49-2 | | | | | 5.0E-03 | I | 2.0E-02 | C | | | | | | 1.8E+02 | | 1.8E+02 | 5.0E+01 | 9.5E-01 | 2.6E-01 |
| Selenium Sulfide | 7446-34-6 | | | | | 5.0E-03 | C | 2.0E-02 | C | | | | | | 1.8E+02 | | 1.8E+02 | | | |
| Sethoxydim | 74051-80-2 | | | | | 9.0E-02 | I | | | | | | | | 3.3E+03 | | 3.3E+03 | | 2.9E+01 | |
| Silica (crystalline, respirable) | 7631-86-9 | | | | | | | 3.0E-03 | C | | | | | | | | | | | |
| Silver | 7440-22-4 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 1.6E+00 | |
| Simazine | 122-34-9 | 1.2E-01 | H | | | 5.0E-03 | I | | | | | 5.6E-01 | | 5.6E-01 | 1.8E+02 | | 1.8E+02 | 4.0E+00 | 2.8E-04 | 2.0E-03 |
| Sodium Acifluorfen | 62476-59-9 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 3.8E+00 | |
| Sodium Azide | 26628-22-8 | | | | | 4.0E-03 | I | | | | | | | | 1.5E+02 | | 1.5E+02 | | | |
| Sodium Diethyldithiocarbamate | 148-18-5 | 2.7E-01 | H | | | 3.0E-02 | I | | | | | 2.5E-01 | | 2.5E-01 | 1.1E+03 | | 1.1E+03 | | | |
| Sodium Fluoride | 7681-49-4 | | | | | 5.0E-02 | A | 1.3E-02 | C | | | | | | 1.8E+03 | | 1.8E+03 | | | |
| Sodium Fluoroacetate | 62-74-8 | | | | | 2.0E-05 | I | | | | | | | | 7.3E-01 | | 7.3E-01 | | 1.5E-04 | |
| Sodium Metavanadate | 13718-26-8 | | | | | 1.0E-03 | H | | | | | | | | 3.7E+01 | | 3.7E+01 | | | |
| Sodium Perchlorate | 7601-89-0 | | | | | 7.0E-04 | I | | | | | | | | 2.6E+01 | | 2.6E+01 | | | |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 2.4E-02 | H | | | 3.0E-02 | I | | | | | 2.8E+00 | | 2.8E+00 | 1.1E+03 | | 1.1E+03 | | 8.3E-03 | |
| Strontium, Stable | 7440-24-6 | | | | | 6.0E-01 | I | | | | | | | | 2.2E+04 | | 2.2E+04 | | 7.7E+02 | |
| Strychnine | 57-24-9 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | 1.2E-01 | |
| Styrene | 100-42-5 | | | | | 2.0E-01 | I | 1.0E+00 | I | V | | | | | 7.3E+03 | 2.1E+03 | 1.6E+03 | 1.0E+02 | 1.8E+00 | 1.1E-01 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | | | | | 8.0E-04 | P | | | | | | | | 2.9E+01 | | 2.9E+01 | | 1.7E-01 | |
| Sulfuric Acid | 7664-93-9 | | | | | | | 1.0E-03 | C | | | | | | | | | | | |
| Systhane | 88671-89-0 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 1.1E+01 | |
| TCMTB | 21564-17-0 | | | | | 3.0E-02 | H | | | | | | | | 1.1E+03 | | 1.1E+03 | | 7.6E+00 | |
| Tebuthiuron | 34014-18-1 | | | | | 7.0E-02 | I | | | | | | | | 2.6E+03 | | 2.6E+03 | | 7.3E-01 | |
| Temephos | 3383-96-8 | | | | | 2.0E-02 | H | | | | | | | | 7.3E+02 | | 7.3E+02 | | 1.4E+02 | |
| Terbacil | 5902-51-2 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 1.4E-01 | |
| Terbufos | 13071-79-9 | | | | | 2.5E-05 | H | | | | | | | | 9.1E-01 | | 9.1E-01 | | 2.0E-03 | |
| Terbutryn | 886-50-0 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | | 5.2E-02 | |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | | | | | 1.0E-04 | I | | | | | | | | 3.7E+00 | | 3.7E+00 | | 9.7E-02 | |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | 5.1E-02 | |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 2.6E-02 | I | 7.4E-06 | I | 3.0E-02 | I | | | V | | 2.6E+00 | 6.6E-01 | 5.2E-01 | 1.1E+03 | | 1.1E+03 | | 2.0E-04 | |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 2.0E-01 | I | 5.8E-05 | I | 4.0E-03 | P | | | V | | 3.4E-01 | 8.4E-02 | 6.7E-02 | 1.5E+02 | | 1.5E+02 | | 2.6E-05 | |
| Tetrachloroethylene | 127-18-4 | 5.4E-01 | C | 5.9E-06 | C | 1.0E-02 | I | 2.7E-01 | A | V | | 1.3E-01 | 8.3E-01 | 1.1E-01 | 3.7E+02 | 5.7E+02 | 2.2E+02 | 5.0E+00 | 4.9E-05 | 2.3E-03 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 6.7E+00 | |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 2.0E+01 | H | | | | | | | | | 3.4E-03 | | 3.4E-03 | | | | | 1.2E-05 | |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | | | | | 5.0E-04 | I | | | | | | | | 1.8E+01 | | 1.8E+01 | | 1.3E-02 | |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | | | | | | | 8.0E+01 | I | V | | | | | | 1.7E+05 | 1.7E+05 | | 9.3E+01 | |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | | | | | 4.0E-03 | P | | | | | | | | 1.5E+02 | | 1.5E+02 | | 1.4E+00 | |
| Thallium (Soluble Salts) | 7440-28-0 | | | | | | | | | | | | | | | | | 2.0E+00 | | 1.4E-01 |
| Thiobencarb | 28249-77-6 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 1.3E+00 | |
| Thiodiglycol | 111-48-8 | | | | | 7.0E-02 | X | | | | | | | | 2.6E+03 | | 2.6E+03 | | 5.2E-01 | |
| Thiofanox | 39196-18-4 | | | | | 3.0E-04 | H | | | | | | | | 1.1E+01 | | 1.1E+01 | | 3.8E-03 | |
| Thiophanate, Methyl | 23564-05-8 | | | | | 8.0E-02 | I | | | | | | | | 2.9E+03 | | 2.9E+03 | | 2.5E+00 | |
| Thiram | 137-26-8 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 2.6E-01 | |
| Tin | 7440-31-5 | | | | | 6.0E-01 | H | | | | | | | | 2.2E+04 | | 2.2E+04 | | 5.5E+03 | |
| Titanium Tetrachloride | 7550-45-0 | | | | | | | 1.0E-04 | A | | | | | | | | | | | |
| Toluene | 108-88-3 | | | | | 8.0E-02 | I | 5.0E+00 | I | V | | | | | 2.9E+03 | 1.0E+04 | 2.3E+03 | 1.0E+03 | 1.6E+00 | 6.9E-01 |
| Toluidine, p- | 106-49-0 | 1.9E-01 | H | | | | | | | | | 3.5E-01 | | 3.5E-01 | | | | | 1.5E-04 | |
| Toxaphene | 8001-35-2 | 1.1E+00 | I | 3.2E-04 | I | | | | | | | 6.1E-02 | | 6.1E-02 | | | | 3.0E+00 | 9.5E-03 | 4.6E-01 |
| Tralomethrin | 66841-25-6 | | | | | 7.5E-03 | I | | | | | | | | 2.7E+02 | | 2.7E+02 | | 1.1E+02 | |
| Tri-n-butyltin | 688-73-3 | | | | | 3.0E-04 | A | | | | | | | | 1.1E+01 | | 1.1E+01 | | 2.4E-01 | |
| Triallate | 2303-17-5 | | | | | 1.3E-02 | I | | | | | | | | 4.8E+02 | | 4.7E+02 | | 1.1E+00 | |
| Triasulfuron | 82097-50-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 3.9E-01 | |
| Tribromobenzene, 1,2,4- | 615-54-3 | | | | | 5.0E-03 | I | | | | | | | | 1.8E+02 | | 1.8E+02 | | 2.6E-01 | |
| Tributyl Phosphate | 126-73-8 | 9.2E-03 | P | | | 2.0E-01 | P | | | | | 7.3E+00 | | 7.3E+00 | 7.3E+03 | | 7.3E+03 | | 3.6E-02 | |
| Tributyltin Compounds | NA | | | | | 3.0E-04 | P | | | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| Tributyltin Oxide | 56-35-9 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | 5.7E+02 | |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | | | | | 3.0E+01 | I | 3.0E+01 | H | V | | | | | 1.1E+06 | 6.3E+04 | 5.9E+04 | | 1.5E+02 | |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 2.9E-02 | H | | | | | | | | | 2.3E+00 | | 2.3E+00 | | | | | 6.4E-03 | |

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Key: I = IRIS; P = PPRTV; A = ATSDR; C = Cal EPA; X = PPRTV Appendix; H = HEAST; J = New Jersey; E = Environmental Criteria and Assessment Office; S = see user guide Section 5; L = see user guide on lead; M = mutagen; V = volatile; F = See FAQ #29; c = cancer; * = where: n SL < 100X c SL; ** = where n SL < 10X c SL; n = noncancer; m = Concentration may exceed ceiling limit (See User's Guide); s = Concentration may exceed Csat (See User's Guide); SSL values are based on DAF=1

| Contaminant | | Toxicity and Chemical-specific Information | | | | | | | | | | Carcinogenic Target Risk (TR) = 1E-06 | | | Noncancer Hazard Index (HI) = 1 | | | MCL | Protection of Groundwater Soil | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | SFO | key | IUR | key | RfDo | key | RfCi | key | voc | muta- | Ingestion | Inhalation | Total | Ingestion | Inhalation | Total | | Risk-based SSL | MCL-based SSL |
| Analyte | CAS No. | (mg/kg-day)$^{-1}$ | | (ug/m$^3$)$^{-1}$ | | (mg/kg-day) | | (mg/m$^3$) | | | gen | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | ug/L | mg/kg | mg/kg |
| Trichloroaniline, 2,4,6- | 634-93-5 | 3.4E-02 | H | | | | | | | | | 2.0E+00 | | 2.0E+00 | | | | | 1.8E-02 | |
| Trichlorobenzene, 1,2,3- | 87-61-6 | | | | | 8.0E-04 | X | | | V | | | | | 2.9E+01 | | 2.9E+01 | | 8.7E-02 | |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 2.9E-02 | P | | | 1.0E-02 | I | 2.0E-03 | P | V | | 2.3E+00 | | 2.3E+00 | 3.7E+02 | 4.2E+00 | 4.1E+00 | 7.0E+01 | 6.8E-03 | 2.0E-01 |
| Trichloroethane, 1,1,1- | 71-55-6 | | | | | 2.0E+00 | I | 5.0E+00 | I | V | | | | | 7.3E+04 | 1.0E+04 | 9.1E+03 | 2.0E+02 | 3.2E+00 | 7.0E-02 |
| Trichloroethane, 1,1,2- | 79-00-5 | 5.7E-02 | I | 1.6E-05 | I | 4.0E-03 | I | | | V | | 1.2E+00 | 3.0E-01 | 2.4E-01 | 1.5E+02 | | 1.5E+02 | 5.0E+00 | 7.8E-05 | 1.6E-03 |
| Trichloroethylene | 79-01-6 | 5.9E-03 | C | 2.0E-06 | C | | | | | V | | 1.1E+01 | 2.4E+00 | 2.0E+00 | | | | 5.0E+00 | 7.2E-04 | 1.8E-03 |
| Trichlorofluoromethane | 75-69-4 | | | | | 3.0E-01 | I | 7.0E-01 | H | V | | | | | 1.1E+04 | 1.5E+03 | 1.3E+03 | | 8.3E-01 | |
| Trichlorophenol, 2,4,5- | 95-95-4 | | | | | 1.0E-01 | I | | | | | | | | 3.7E+03 | | 3.7E+03 | | 1.4E+01 | |
| Trichlorophenol, 2,4,6- | 88-06-2 | 1.1E-02 | I | 3.1E-06 | I | 1.0E-03 | P | | | | | 6.1E+00 | | 6.1E+00 | 3.7E+01 | | 3.7E+01 | | 2.3E-02 | |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | | | | | 1.0E-02 | I | | | | | | | | 3.7E+02 | | 3.7E+02 | | 1.5E-01 | |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | | | | | 8.0E-03 | I | | | | | | | | 2.9E+02 | | 2.9E+02 | 5.0E+01 | 1.6E-01 | 2.8E-02 |
| Trichloropropane, 1,1,2- | 598-77-6 | | | | | 5.0E-03 | I | | | V | | | | | 1.8E+02 | | 1.8E+02 | | 7.1E-02 | |
| Trichloropropane, 1,2,3- | 96-18-4 | 3.0E+01 | I | | | 4.0E-03 | I | 3.0E-04 | I | V | M | 7.2E-04 | | 7.2E-04 | 1.5E+02 | 6.3E-01 | 6.2E-01 | | 3.1E-07 | |
| Trichloropropene, 1,2,3- | 96-19-5 | | | | | 3.0E-03 | X | 3.0E-04 | P | V | | | | | 1.1E+02 | 6.3E-01 | 6.2E-01 | | 3.1E-04 | |
| Tridiphane | 58138-08-2 | | | | | 3.0E-03 | I | | | | | | | | 1.1E+02 | | 1.1E+02 | | 7.8E-01 | |
| Triethylamine | 121-44-8 | | | | | | | 7.0E-03 | I | V | | | | | | 1.5E+01 | 1.5E+01 | | 4.4E-03 | |
| Trifluralin | 1582-09-8 | 7.7E-03 | I | | | 7.5E-03 | I | | | | | 8.7E+00 | | 8.7E+00 | 2.7E+02 | | 2.7E+02 | | 2.9E-01 | |
| Trimethyl Phosphate | 512-56-1 | 3.7E-02 | H | | | | | | | | | 1.8E+00 | | 1.8E+00 | | | | | 4.0E-04 | |
| Trimethylbenzene, 1,2,4- | 95-63-6 | | | | | | | 7.0E-03 | P | V | | | | | | 1.5E+01 | 1.5E+01 | | 2.1E-02 | |
| Trimethylbenzene, 1,3,5- | 108-67-8 | | | | | 1.0E-02 | X | | | V | | | | | 3.7E+02 | | 3.7E+02 | | 5.2E-01 | |
| Trinitrobenzene, 1,3,5- | 99-35-4 | | | | | 3.0E-02 | I | | | | | | | | 1.1E+03 | | 1.1E+03 | | 3.9E+00 | |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 3.0E-02 | I | | | 5.0E-04 | I | | | | | 2.2E+00 | | 2.2E+00 | 1.8E+01 | | 1.8E+01 | | 1.3E-02 | |
| Triphenylphosphine Oxide | 791-28-6 | | | | | 2.0E-02 | P | | | | | | | | 7.3E+02 | | 7.3E+02 | | 3.0E+00 | |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 2.0E-02 | P | | | 7.0E-03 | P | | | | | 3.4E+00 | | 3.4E+00 | 2.6E+02 | | 2.6E+02 | | 3.3E-03 | |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 3.2E-03 | P | | | 1.0E-01 | P | | | | | 2.1E+01 | | 2.1E+01 | 3.7E+03 | | 3.7E+03 | | 1.0E+02 | |
| Uranium (Soluble Salts) | NA | | | | | 3.0E-03 | I | 3.0E-04 | A | | | | | | 1.1E+02 | | 1.1E+02 | | 4.9E+01 | |
| Urethane | 51-79-6 | 1.0E+00 | C | 2.9E-04 | C | | | | | | | 6.7E-02 | | 6.7E-02 | | | | | 1.5E-05 | |
| Vanadium Pentoxide | 1314-62-1 | | | 8.3E-03 | P | 9.0E-03 | I | 7.0E-06 | P | | | | | | 3.3E+02 | | 3.3E+02 | | | |
| Vanadium Sulfate | 36907-42-3 | | | | | 2.0E-02 | H | | | | | | | | 7.3E+02 | | 7.3E+02 | | | |
| Vanadium and Compounds | NA | | | | | 5.0E-03 | S | | | | | | | | 1.8E+02 | | 1.8E+02 | | 1.8E+02 | |
| Vanadium, Metallic | 7440-62-2 | | | | | 7.0E-05 | P | | | | | | | | 2.6E+00 | | 2.6E+00 | | 2.6E+00 | |
| Vernolate | 1929-77-7 | | | | | 1.0E-03 | I | | | | | | | | 3.7E+01 | | 3.7E+01 | | 2.9E-02 | |
| Vinclozolin | 50471-44-8 | | | | | 2.5E-02 | I | | | | | | | | 9.1E+02 | | 9.1E+02 | | 7.0E-01 | |
| Vinyl Acetate | 108-05-4 | | | | | 1.0E+00 | H | 2.0E-01 | I | V | | | | | 3.7E+04 | 4.2E+02 | 4.1E+02 | | 8.8E-02 | |
| Vinyl Bromide | 593-60-2 | | | 3.2E-05 | H | | | 3.0E-03 | I | V | | | 1.5E-01 | 1.5E-01 | | 6.3E+00 | 6.3E+00 | | 4.4E-05 | |
| Vinyl Chloride | 75-01-4 | 7.2E-01 | I | 4.4E-06 | I | 3.0E-03 | I | 1.0E-01 | I | V | M | 1.7E-02 | 3.2E-01 | 1.6E-02 | 1.1E+02 | 2.1E+02 | 7.2E+01 | 2.0E+00 | 5.6E-06 | 6.9E-04 |
| Warfarin | 81-81-2 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | 1.2E-02 | |
| Xylene, Mixture | 1330-20-7 | | | | | 2.0E-01 | I | 1.0E-01 | I | V | | | | | 7.3E+03 | 2.1E+02 | 2.0E+02 | 1.0E+04 | 2.0E-01 | 9.9E+00 |
| Xylene, P- | 106-42-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | | 1.2E+00 | |
| Xylene, m- | 108-38-3 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | | 1.2E+00 | |
| Xylene, o- | 95-47-6 | | | | | 2.0E-01 | I | 7.0E-01 | C | V | | | | | 7.3E+03 | 1.5E+03 | 1.2E+03 | | 1.2E+00 | |
| Zinc (Metallic) | 7440-66-6 | | | | | 3.0E-01 | I | | | | | | | | 1.1E+04 | | 1.1E+04 | | 6.8E+02 | |
| Zinc Phosphide | 1314-84-7 | | | | | 3.0E-04 | I | | | | | | | | 1.1E+01 | | 1.1E+01 | | | |
| Zineb | 12122-67-7 | | | | | 5.0E-02 | I | | | | | | | | 1.8E+03 | | 1.8E+03 | | 5.3E+00 | |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| ALAR | 1596-84-5 | 160.17 | EPI Demwin v2.0 | 1.70E-08 | 4.23E-10 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.00E+05 | EPI WATERNT v.01 |
| Acephate | 30560-19-1 | 183.16 | EPI Demwin v2.0 | 2.00E-11 | 5.01E-13 | EPI HenryWin v3.2 | 1.35 | CRC 89th Ed | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 8.18E+05 | EPI WATERNT v.01 |
| Acetaldehyde | 75-07-0 | 44.05 | EPI Demwin v2.0 | 2.70E-03 | 6.67E-05 | EPI HenryWin v3.2 | 0.7834 | CRC 89th Ed | 1.30E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Acetochlor | 34256-82-1 | 269.77 | EPI Demwin v2.0 | 9.10E-07 | 2.23E-08 | EPI HenryWin v3.2 | | | | | | | 2.98E+02 | EPI KOCWIN v2.0 | 2.23E+02 | EPI WATERNT v.01 |
| Acetone | 67-64-1 | 58.08 | EPI Demwin v2.0 | 1.40E-03 | 3.50E-05 | EPI HenryWin v3.2 | 0.7845 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 2.36E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Acetone Cyanohydrin | 75-86-5 | 85.11 | EPI Demwin v2.0 | 5.30E-04 | 1.30E-05 | EPI HenryWin v3.2 | 0.932 | CRC 89th Ed | 8.60E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Acetonitrile | 75-05-8 | 41.05 | EPI Demwin v2.0 | 1.40E-03 | 3.45E-05 | EPI HenryWin v3.2 | 0.7857 | CRC 89th Ed | 1.30E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 4.67E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Acetophenone | 98-86-2 | 120.15 | EPI Demwin v2.0 | 4.30E-04 | 1.04E-05 | EPI HenryWin v3.2 | 1.0281 | CRC 89th Ed | 6.50E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 5.19E+01 | EPI KOCWIN v2.0 | 6.13E+03 | EPI WATERNT v.01 |
| Acetylaminofluorene, 2- | 53-96-3 | 223.28 | EPI Demwin v2.0 | 7.80E-09 | 1.92E-10 | EPI HenryWin v3.2 | | | | | | | 2.21E+03 | EPI KOCWIN v2.0 | 8.46E+00 | EPI WATERNT v.01 |
| Acrolein | 107-02-8 | 56.06 | EPI Demwin v2.0 | 5.00E-03 | 1.22E-04 | EPI HenryWin v3.2 | 0.84 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 1.00E+00 | EPI KOCWIN v2.0 | 2.12E+05 | EPI WATERNT v.01 |
| Acrylamide | 79-06-1 | 71.08 | EPI Demwin v2.0 | 7.00E-08 | 1.70E-09 | EPI HenryWin v3.2 | | | | | | | 5.69E+00 | EPI KOCWIN v2.0 | 3.90E+05 | EPI WATERNT v.01 |
| Acrylic Acid | 79-10-7 | 72.06 | EPI Demwin v2.0 | 1.50E-05 | 3.70E-07 | EPI HenryWin v3.2 | 1.0511 | CRC 89th Ed | 1.00E-01 | EPA 2002 | 1.20E-05 | EPA 2002 | 1.44E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Acrylonitrile | 107-13-1 | 53.06 | EPI Demwin v2.0 | 5.60E-03 | 1.38E-04 | EPI HenryWin v3.2 | 0.8007 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 8.51E+00 | EPI KOCWIN v2.0 | 7.45E+04 | EPI WATERNT v.01 |
| Adiponitrile | 111-69-3 | 108.14 | EPI Demwin v2.0 | 4.90E-08 | 1.21E-09 | EPI HenryWin v3.2 | 0.9676 | CRC 89th Ed | 7.10E-02 | EPA 2002 | 9.00E-06 | EPA 2002 | 2.02E+01 | EPI KOCWIN v2.0 | 8.00E+04 | EPI WATERNT v.01 |
| Alachlor | 15972-60-8 | 269.77 | EPI Demwin v2.0 | 3.40E-07 | 8.32E-09 | EPI HenryWin v3.2 | 1.133 | CRC 89th Ed | | | | | 3.12E+02 | EPI KOCWIN v2.0 | 2.40E+02 | EPI WATERNT v.01 |
| Aldicarb | 116-06-3 | 190.26 | EPI Demwin v2.0 | 5.90E-08 | 1.44E-09 | EPI HenryWin v3.2 | 1.195 | CRC 89th Ed | | | | | 2.46E+01 | EPI KOCWIN v2.0 | 6.03E+03 | EPI WATERNT v.01 |
| Aldicarb Sulfone | 1646-88-4 | 222.26 | EPI Demwin v2.0 | 1.40E-07 | 3.37E-09 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.00E+04 | EPI WATERNT v.01 |
| Aldrin | 309-00-2 | 364.92 | EPI Demwin v2.0 | 1.80E-03 | 4.40E-05 | EPI HenryWin v3.2 | | | | | | | 8.20E+04 | EPI KOCWIN v2.0 | 1.70E-02 | EPI WATERNT v.01 |
| Ally | 74223-64-6 | 381.37 | EPI Demwin v2.0 | 5.40E-15 | 1.32E-16 | EPI HenryWin v3.2 | | | | | | | 9.25E+01 | EPI KOCWIN v2.0 | 9.50E+03 | EPI WATERNT v.01 |
| Allyl Alcohol | 107-18-6 | 58.08 | EPI Demwin v2.0 | 2.00E-04 | 4.99E-06 | EPI HenryWin v3.2 | 0.854 | CRC 89th Ed | 1.10E-01 | EPA 2002 | 1.20E-05 | EPA 2002 | 1.90E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Allyl Chloride | 107-05-1 | 76.53 | EPI Demwin v2.0 | 4.50E-01 | 1.10E-02 | EPI HenryWin v3.2 | 0.9376 | CRC 89th Ed | 9.40E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 3.37E+03 | EPI WATERNT v.01 |
| Aluminum | 7429-90-5 | 30.01 | EPI Demwin v2.0 | | | | 2.7 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Aluminum Phosphide | 20859-73-8 | 57.96 | EPI Demwin v2.0 | | | | 2.4 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Amdro | 67485-29-4 | 494.49 | EPI Demwin v2.0 | 9.00E-05 | 2.20E-06 | EPI HenryWin v3.2 | | | | | | | 1.80E+08 | EPI KOCWIN v2.0 | 6.00E-03 | EPI WATERNT v.01 |
| Ametryn | 834-12-8 | 227.33 | EPI Demwin v2.0 | 9.90E-08 | 2.43E-09 | EPI HenryWin v3.2 | | | | | | | 4.28E+02 | EPI KOCWIN v2.0 | 2.09E+02 | EPI WATERNT v.01 |
| Aminobiphenyl, 4- | 92-67-1 | 169.23 | EPI Demwin v2.0 | 7.10E-06 | 1.73E-07 | EPI HenryWin v3.2 | | | | | | | 2.47E+03 | EPI KOCWIN v2.0 | 1.29E+02 | EPI WATERNT v.01 |
| Aminophenol, m- | 591-27-5 | 109.13 | EPI Demwin v2.0 | 1.10E-08 | 2.68E-10 | EPI HenryWin v3.2 | | | | | | | 9.02E+01 | EPI KOCWIN v2.0 | 2.70E+04 | EPI WATERNT v.01 |
| Aminophenol, p- | 123-30-8 | 109.13 | EPI Demwin v2.0 | 1.50E-08 | 3.59E-10 | EPI HenryWin v3.2 | | | | | | | 9.02E+01 | EPI KOCWIN v2.0 | 1.60E+04 | EPI WATERNT v.01 |
| Amitraz | 33089-61-1 | 293.42 | EPI Demwin v2.0 | 4.00E-04 | 9.87E-06 | EPI HenryWin v3.2 | 1.128 | CRC 89th Ed | | | | | 2.57E+05 | EPI KOCWIN v2.0 | 1.00E+00 | EPI WATERNT v.01 |
| Ammonia | 7664-41-7 | 17.03 | EPI Demwin v2.0 | 6.60E-04 | | PHYSPROP conversion | 0.696 | CRC 89th Ed | | | | | | | 4.82E+05 | CRC 89th Ed |
| Ammonium Perchlorate | 7790-98-9 | 117.49 | EPI Demwin v2.0 | | | | 1.95 | CRC 89th Ed | | | | | | | 2.00E+05 | EPI WATERNT v.01 |
| Ammonium Sulfamate | 7773-06-0 | 97.09 | EPI Demwin v2.0 | | | | | | | | | | | | 1.47E+05 | EPI WATERNT v.01 |
| Aniline | 62-53-3 | 93.13 | EPI Demwin v2.0 | 8.30E-05 | 2.02E-06 | EPI HenryWin v3.2 | 1.0217 | CRC 89th Ed | 8.30E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 7.02E+01 | EPI KOCWIN v2.0 | 3.60E+04 | EPI WATERNT v.01 |
| Antimony (metallic) | 7440-36-0 | 124.78 | EPI Demwin v2.0 | | | | 6.68 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 85th Ed |
| Antimony Pentoxide | 1314-60-9 | 323.52 | EPI | | | | 3.78 | CRC 89th Ed | | | | | | | 3.00E+03 | CRC 89th Ed |
| Antimony Potassium Tartrate | 11071-15-1 | 613.83 | EPI Demwin v2.0 | | | | | | | | | | | | 5.26E+04 | EPI WATERNT v.01 |
| Antimony Tetroxide | 1332-81-6 | 307.52 | EPI Demwin v2.0 | | | | 6.64 | CRC 89th Ed | | | | | | | | |
| Antimony Trioxide | 1309-64-4 | 291.52 | EPI Demwin v2.0 | | | | 5.58 | CRC 89th Ed | | | | | | | | CRC 89th Ed |
| Apollo | 74115-24-5 | 303.15 | EPI Demwin v2.0 | 1.60E-08 | 3.90E-10 | EPI HenryWin v3.2 | | | | | | | 3.02E+04 | EPI KOCWIN v2.0 | 1.00E+00 | EPI WATERNT v.01 |
| Aramite | 140-57-8 | 334.86 | EPI Demwin v2.0 | 7.80E-06 | 1.90E-07 | EPI HenryWin v3.2 | 1.143 | CRC 89th Ed | | | | | 5.55E+03 | EPI KOCWIN v2.0 | 2.59E+00 | EPI WATERNT v.01 |
| Arsenic, Inorganic | 7440-38-2 | 77.95 | EPI Demwin v2.0 | | | | 5.75 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Arsine | 7784-42-1 | 77.95 | EPI Demwin v2.0 | | | | 3.186 | CRC 89th Ed | | | | | | | 9.58E+02 | CRC 89th Ed |
| Assure | 76578-14-8 | 372.81 | EPI Demwin v2.0 | 4.30E-07 | 1.06E-08 | EPI HenryWin v3.2 | | | | | | | 7.74E+03 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Asulam | 3337-71-1 | 230.24 | EPI Demwin v2.0 | 7.00E-11 | 1.71E-12 | EPI HenryWin v3.2 | | | | | | | 2.78E+01 | EPI KOCWIN v2.0 | 5.00E+03 | EPI WATERNT v.01 |
| Atrazine | 1912-24-9 | 215.69 | EPI Demwin v2.0 | 9.60E-08 | 2.36E-09 | EPI HenryWin v3.2 | | | | | | | 2.25E+02 | EPI KOCWIN v2.0 | 3.47E+01 | EPI WATERNT v.01 |
| Auramine | 492-80-8 | 267.38 | EPI Demwin v2.0 | 1.50E-07 | 3.64E-09 | EPI HenryWin v3.2 | | | | | | | 4.46E+03 | EPI KOCWIN v2.0 | 1.00E+04 | EPI WATERNT v.01 |
| Avermectin B1 | 65195-55-3 | 875.12 | EPI Demwin v2.0 | 5.40E-26 | 1.32E-27 | EPI HenryWin v3.2 | | | | | | | 8.77E+05 | EPI KOCWIN v2.0 | 1.42E+00 | EPI WATERNT v.01 |
| Azobenzene | 103-33-3 | 182.23 | EPI Demwin v2.0 | 5.50E-04 | 1.35E-05 | EPI HenryWin v3.2 | 1.09 | Merk | 3.40E-02 | USEPA 2001 | 7.00E-06 | USEPA 2001 | 3.76E+03 | EPI KOCWIN v2.0 | 6.40E+00 | EPI WATERNT v.01 |
| Barium | 7440-39-3 | 137.33 | EPI Demwin v2.0 | | | | 3.62 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Baygon | 114-26-1 | 209.25 | EPI Demwin v2.0 | 5.80E-08 | 1.43E-09 | EPI HenryWin v3.2 | 1.12 | CRC 89th Ed | | | | | 6.00E+01 | EPI KOCWIN v2.0 | 1.86E+03 | EPI WATERNT v.01 |
| Bayleton | 43121-43-3 | 293.76 | EPI Demwin v2.0 | 3.30E-09 | 8.11E-11 | EPI HenryWin v3.2 | 1.22 | CRC 89th Ed | | | | | 2.99E+02 | EPI KOCWIN v2.0 | 7.15E+01 | EPI WATERNT v.01 |
| Baythroid | 68359-37-5 | 434.30 | EPI Demwin v2.0 | 1.20E-06 | 2.90E-08 | EPI HenryWin v3.2 | | | | | | | 1.31E+05 | EPI KOCWIN v2.0 | 3.00E-03 | EPI WATERNT v.01 |
| Benefin | 1861-40-1 | 335.29 | EPI Demwin v2.0 | 1.20E-02 | 2.91E-04 | EPI HenryWin v3.2 | | | | | | | 1.64E+04 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| Benomyl | 17804-35-2 | 290.32 | EPI Demwin v2.0 | 2.00E-10 | 4.93E-12 | EPI HenryWin v3.2 | | | | | | | 3.36E+02 | EPI KOCWIN v2.0 | 3.80E+00 | EPI WATERNT v.01 |
| Bentazon | 25057-89-0 | 240.28 | EPI Demwin v2.0 | 8.90E-08 | 2.18E-09 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 5.00E+02 | EPI WATERNT v.01 |
| Benzaldehyde | 100-52-7 | 106.13 | EPI Demwin v2.0 | 1.10E-03 | 2.67E-05 | EPI HenryWin v3.2 | 1.0401 | CRC 89th Ed | 7.40E-02 | USEPA 2001 | 9.50E-06 | USEPA 2001 | 1.11E+01 | EPI KOCWIN v2.0 | 6.95E+03 | EPI WATERNT v.01 |
| Benzene | 71-43-2 | 78.11 | EPI Demwin v2.0 | 2.30E-01 | 5.55E-03 | EPI HenryWin v3.2 | 0.8765 | CRC 89th Ed | 9.00E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 1.46E+02 | EPI KOCWIN v2.0 | 1.79E+03 | EPI WATERNT v.01 |
| Benzenethiol | 108-98-5 | 110.17 | EPI Demwin v2.0 | 1.40E-02 | 3.35E-04 | EPI HenryWin v3.2 | 1.0775 | CRC 89th Ed | 7.30E-02 | USEPA 2001 | 9.50E-06 | USEPA 2001 | 2.34E+02 | EPI KOCWIN v2.0 | 8.35E+02 | EPI WATERNT v.01 |
| Benzidine | 92-87-5 | 184.24 | EPI Demwin v2.0 | 2.90E-09 | 7.05E-11 | EPI HenryWin v3.2 | | | | | | | 1.19E+03 | EPI KOCWIN v2.0 | 3.22E+02 | EPI WATERNT v.01 |
| Benzoic Acid | 65-85-0 | 122.12 | EPI Demwin v2.0 | 1.60E-06 | 3.81E-08 | EPI HenryWin v3.2 | 1.2659 | CRC 89th Ed | | | | | 1.66E+01 | EPI KOCWIN v2.0 | 3.40E+03 | EPI WATERNT v.01 |
| Benzotrichloride | 98-07-7 | 195.48 | EPI Demwin v2.0 | 1.10E-02 | 2.60E-04 | EPI HenryWin v3.2 | 1.3723 | CRC 89th Ed | 3.10E-02 | USEPA 2001 | 7.70E-06 | USEPA 2001 | 1.00E+03 | EPI KOCWIN v2.0 | 5.30E+01 | EPI WATERNT v.01 |
| Benzyl Alcohol | 100-51-6 | 108.14 | EPI Demwin v2.0 | 1.40E-05 | 3.37E-07 | EPI HenryWin v3.2 | 1.0419 | CRC 89th Ed | 7.30E-02 | EPA 2002 | 9.40E-06 | EPA 2002 | 2.15E+01 | EPI KOCWIN v2.0 | 4.29E+04 | EPI WATERNT v.01 |
| Benzyl Chloride | 100-44-7 | 126.59 | EPI Demwin v2.0 | 1.70E-02 | 4.12E-04 | EPI HenryWin v3.2 | 1.1004 | CRC 89th Ed | 6.30E-02 | USEPA 2001 | 8.80E-06 | USEPA 2001 | 4.46E+02 | EPI KOCWIN v2.0 | 5.25E+02 | EPI WATERNT v.01 |
| Beryllium and compounds | 7440-41-7 | 9.01 | EPI Demwin v2.0 | | | | 1.85 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Bidrin | 141-66-2 | 237.19 | EPI Demwin v2.0 | 2.10E-09 | 5.03E-11 | EPI HenryWin v3.2 | 1.216 | CRC 89th Ed | | | | | 1.66E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Bifenox | 42576-02-3 | 342.14 | EPI Demwin v2.0 | 4.40E-06 | 1.08E-07 | EPI HenryWin v3.2 | | | | | | | 3.68E+03 | EPI KOCWIN v2.0 | 3.98E-01 | EPI WATERNT v.01 |
| Biphenthrin | 82657-04-3 | 422.88 | EPI Demwin v2.0 | 4.10E-05 | 1.00E-06 | EPI HenryWin v3.2 | 1.2 | CRC 89th Ed | | | | | 2.27E+06 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| Biphenyl, 1,1'- | 92-52-4 | 154.21 | EPI Demwin v2.0 | 1.30E-02 | 3.08E-04 | EPI HenryWin v3.2 | 1.04 | CRC 89th Ed | 4.70E-02 | USEPA 2001 | 7.60E-06 | USEPA 2001 | 5.13E+03 | EPI KOCWIN v2.0 | 6.94E+00 | EPI WATERNT v.01 |
| Bis(2-chloro-1-methylethyl) ether | 108-60-1 | 171.07 | EPI Demwin v2.0 | 3.00E-03 | 7.42E-05 | EPI HenryWin v3.2 | 1.103 | CRC 89th Ed | 4.00E-02 | USEPA 2001 | 7.40E-06 | USEPA 2001 | 8.29E+01 | EPI KOCWIN v2.0 | 1.70E+03 | EPI WATERNT v.01 |
| Bis(2-chloroethoxy)methane | 111-91-1 | 173.04 | EPI Demwin v2.0 | 1.60E-04 | 3.85E-06 | EPI HenryWin v3.2 | | | | | | | 1.44E+01 | EPI KOCWIN v2.0 | 7.80E+03 | EPI WATERNT v.01 |
| Bis(2-chloroethyl)ether | 111-44-4 | 143.01 | EPI Demwin v2.0 | 7.00E-04 | 1.70E-05 | EPI HenryWin v3.2 | 1.22 | CRC 89th Ed | 5.70E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 3.22E+01 | EPI KOCWIN v2.0 | 1.72E+04 | EPI WATERNT v.01 |
| Bis(2-ethylhexyl)phthalate | 117-81-7 | 390.57 | EPI Demwin v2.0 | 1.10E-05 | 2.70E-07 | EPI HenryWin v3.2 | 0.981 | CRC 89th Ed | | | | | 1.20E+05 | EPI KOCWIN v2.0 | 2.70E-01 | EPI WATERNT v.01 |
| Bis(chloromethyl)ether | 542-88-1 | 114.96 | EPI Demwin v2.0 | 1.80E-01 | 4.36E-03 | EPI HenryWin v3.2 | 1.323 | CRC 89th Ed | 7.60E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 9.70E+00 | EPI KOCWIN v2.0 | 2.20E+04 | EPI WATERNT v.01 |
| Bisphenol A | 80-05-7 | 228.29 | EPI Demwin v2.0 | 3.70E-10 | 9.16E-12 | EPI HenryWin v3.2 | | | | | | | 3.77E+04 | EPI KOCWIN v2.0 | 1.20E+02 | EPI WATERNT v.01 |
| Boron And Borates Only | 7440-42-8 | 13.84 | EPI Demwin v2.0 | | | | 2.34 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Boron Trifluoride | 7637-07-2 | 67.81 | EPI Demwin v2.0 | | | | 2.772 | CRC 89th Ed | | | | | | | 3.32E+06 | EPI WATERNT v.01 |
| Bromate | 15541-45-4 | 79.90 | EPI Demwin v2.0 | | | | | | | | | | | | | |
| Bromo-2-chloroethane, 1- | 107-04-0 | 143.41 | EPI Demwin v2.0 | 3.70E-02 | 9.09E-04 | EPI HenryWin v3.2 | 1.7392 | CRC 89th Ed | 6.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 6.90E+03 | EPI WATERNT v.01 |
| Bromobenzene | 108-86-1 | 157.01 | EPI Demwin v2.0 | 1.00E-01 | 2.47E-03 | EPI HenryWin v3.2 | 1.495 | CRC 89th Ed | 5.40E-02 | USEPA 2001 | 9.30E-06 | USEPA 2001 | 2.34E+02 | EPI KOCWIN v2.0 | 4.46E+02 | EPI WATERNT v.01 |
| Bromodichloromethane | 75-27-4 | 163.83 | EPI Demwin v2.0 | 8.70E-02 | 2.12E-03 | EPI HenryWin v3.2 | 1.98 | CRC 89th Ed | 5.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 3.03E+03 | EPI WATERNT v.01 |
| Bromoform | 75-25-2 | 252.73 | EPI Demwin v2.0 | 2.20E-02 | 5.35E-04 | EPI HenryWin v3.2 | 2.8788 | CRC 89th Ed | | | | | 3.18E+01 | EPI KOCWIN v2.0 | 3.10E+03 | EPI WATERNT v.01 |
| Bromomethane | 74-83-9 | 94.94 | EPI Demwin v2.0 | 3.00E-01 | 7.34E-03 | EPI HenryWin v3.2 | 1.6755 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.30E-05 | USEPA 2001 | 1.32E+01 | EPI KOCWIN v2.0 | 1.52E+04 | EPI WATERNT v.01 |
| Bromophos | 2104-96-3 | 365.99 | EPI Demwin v2.0 | 8.40E-03 | 2.05E-04 | EPI HenryWin v3.2 | | | | | | | 2.02E+03 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Bromoxynil | 1689-84-5 | 276.92 | EPI Demwin v2.0 | 5.40E-09 | 1.32E-10 | EPI HenryWin v3.2 | | | | | | | 3.30E+02 | EPI KOCWIN v2.0 | 1.30E+02 | EPI WATERNT v.01 |
| Bromoxynil Octanoate | 1689-99-2 | 403.12 | EPI Demwin v2.0 | 1.30E-03 | 3.19E-05 | EPI HenryWin v3.2 | | | | | | | 4.25E+03 | EPI KOCWIN v2.0 | 8.00E-02 | EPI WATERNT v.01 |
| Butadiene, 1,3- | 106-99-0 | 54.09 | EPI Demwin v2.0 | 3.00E+00 | 7.36E-02 | EPI HenryWin v3.2 | 0.6149 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 7.35E+02 | EPI WATERNT v.01 |
| Butanol, N- | 71-36-3 | 74.12 | EPI Demwin v2.0 | 3.60E-04 | 8.81E-06 | EPI HenryWin v3.2 | 0.8095 | CRC 89th Ed | 9.00E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 3.47E+00 | EPI KOCWIN v2.0 | 6.32E+04 | EPI WATERNT v.01 |
| Butyl Benzyl Phthlate | 85-68-7 | 312.37 | EPI Demwin v2.0 | 5.20E-05 | 1.26E-06 | EPI HenryWin v3.2 | 1.119 | CRC 89th Ed | | | | | 7.16E+03 | EPI KOCWIN v2.0 | 2.69E+00 | EPI WATERNT v.01 |
| Butyl alcohol, sec- | 78-92-2 | 74.12 | EPI Demwin v2.0 | 3.70E-04 | 9.06E-06 | EPI HenryWin v3.2 | 0.8063 | CRC 89th Ed | | | | | 2.92E+00 | EPI KOCWIN v2.0 | 1.81E+05 | EPI WATERNT v.01 |
| Butylate | 2008-41-5 | 217.37 | EPI Demwin v2.0 | 3.50E-03 | 8.45E-05 | EPI HenryWin v3.2 | 0.9402 | CRC 89th Ed | | | | | 3.86E+02 | EPI KOCWIN v2.0 | 4.50E+01 | EPI WATERNT v.01 |
| Butylated hydroxyanisole | 25013-16-5 | 180.25 | EPI Demwin v2.0 | 4.80E-05 | 1.17E-06 | EPI HenryWin v3.2 | | | | | | | 8.41E+02 | EPI KOCWIN v2.0 | 7.43E+02 | EPI WATERNT v.01 |
| Butylphthalyl Butylglycolate | 85-70-1 | 336.39 | EPI Demwin v2.0 | 1.30E-07 | 3.08E-09 | EPI HenryWin v3.2 | | | | | | | 1.12E+04 | EPI KOCWIN v2.0 | 8.47E+00 | EPI WATERNT v.01 |
| Cacodylic Acid | 75-60-5 | 138.00 | EPI Demwin v2.0 | | | | | | | | | | 4.39E+01 | EPI KOCWIN v2.0 | 2.00E+06 | EPI WATERNT v.01 |
| Cadmium (Diet) | 7440-43-9 | 112.41 | EPI Demwin v2.0 | | | | 8.69 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Cadmium (Water) | 7440-43-9 | 112.41 | EPI Demwin v2.0 | | | | 8.69 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Caprolactam | 105-60-2 | 113.16 | EPI Demwin v2.0 | 1.00E-06 | 2.53E-08 | EPI HenryWin v3.2 | | | | | | | 2.45E+01 | EPI KOCWIN v2.0 | 7.72E+05 | EPI WATERNT v.01 |
| Captafol | 2425-06-1 | 349.06 | EPI Demwin v2.0 | 2.00E-07 | 4.92E-09 | EPI HenryWin v3.2 | | | | | | | 7.83E+02 | EPI KOCWIN v2.0 | 1.40E+00 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Captan | 133-06-2 | 300.59 | EPI Dermwin v2.0 | 2.90E-07 | 7.00E-09 | EPI HenryWin v3.2 | 1.74 | CRC 89th Ed | | | | | 2.52E+02 | EPI KOCWIN v2.0 | 5.10E+00 | EPI WATERNT v.01 |
| Carbaryl | 63-25-2 | 201.23 | EPI Dermwin v2.0 | 1.30E-07 | 3.27E-09 | EPI HenryWin v3.2 | 1.228 | CRC 89th Ed | | | | | 3.55E+02 | EPI KOCWIN v2.0 | 1.10E+02 | EPI WATERNT v.01 |
| Carbofuran | 1563-66-2 | 221.26 | EPI Dermwin v2.0 | 1.30E-07 | 3.09E-09 | EPI HenryWin v3.2 | 1.18 | CRC 89th Ed | | | | | 9.53E+01 | EPI KOCWIN v2.0 | 3.20E+02 | EPI WATERNT v.01 |
| Carbon Disulfide | 75-15-0 | 76.13 | EPI Dermwin v2.0 | 5.90E-01 | 1.44E-02 | EPI HenryWin v3.2 | 1.2632 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.30E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 2.16E+03 | EPI WATERNT v.01 |
| Carbon Tetrachloride | 56-23-5 | 153.82 | EPI Dermwin v2.0 | 1.10E+00 | 2.76E-02 | EPI HenryWin v3.2 | 1.594 | CRC 89th Ed | 5.70E-02 | USEPA 2001 | 9.80E-06 | USEPA 2001 | 4.39E+01 | EPI KOCWIN v2.0 | 7.93E+02 | EPI WATERNT v.01 |
| Carbosulfan | 55285-14-8 | 380.55 | EPI Dermwin v2.0 | 2.10E-05 | 5.12E-07 | EPI HenryWin v3.2 | 1.056 | CRC 89th Ed | | | | | 1.20E+04 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Carboxin | 5234-68-4 | 235.30 | EPI Dermwin v2.0 | 1.30E-08 | 3.20E-10 | EPI HenryWin v3.2 | | | | | | | 1.69E+02 | EPI KOCWIN v2.0 | 1.47E+02 | EPI WATERNT v.01 |
| Ceric oxide | 1306-38-3 | 172.11 | EPI Dermwin v2.0 | | | | 7.216 | CRC 89th Ed | | | | | | | 1.07E+05 | EPI WATERNT v.01 |
| Chloral Hydrate | 302-17-0 | 165.40 | EPI Dermwin v2.0 | 4.50E-09 | 1.09E-10 | EPI HenryWin v3.2 | 1.9081 | CRC 89th Ed | 5.40E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 7.93E+05 | EPI WATERNT v.01 |
| Chloramben | 133-90-4 | 206.03 | EPI Dermwin v2.0 | 1.60E-09 | 3.87E-11 | EPI HenryWin v3.2 | | | | | | | 2.14E+01 | EPI KOCWIN v2.0 | 7.00E+02 | EPI WATERNT v.01 |
| Chloranil | 118-75-2 | 245.88 | EPI Dermwin v2.0 | 1.30E-08 | 3.27E-10 | EPI HenryWin v3.2 | | | | | | | 3.08E+02 | EPI KOCWIN v2.0 | 2.50E+02 | EPI WATERNT v.01 |
| Chlordane | 12789-03-6 | 409.78 | EPI Dermwin v2.0 | 2.00E-03 | 4.86E-05 | EPI HenryWin v3.2 | 1.6 | CRC 87th edition | | | | | 3.38E+04 | EPI KOCWIN v2.0 | 5.60E-02 | EPI WATERNT v.01 |
| Chlordecone (Kepone) | 143-50-0 | 490.64 | EPI Dermwin v2.0 | 2.20E-06 | 5.38E-08 | EPI HenryWin v3.2 | 1.61 | CRC 89th Ed | | | | | 1.75E+04 | EPI KOCWIN v2.0 | 2.70E+00 | EPI WATERNT v.01 |
| Chlorfenvinphos | 470-90-6 | 359.58 | EPI Dermwin v2.0 | 1.20E-06 | 2.89E-08 | EPI HenryWin v3.2 | | | | | | | 1.26E+03 | EPI KOCWIN v2.0 | 1.24E+02 | EPI WATERNT v.01 |
| Chlorimuron, Ethyl- | 90982-32-4 | 414.82 | EPI Dermwin v2.0 | 7.40E-14 | 1.82E-15 | EPI HenryWin v3.2 | | | | | | | 7.18E+01 | EPI KOCWIN v2.0 | 1.20E+03 | EPI WATERNT v.01 |
| Chlorine | 7782-50-5 | 70.91 | EPI Dermwin v2.0 | 4.80E-01 | | PHYSPROP conversion | 2.898 | CRC 89th Ed | | | | | | | 6.30E+03 | EPI WATERNT v.01 |
| Chlorine Dioxide | 10049-04-4 | 67.45 | EPI Dermwin v2.0 | | | | 2.757 | CRC 89th Ed | | | | | | | 1.12E+05 | CRC 89th Ed |
| Chlorite (Sodium Salt) | 7758-19-2 | 90.44 | EPI Dermwin v2.0 | | | | | | | | | | | | 6.40E+05 | CRC 89th Ed |
| Chloro-1,1-difluoroethane, 1- | 75-68-3 | 100.50 | EPI Dermwin v2.0 | 2.40E+00 | 5.88E-02 | EPI HenryWin v3.2 | 1.107 | CRC 89th Ed | 8.00E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 4.39E+01 | EPI KOCWIN v2.0 | 1.40E+03 | EPI WATERNT v.01 |
| Chloro-1,3-butadiene, 2- | 126-99-8 | 88.54 | EPI Dermwin v2.0 | 2.30E+00 | 5.61E-02 | EPI HenryWin v3.2 | 0.956 | CRC 89th Ed | 8.40E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 6.07E+01 | EPI KOCWIN v2.0 | 8.37E+02 | EPI WATERNT v.01 |
| Chloro-2-methylaniline HCl, 4- | 3165-93-3 | 141.60 | EPI Dermwin v2.0 | 8.10E-05 | 1.99E-06 | EPI HenryWin v3.2 | | | 7.00E-02 | USEPA 1987 | 8.20E-06 | USEPA 1987 | 1.85E+02 | EPI KOCWIN v2.0 | 1.73E+03 | EPI WATERNT v.01 |
| Chloroacetic Acid | 79-11-8 | 94.50 | EPI Dermwin v2.0 | 3.80E-07 | 9.26E-09 | EPI HenryWin v3.2 | 1.4043 | CRC 89th Ed | | | | | 1.44E+00 | EPI KOCWIN v2.0 | 8.58E+05 | EPI WATERNT v.01 |
| Chloroacetophenone, 2- | 532-27-4 | 154.60 | EPI Dermwin v2.0 | 1.30E-04 | 3.30E-06 | EPI HenryWin v3.2 | 1.324 | CRC 89th Ed | 5.20E-02 | EPA 2002 | 8.70E-06 | EPA 2002 | 9.89E+01 | EPI KOCWIN v2.0 | 2.48E+03 | EPI WATERNT v.01 |
| Chloroaniline, p- | 106-47-8 | 127.57 | EPI Dermwin v2.0 | 4.70E-05 | 1.16E-06 | EPI HenryWin v3.2 | 1.429 | CRC 89th Ed | 7.00E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 1.13E+02 | EPI KOCWIN v2.0 | 3.90E+03 | EPI WATERNT v.01 |
| Chlorobenzene | 108-90-7 | 112.56 | EPI Dermwin v2.0 | 1.30E-01 | 3.11E-03 | EPI HenryWin v3.2 | 1.1058 | CRC 89th Ed | 7.20E-02 | USEPA 2001 | 9.50E-06 | USEPA 2001 | 2.34E+02 | EPI KOCWIN v2.0 | 4.98E+02 | EPI WATERNT v.01 |
| Chlorobenzilate | 510-15-6 | 325.19 | EPI Dermwin v2.0 | 3.00E-06 | 7.24E-08 | EPI HenryWin v3.2 | 1.2816 | CRC 89th Ed | | | | | 1.54E+03 | EPI KOCWIN v2.0 | 1.30E+01 | EPI WATERNT v.01 |
| Chlorobenzoic Acid, p- | 74-11-3 | 156.57 | EPI Dermwin v2.0 | 1.60E-06 | 3.88E-08 | EPI HenryWin v3.2 | | | | | | | 2.66E+01 | EPI KOCWIN v2.0 | 7.20E+01 | EPI WATERNT v.01 |
| Chlorobenzotrifluoride, 4- | 98-56-6 | 180.56 | EPI Dermwin v2.0 | 1.40E+00 | 3.47E-02 | EPI HenryWin v3.2 | 1.334 | CRC 89th Ed | 3.80E-02 | USEPA 2001 | 8.00E-06 | USEPA 2001 | 1.61E+03 | EPI KOCWIN v2.0 | 1.17E+01 | EPI WATERNT v.01 |
| Chlorobutane, 1- | 109-69-3 | 92.57 | EPI Dermwin v2.0 | 6.80E-01 | 1.67E-02 | EPI HenryWin v3.2 | 0.8857 | CRC 89th Ed | 7.80E-02 | USEPA 2001 | 9.30E-06 | USEPA 2001 | 7.22E+01 | EPI KOCWIN v2.0 | 1.10E+03 | EPI WATERNT v.01 |
| Chlorodifluoromethane | 75-45-6 | 86.47 | EPI Dermwin v2.0 | 1.70E+00 | 4.06E-02 | EPI HenryWin v3.2 | 1.4909 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.30E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 2.77E+03 | EPI WATERNT v.01 |
| Chloroform | 67-66-3 | 119.38 | EPI Dermwin v2.0 | 1.50E-01 | 3.67E-03 | EPI HenryWin v3.2 | 1.4788 | CRC 89th Ed | 7.70E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 7.95E+03 | EPI WATERNT v.01 |
| Chloromethane | 74-87-3 | 50.49 | EPI Dermwin v2.0 | 3.60E-01 | 8.82E-03 | EPI HenryWin v3.2 | 0.911 | CRC 89th Ed | 1.20E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 1.32E+01 | EPI KOCWIN v2.0 | 5.32E+03 | EPI WATERNT v.01 |
| Chloromethyl Methyl Ether | 107-30-2 | 80.51 | EPI Dermwin v2.0 | 1.20E-02 | 3.04E-04 | EPI HenryWin v3.2 | 1.063 | CRC 89th Ed | 9.50E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 5.32E+00 | EPI KOCWIN v2.0 | 1.92E+05 | EPI WATERNT v.01 |
| Chloronaphthalene, Beta- | 91-58-7 | 162.62 | EPI Dermwin v2.0 | 1.30E-02 | 3.20E-04 | EPI HenryWin v3.2 | 1.1377 | CRC 89th Ed | 4.50E-02 | USEPA 2001 | 7.70E-06 | USEPA 2001 | 2.48E+03 | EPI KOCWIN v2.0 | 1.17E+01 | EPI WATERNT v.01 |
| Chloronitrobenzene, o- | 88-73-3 | 157.56 | EPI Dermwin v2.0 | 3.80E-04 | 9.30E-06 | EPI HenryWin v3.2 | 1.368 | CRC 89th Ed | 5.10E-02 | EPA 2002 | 8.80E-06 | EPA 2002 | 3.71E+02 | EPI KOCWIN v2.0 | 4.41E+02 | EPI WATERNT v.01 |
| Chloronitrobenzene, p- | 100-00-5 | 157.56 | EPI Dermwin v2.0 | 2.00E-04 | 4.89E-06 | EPI HenryWin v3.2 | 1.2979 | CRC 89th Ed | 5.00E-02 | EPA 2002 | 8.50E-06 | EPA 2002 | 3.63E+02 | EPI KOCWIN v2.0 | 2.25E+02 | EPI WATERNT v.01 |
| Chlorophenol, 2- | 95-57-8 | 128.56 | EPI Dermwin v2.0 | 4.60E-04 | 1.12E-05 | EPI HenryWin v3.2 | 1.2634 | CRC 89th Ed | 6.60E-02 | USEPA 2001 | 9.50E-06 | USEPA 2001 | 3.07E+02 | EPI KOCWIN v2.0 | 1.13E+04 | EPI WATERNT v.01 |
| Chloropicrin | 76-06-2 | 164.38 | EPI Dermwin v2.0 | 8.40E-02 | 2.05E-03 | EPI HenryWin v3.2 | 1.6558 | CRC 89th Ed | 5.20E-02 | USEPA 2001 | 9.60E-06 | USEPA 2001 | 4.42E+01 | EPI KOCWIN v2.0 | 1.62E+03 | EPI WATERNT v.01 |
| Chlorothalonil | 1897-45-6 | 265.91 | EPI Dermwin v2.0 | 8.20E-05 | 2.00E-06 | EPI HenryWin v3.2 | 1.7 | CRC 89th Ed | | | | | 1.04E+03 | EPI KOCWIN v2.0 | 8.10E-01 | EPI WATERNT v.01 |
| Chlorotoluene, o- | 95-49-8 | 126.59 | EPI Dermwin v2.0 | 1.50E-01 | 3.57E-03 | EPI HenryWin v3.2 | 1.0825 | CRC 89th Ed | 6.30E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 3.83E+02 | EPI KOCWIN v2.0 | 3.74E+02 | EPI WATERNT v.01 |
| Chlorotoluene, p- | 106-43-4 | 126.59 | EPI Dermwin v2.0 | 1.80E-01 | 4.38E-03 | EPI HenryWin v3.2 | 1.0697 | CRC 89th Ed | 6.30E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 3.75E+02 | EPI KOCWIN v2.0 | 1.06E+02 | EPI WATERNT v.01 |
| Chlorozotocin | 54749-90-5 | 313.70 | EPI Dermwin v2.0 | 1.50E-20 | 3.67E-22 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Chlorpropham | 101-21-3 | 213.67 | EPI Dermwin v2.0 | 2.30E-05 | 5.69E-07 | EPI HenryWin v3.2 | 1.18 | CRC 89th Ed | | | | | 3.51E+02 | EPI KOCWIN v2.0 | 8.90E+01 | EPI WATERNT v.01 |
| Chlorpyrifos | 2921-88-2 | 350.59 | EPI Dermwin v2.0 | 1.20E-04 | 2.93E-06 | EPI HenryWin v3.2 | | | | | | | 7.28E+03 | EPI KOCWIN v2.0 | 1.12E+00 | EPI WATERNT v.01 |
| Chlorpyrifos Methyl | 5598-13-0 | 322.53 | EPI Dermwin v2.0 | 1.50E-04 | 3.75E-06 | EPI HenryWin v3.2 | | | | | | | 2.19E+03 | EPI KOCWIN v2.0 | 4.76E+00 | EPI WATERNT v.01 |
| Chlorsulfuron | 64902-72-3 | 357.77 | EPI Dermwin v2.0 | 1.40E-14 | 3.42E-16 | EPI HenryWin v3.2 | | | | | | | 3.22E+02 | EPI KOCWIN v2.0 | 3.10E+04 | EPI WATERNT v.01 |
| Chlorthiophos | 60238-56-4 | 361.24 | EPI Dermwin v2.0 | 4.90E-05 | 1.20E-06 | EPI HenryWin v3.2 | | | | | | | 1.28E+04 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Chromium(III), Insoluble Salts | 16065-83-1 | | EPI | | | | 5.22 | CRC Chrom III note | | | | | | | 0.00E+00 | CRC 85th Ed |
| Chromium(VI) | 18540-29-9 | | EPI | | | | | | | | | | | | 1.69E+06 | CRC 85th Ed. at 25 C. |
| Chromium, Total | 7440-47-3 | 52.00 | EPI Dermwin v2.0 | | | | 7.15 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 85th Ed |
| Cobalt | 7440-48-4 | 58.93 | EPI Dermwin v2.0 | | | | 8.86 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Coke Oven Emissions | 8007-45-2 | 78.11 | EPI Dermwin v2.0 | 2.30E-01 | 5.55E-03 | EPI HenryWin v3.2 | | | 1.00E-01 | USEPA 1987 | 1.20E-05 | USEPA 1987 | 1.46E+02 | EPI KOCWIN v2.0 | 1.79E+03 | EPI WATERNT v.01 |
| Copper | 7440-50-8 | 63.55 | EPI Dermwin v2.0 | | | | 8.96 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Cresol, m- | 108-39-4 | 108.14 | EPI Dermwin v2.0 | 3.50E-05 | 8.56E-07 | EPI HenryWin v3.2 | 1.0339 | CRC 89th Ed | 7.30E-02 | EPA 2002 | 9.30E-06 | EPA 2002 | 3.00E+02 | EPI KOCWIN v2.0 | 2.27E+04 | EPI WATERNT v.01 |
| Cresol, o- | 95-48-7 | 108.14 | EPI Dermwin v2.0 | 4.90E-05 | 1.20E-06 | EPI HenryWin v3.2 | 1.0327 | CRC 89th Ed | 7.30E-02 | EPA 2002 | 9.30E-06 | EPA 2002 | 3.07E+02 | EPI KOCWIN v2.0 | 2.59E+04 | EPI WATERNT v.01 |
| Cresol, p- | 106-44-5 | 108.14 | EPI Dermwin v2.0 | 4.10E-05 | 1.00E-06 | EPI HenryWin v3.2 | 1.0185 | CRC 89th Ed | 7.20E-02 | EPA 2002 | 9.20E-06 | EPA 2002 | 3.00E+02 | EPI KOCWIN v2.0 | 2.15E+04 | EPI WATERNT v.01 |
| Cresol, p-chloro-m- | 59-50-7 | 142.59 | EPI Dermwin v2.0 | 1.00E-04 | 2.45E-06 | EPI HenryWin v3.2 | | | 7.00E-02 | USEPA 1987 | 8.10E-06 | USEPA 1987 | 4.92E+02 | EPI KOCWIN v2.0 | 3.83E+03 | EPI WATERNT v.01 |
| Cresols | 1319-77-3 | 108.14 | EPI Dermwin v2.0 | 4.90E-05 | 1.20E-06 | EPI HenryWin v3.2 | | | 8.40E-02 | USEPA 1987 | 9.80E-06 | USEPA 1987 | 3.07E+02 | EPI KOCWIN v2.0 | 2.59E+04 | EPI WATERNT v.01 |
| Crotonaldehyde, trans- | 123-73-9 | 70.09 | EPI Dermwin v2.0 | 7.90E-04 | 1.94E-05 | EPI HenryWin v3.2 | 0.8516 | CRC 89th Ed | 9.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 1.79E+00 | EPI KOCWIN v2.0 | 1.50E+05 | EPI WATERNT v.01 |
| Cumene | 98-82-8 | 120.20 | EPI Dermwin v2.0 | 4.70E-01 | 1.15E-02 | EPI HenryWin v3.2 | 0.864 | CRC 89th Ed | 6.00E-02 | USEPA 2001 | 7.90E-06 | USEPA 2001 | 6.98E+02 | EPI KOCWIN v2.0 | 6.13E+01 | EPI WATERNT v.01 |
| Cupferron | 135-20-6 | 155.16 | EPI Dermwin v2.0 | 8.70E-16 | 2.12E-17 | EPI HenryWin v3.2 | | | | | | | 7.62E+02 | EPI KOCWIN v2.0 | 2.04E+05 | EPI WATERNT v.01 |
| Cyanazine | 21725-46-2 | 240.70 | EPI Dermwin v2.0 | 1.10E-10 | 2.57E-12 | EPI HenryWin v3.2 | | | | | | | 1.34E+02 | EPI KOCWIN v2.0 | 1.70E+02 | EPI WATERNT v.01 |
| Cyanides | | | | | | | | | | | | | | | | |
| ~Calcium Cyanide | 592-01-8 | 92.11 | EPI Dermwin v2.0 | | | | | | | | | | | | | CRC 89th Ed |
| ~Copper Cyanide | 544-92-3 | 89.56 | EPI Dermwin v2.0 | | | | 2.9 | CRC 89th Ed | | | | | | | 2.30E+01 | EPI WATERNT v.01 |
| ~Cyanide (CN-) | 57-12-5 | 27.03 | EPI Dermwin v2.0 | 5.40E-03 | 1.33E-04 | EPI HenryWin v3.2 | | | 2.10E-01 | USEPA 1987 | 2.50E-05 | USEPA 1987 | 2.84E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| ~Cyanogen | 460-19-5 | 52.04 | EPI Dermwin v2.0 | 2.20E-01 | 5.40E-03 | EPI HenryWin v3.2 | 0.9537 | CRC 89th Ed | 1.20E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 1.83E+00 | EPI KOCWIN v2.0 | 9.49E+03 | Yaws 2001 |
| ~Cyanogen Bromide | 506-68-3 | 105.92 | EPI Dermwin v2.0 | 1.00E+00 | 2.45E-02 | EPI HenryWin v3.2 | 2.015 | CRC 89th Ed | 9.80E-02 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 4.67E+00 | EPI KOCWIN v2.0 | 3.25E+05 | EPI WATERNT v.01 |
| ~Cyanogen Chloride | 506-77-4 | 61.47 | EPI Dermwin v2.0 | 7.90E-02 | 1.94E-03 | Yaws 2001 | 1.186 | CRC 89th Ed | 1.20E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 4.67E+00 | EPI KOCWIN v2.0 | 3.00E+04 | Yaws 2001 |
| ~Hydrogen Cyanide | 74-90-8 | 27.03 | EPI Dermwin v2.0 | 5.40E-03 | 1.33E-04 | EPI HenryWin v3.2 | 0.6876 | CRC 89th Ed | 1.70E-01 | USEPA 2001 | 1.70E-05 | USEPA 2001 | 2.84E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| ~Potassium Cyanide | 151-50-8 | 65.12 | EPI Dermwin v2.0 | | | | 1.55 | CRC 89th Ed | | | | | | | 7.20E+05 | EPI WATERNT v.01 |
| ~Potassium Silver Cyanide | 506-61-6 | 199.00 | EPI Dermwin v2.0 | | | | | | | | | | | | 2.50E+05 | CRC 89th Ed |
| ~Silver Cyanide | 506-64-9 | 133.89 | EPI Dermwin v2.0 | | | | 3.95 | CRC 89th Ed | | | | | | | 2.30E+01 | EPI WATERNT v.01 |
| ~Sodium Cyanide | 143-33-9 | 49.01 | EPI Dermwin v2.0 | | | | 1.6 | CRC 89th Ed | | | | | | | 5.82E+05 | CRC 89th Ed |
| ~Thiocyanate | 463-56-9 | 59.09 | EPI Dermwin v2.0 | 6.00E-03 | 1.46E-04 | EPI HenryWin v3.2 | | | 1.30E-01 | USEPA 1987 | 1.50E-05 | USEPA 1987 | 4.67E+00 | EPI KOCWIN v2.0 | 3.53E+04 | EPI WATERNT v.01 |
| ~Zinc Cyanide | 557-21-1 | 117.43 | EPI Dermwin v2.0 | | | | 1.852 | CRC 89th Ed | | | | | | | 1.71E+04 | EPI WATERNT v.01 |
| Cyclohexane | 110-82-7 | 84.16 | EPI Dermwin v2.0 | 6.10E+00 | 1.50E-01 | EPI HenryWin v3.2 | 0.7739 | CRC 89th Ed | 8.00E-02 | USEPA 2001 | 9.10E-06 | USEPA 2001 | 1.46E+02 | EPI KOCWIN v2.0 | 5.50E+01 | EPI WATERNT v.01 |
| Cyclohexane, 1,2,3,4,5-pentabromo-6-chloro- | 87-84-3 | 513.09 | EPI Dermwin v2.0 | 4.40E-10 | 1.07E-11 | EPI HenryWin v3.2 | | | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 4.54E-01 | EPI WATERNT v.01 |
| Cyclohexanone | 108-94-1 | 98.15 | EPI Dermwin v2.0 | 3.70E-04 | 9.00E-06 | EPI HenryWin v3.2 | 0.9478 | CRC 89th Ed | 7.70E-02 | EPA 2002 | 9.40E-06 | EPA 2002 | 1.74E+01 | EPI KOCWIN v2.0 | 2.50E+04 | EPI WATERNT v.01 |
| Cyclohexylamine | 108-91-8 | 99.18 | EPI Dermwin v2.0 | 1.70E-04 | 4.16E-06 | EPI HenryWin v3.2 | 0.8191 | CRC 89th Ed | 7.10E-02 | EPA 2002 | 8.50E-06 | EPA 2002 | 3.22E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Cyhalothrin/karate | 68085-85-8 | 449.86 | EPI Dermwin v2.0 | 6.10E-05 | 1.48E-06 | EPI HenryWin v3.2 | | | | | | | 3.41E+05 | EPI KOCWIN v2.0 | 5.00E-03 | EPI WATERNT v.01 |
| Cypermethrin | 52315-07-8 | 416.31 | EPI Dermwin v2.0 | 1.70E-05 | 4.20E-07 | EPI HenryWin v3.2 | 1.25 | CRC 89th Ed | | | | | 7.98E+04 | EPI KOCWIN v2.0 | 4.00E-03 | EPI WATERNT v.01 |
| Cyromazine | 66215-27-8 | 166.19 | EPI Dermwin v2.0 | 2.30E-12 | 5.65E-14 | EPI HenryWin v3.2 | | | | | | | 2.87E+01 | EPI KOCWIN v2.0 | 1.30E+04 | EPI WATERNT v.01 |
| DDD | 72-54-8 | 320.05 | EPI Dermwin v2.0 | 2.70E-04 | 6.60E-06 | EPI HenryWin v3.2 | | | | | | | 1.18E+05 | EPI KOCWIN v2.0 | 9.00E-02 | EPI WATERNT v.01 |
| DDE, p,p'- | 72-55-9 | 318.03 | EPI Dermwin v2.0 | 1.70E-03 | 4.16E-05 | EPI HenryWin v3.2 | | | | | | | 1.18E+05 | EPI KOCWIN v2.0 | 4.00E-02 | EPI WATERNT v.01 |
| DDT | 50-29-3 | 354.49 | EPI Dermwin v2.0 | 3.40E-04 | 8.32E-06 | EPI HenryWin v3.2 | | | | | | | 1.69E+05 | EPI KOCWIN v2.0 | 5.50E-03 | EPI WATERNT v.01 |
| Dacthal | 1861-32-1 | 331.97 | EPI Dermwin v2.0 | 8.90E-05 | 2.18E-06 | EPI HenryWin v3.2 | | | | | | | 5.11E+02 | EPI KOCWIN v2.0 | 5.00E-01 | EPI WATERNT v.01 |
| Dalapon | 75-99-0 | 142.97 | EPI Dermwin v2.0 | 2.30E-06 | 5.66E-08 | EPI HenryWin v3.2 | 1.389 | CRC 89th Ed | | | | | 3.23E+00 | EPI KOCWIN v2.0 | 5.02E+05 | EPI WATERNT v.01 |
| Decabromodiphenyl ether, 2,2',3,3',4,4',5,5',6,6'- (BDE-209) | 1163-19-5 | 959.17 | EPI Dermwin v2.0 | 1.80E-06 | 4.45E-08 | EPI HenryWin v3.2 | 3 | IRIS Profile | | | | | 2.76E+05 | EPI KOCWIN v2.0 | 1.00E-04 | EPI WATERNT v.01 |
| Demeton | 8065-48-3 | 258.34 | EPI | | | EPI (HenryWin) | | | | | | | | EPI (PCKOCWIN) | 0.00E+00 | EPI (WSKOWWIN) |
| Di(2-ethylhexyl)adipate | 103-23-1 | 370.58 | EPI Dermwin v2.0 | 1.80E-05 | 4.34E-07 | EPI HenryWin v3.2 | 0.922 | CRC 89th Ed | | | | | 3.60E+04 | EPI KOCWIN v2.0 | 7.80E-01 | EPI WATERNT v.01 |
| Diallate | 2303-16-4 | 270.22 | EPI Dermwin v2.0 | 1.60E-04 | 3.80E-06 | EPI HenryWin v3.2 | | | | | | | 6.44E+02 | EPI KOCWIN v2.0 | 1.40E+01 | EPI WATERNT v.01 |
| Diazinon | 333-41-5 | 304.35 | EPI Dermwin v2.0 | 4.60E-06 | 1.13E-07 | EPI HenryWin v3.2 | 1.1088 | CRC 89th Ed | | | | | 3.03E+03 | EPI KOCWIN v2.0 | 4.00E+01 | EPI WATERNT v.01 |
| Dibromo-3-chloropropane, 1,2- | 96-12-8 | 236.33 | EPI Dermwin v2.0 | 6.00E-03 | 1.47E-04 | EPI HenryWin v3.2 | 2.093 | CRC 89th Ed | 3.20E-02 | EPA 2002 | 8.90E-06 | EPA 2002 | 1.16E+02 | EPI KOCWIN v2.0 | 1.23E+03 | EPI WATERNT v.01 |
| Dibromobenzene, 1,4- | 106-37-6 | 235.91 | EPI Dermwin v2.0 | 3.70E-02 | 8.93E-04 | EPI HenryWin v3.2 | 2.261 | CRC 89th Ed | | | | | 3.75E+02 | EPI KOCWIN v2.0 | 2.00E+01 | EPI WATERNT v.01 |
| Dibromochloromethane | 124-48-1 | 208.28 | EPI Dermwin v2.0 | 3.20E-02 | 7.83E-04 | EPI HenryWin v3.2 | 2.451 | CRC 89th Ed | 3.70E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 3.18E+01 | EPI KOCWIN v2.0 | 2.70E+03 | EPI WATERNT v.01 |
| Dibromoethane, 1,2- | 106-93-4 | 187.86 | EPI Dermwin v2.0 | 2.70E-02 | 6.50E-04 | EPI HenryWin v3.2 | 2.1683 | CRC 89th Ed | 4.30E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 3.91E+03 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density ($g/cm^3$) | | Diffusivity in Air ($cm^2/s$) | | Diffusivity in Water ($cm^2/s$) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-$m^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Dibromomethane (Methylene Bromide) | 74-95-3 | 173.84 | EPI Dermwin v2.0 | 3.40E-02 | 8.22E-04 | EPI HenryWin v3.2 | 2.4969 | CRC 89th Ed | 5.50E-02 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 1.19E+04 | EPI WATERNT v.01 |
| Dibutyl Phthalate | 84-74-2 | 278.35 | EPI Dermwin v2.0 | 7.40E-05 | 1.81E-06 | EPI HenryWin v3.2 | 1.0465 | CRC 89th Ed | | | | | 1.16E+03 | EPI KOCWIN v2.0 | 1.12E+01 | EPI WATERNT v.01 |
| Dibutyltin Compounds | NA | | | | | | | | | | | | | | | |
| Dicamba | 1918-00-9 | 221.04 | EPI Dermwin v2.0 | 8.90E-08 | 2.18E-09 | EPI HenryWin v3.2 | 1.57 | CRC 89th Ed | | | | | 2.90E+01 | EPI KOCWIN v2.0 | 8.31E+03 | EPI WATERNT v.01 |
| Dichloro-2-butene, 1,4- | 764-41-0 | 125.00 | EPI Dermwin v2.0 | 2.70E-02 | 6.64E-04 | EPI HenryWin v3.2 | | | 7.60E-02 | USEPA 1987 | 8.90E-06 | USEPA 1987 | 1.32E+02 | EPI KOCWIN v2.0 | 5.80E+02 | EPI WATERNT v.01 |
| Dichloro-2-butene, cis-1,4- | 1476-11-5 | 125.00 | EPI Dermwin v2.0 | 2.70E-02 | 6.64E-04 | EPI HenryWin v3.2 | 1.188 | CRC 89th Ed | 6.70E-02 | USEPA 2001 | 9.30E-06 | USEPA 2001 | 1.32E+02 | EPI KOCWIN v2.0 | 5.80E+02 | EPI WATERNT v.01 |
| Dichloro-2-butene, trans-1,4- | 110-57-6 | 125.00 | EPI Dermwin v2.0 | 2.70E-02 | 6.64E-04 | EPI HenryWin v3.2 | 1.183 | CRC 89th Ed | 6.60E-02 | USEPA 2001 | 9.30E-06 | USEPA 2001 | 1.32E+02 | EPI KOCWIN v2.0 | 8.50E+02 | EPI WATERNT v.01 |
| Dichloroacetic Acid | 79-43-6 | 128.94 | EPI Dermwin v2.0 | 3.40E-07 | 8.38E-09 | EPI HenryWin v3.2 | 1.5634 | CRC 89th Ed | 7.20E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 2.25E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dichlorobenzene, 1,2- | 95-50-1 | 147.00 | EPI Dermwin v2.0 | 7.80E-02 | 1.92E-03 | EPI HenryWin v3.2 | 1.3059 | CRC 89th Ed | 5.60E-02 | USEPA 2001 | 8.90E-06 | USEPA 2001 | 3.83E+02 | EPI KOCWIN v2.0 | 1.56E+02 | EPI WATERNT v.01 |
| Dichlorobenzene, 1,4- | 106-46-7 | 147.00 | EPI Dermwin v2.0 | 9.90E-02 | 2.41E-03 | EPI HenryWin v3.2 | 1.2475 | CRC 89th Ed | 5.50E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 3.75E+02 | EPI KOCWIN v2.0 | 8.13E+01 | EPI WATERNT v.01 |
| Dichlorobenzidine, 3,3'- | 91-94-1 | 253.13 | EPI Dermwin v2.0 | 2.10E-09 | 5.11E-11 | EPI HenryWin v3.2 | | | | | | | 3.19E+03 | EPI KOCWIN v2.0 | 3.10E+00 | EPI WATERNT v.01 |
| Dichlorobenzophenone, 4,4'- | 90-98-2 | 251.11 | EPI Dermwin v2.0 | 4.40E-05 | 1.07E-06 | EPI HenryWin v3.2 | 1.45 | CRC 89th Ed | | | | | 2.93E+03 | EPI KOCWIN v2.0 | 7.80E+00 | EPI WATERNT v.01 |
| Dichlorodifluoromethane | 75-71-8 | 120.91 | EPI Dermwin v2.0 | 1.40E+01 | 3.43E-01 | EPI HenryWin v3.2 | | | 7.80E-02 | USEPA 1987 | 9.10E-06 | USEPA 1987 | 4.39E+01 | EPI KOCWIN v2.0 | 2.80E+02 | EPI WATERNT v.01 |
| Dichloroethane, 1,1- | 75-34-3 | 98.96 | EPI Dermwin v2.0 | 2.30E-01 | 5.62E-03 | EPI HenryWin v3.2 | 1.1757 | CRC 89th Ed | 8.40E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 5.04E+03 | EPI WATERNT v.01 |
| Dichloroethane, 1,2- | 107-06-2 | 98.96 | EPI Dermwin v2.0 | 4.80E-02 | 1.18E-03 | EPI HenryWin v3.2 | 1.2454 | CRC 89th Ed | 8.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 8.60E+03 | EPI WATERNT v.01 |
| Dichloroethylene, 1,1- | 75-35-4 | 96.94 | EPI Dermwin v2.0 | 1.10E+00 | 2.61E-02 | EPI HenryWin v3.2 | 1.213 | CRC 89th Ed | 8.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 2.42E+03 | EPI WATERNT v.01 |
| Dichloroethylene, 1,2- (Mixed Isomers) | 540-59-0 | 96.94 | EPI Dermwin v2.0 | 1.70E-01 | 4.08E-03 | EPI HenryWin v3.2 | | | 9.00E-02 | USEPA 1987 | 1.10E-05 | USEPA 1987 | 3.96E+01 | EPI KOCWIN v2.0 | 3.50E+03 | EPI WATERNT v.01 |
| Dichloroethylene, 1,2-cis- | 156-59-2 | 96.94 | EPI Dermwin v2.0 | 1.70E-01 | 4.08E-03 | EPI HenryWin v3.2 | 1.2837 | CRC 89th Ed | 8.80E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 6.41E+03 | EPI WATERNT v.01 |
| Dichloroethylene, 1,2-trans- | 156-60-5 | 96.94 | EPI Dermwin v2.0 | 1.70E-01 | 4.08E-03 | EPI HenryWin v3.2 | 1.2565 | CRC 89th Ed | 8.80E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 4.52E+03 | EPI WATERNT v.01 |
| Dichlorophenol, 2,4- | 120-83-2 | 163.00 | EPI Dermwin v2.0 | 1.80E-04 | 4.29E-06 | EPI HenryWin v3.2 | | | 6.40E-02 | USEPA 1987 | 7.40E-06 | USEPA 1987 | 4.92E+02 | EPI KOCWIN v2.0 | 4.50E+03 | EPI WATERNT v.01 |
| Dichlorophenoxy Acetic Acid, 2,4- | 94-75-7 | 221.04 | EPI Dermwin v2.0 | 1.40E-06 | 3.54E-08 | EPI HenryWin v3.2 | | | | | | | 2.96E+01 | EPI KOCWIN v2.0 | 6.77E+02 | EPI WATERNT v.01 |
| Dichlorophenoxy)butyric Acid, 4-(2,4- | 94-82-6 | 249.10 | EPI Dermwin v2.0 | 2.40E-07 | 5.87E-09 | EPI HenryWin v3.2 | | | | | | | 9.84E+01 | EPI KOCWIN v2.0 | 4.60E+01 | EPI WATERNT v.01 |
| Dichloropropane, 1,2- | 78-87-5 | 112.99 | EPI Dermwin v2.0 | 1.20E-01 | 2.82E-03 | EPI HenryWin v3.2 | | | 8.10E-02 | USEPA 1987 | 9.50E-06 | USEPA 1987 | 6.07E+01 | EPI KOCWIN v2.0 | 2.80E+03 | EPI WATERNT v.01 |
| Dichloropropane, 1,3- | 142-28-9 | 112.99 | EPI Dermwin v2.0 | 4.00E-02 | 9.76E-04 | EPI HenryWin v3.2 | 1.1785 | CRC 89th Ed | 7.40E-02 | USEPA 2001 | 9.80E-06 | USEPA 2001 | 7.22E+01 | EPI KOCWIN v2.0 | 2.75E+03 | EPI WATERNT v.01 |
| Dichloropropanol, 2,3- | 616-23-9 | 128.99 | EPI Dermwin v2.0 | 1.50E-07 | 3.62E-09 | EPI HenryWin v3.2 | 1.3607 | CRC 89th Ed | | | | | 5.57E+00 | EPI KOCWIN v2.0 | 6.08E+04 | EPI WATERNT v.01 |
| Dichloropropene, 1,3- | 542-75-6 | 110.97 | EPI Dermwin v2.0 | 1.50E-01 | 3.55E-03 | EPI HenryWin v3.2 | | | 8.20E-02 | USEPA 1987 | 9.60E-06 | USEPA 1987 | 7.22E+01 | EPI KOCWIN v2.0 | 2.80E+03 | EPI WATERNT v.01 |
| Dichlorvos | 62-73-7 | 220.98 | EPI Dermwin v2.0 | 2.30E-05 | 5.74E-07 | EPI HenryWin v3.2 | 1.415 | CRC 89th Ed | | | | | 5.40E+01 | EPI KOCWIN v2.0 | 8.00E+03 | EPI WATERNT v.01 |
| Dicyclopentadiene | 77-73-6 | 132.21 | EPI Dermwin v2.0 | 2.60E+00 | 6.25E-02 | EPI HenryWin v3.2 | | | 7.30E-02 | USEPA 1987 | 8.60E-06 | USEPA 1987 | 1.51E+03 | EPI KOCWIN v2.0 | 1.37E+01 | EPI WATERNT v.01 |
| Dieldrin | 60-57-1 | 380.91 | EPI Dermwin v2.0 | 4.10E-04 | 1.00E-05 | EPI HenryWin v3.2 | 1.75 | CRC 89th Ed | | | | | 2.01E+04 | EPI KOCWIN v2.0 | 1.95E-01 | EPI WATERNT v.01 |
| Diesel Engine Exhaust | NA | | | | | | | | | | | | | | | |
| Diethanolamine | 111-42-2 | 105.14 | EPI Dermwin v2.0 | 1.60E-09 | 3.87E-11 | EPI HenryWin v3.2 | 1.0966 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Diethyl Phthalate | 84-66-2 | 222.24 | EPI Dermwin v2.0 | 2.50E-05 | 6.10E-07 | EPI HenryWin v3.2 | 1.232 | CRC 89th Ed | | | | | 1.05E+02 | EPI KOCWIN v2.0 | 1.08E+03 | EPI WATERNT v.01 |
| Diethylene Glycol Monobutyl Ether | 112-34-5 | 162.23 | EPI Dermwin v2.0 | 2.90E-07 | 7.20E-09 | EPI HenryWin v3.2 | 0.9553 | CRC 89th Ed | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Diethylene Glycol Monoethyl Ether | 111-90-0 | 134.18 | EPI Dermwin v2.0 | 9.10E-07 | 2.23E-08 | EPI HenryWin v3.2 | 0.9885 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Diethylformamide | 617-84-5 | 101.15 | EPI Dermwin v2.0 | 5.30E-06 | 1.30E-07 | EPI HenryWin v3.2 | 0.908 | CRC 89th Ed | | | | | 2.06E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Diethylstilbestrol | 56-53-1 | 268.36 | EPI Dermwin v2.0 | 2.40E-10 | 5.80E-12 | EPI HenryWin v3.2 | | | | | | | 2.74E+05 | EPI KOCWIN v2.0 | 1.20E+01 | EPI WATERNT v.01 |
| Difenzoquat | 43222-48-6 | 360.43 | EPI Dermwin v2.0 | | | | | | | | | | 7.84E+04 | EPI KOCWIN v2.0 | 8.17E+05 | EPI WATERNT v.01 |
| Diflubenzuron | 35367-38-5 | 310.69 | EPI Dermwin v2.0 | 1.90E-07 | 4.60E-09 | EPI HenryWin v3.2 | | | | | | | 4.63E+02 | EPI KOCWIN v2.0 | 8.00E-02 | EPI WATERNT v.01 |
| Difluoroethane, 1,1- | 75-37-6 | 66.05 | EPI Dermwin v2.0 | 8.30E-01 | 2.03E-02 | EPI HenryWin v3.2 | 0.896 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 3.18E+01 | EPI KOCWIN v2.0 | 3.20E+03 | EPI WATERNT v.01 |
| Dihydrosafrole | 94-58-6 | 164.21 | EPI Dermwin v2.0 | 6.70E+00 | 1.65E-01 | EPI HenryWin v3.2 | | | 6.30E-02 | USEPA 1987 | 7.40E-06 | USEPA 1987 | 2.07E+02 | EPI KOCWIN v2.0 | 5.77E+00 | EPI WATERNT v.01 |
| Diisopropyl Ether | 108-20-3 | 102.18 | EPI Dermwin v2.0 | 1.00E-01 | 2.56E-03 | EPI HenryWin v3.2 | 0.7192 | CRC 89th Ed | 6.50E-02 | USEPA 2001 | 7.80E-06 | USEPA 2001 | 2.28E+01 | EPI KOCWIN v2.0 | 8.80E+03 | EPI WATERNT v.01 |
| Diisopropyl Methylphosphonate | 1445-75-6 | 180.19 | EPI Dermwin v2.0 | 1.80E-03 | 4.38E-05 | EPI HenryWin v3.2 | | | 6.00E-02 | USEPA 1987 | 7.00E-06 | USEPA 1987 | 4.22E+01 | EPI KOCWIN v2.0 | 1.50E+03 | EPI WATERNT v.01 |
| Dimethipin | 55290-64-7 | 210.26 | EPI Dermwin v2.0 | 9.40E-10 | 2.30E-11 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 4.60E+03 | EPI WATERNT v.01 |
| Dimethoate | 60-51-5 | 229.25 | EPI Dermwin v2.0 | 9.90E-09 | 2.43E-10 | EPI HenryWin v3.2 | 1.277 | CRC 89th Ed | | | | | 1.28E+01 | EPI KOCWIN v2.0 | 2.33E+04 | EPI WATERNT v.01 |
| Dimethoxybenzidine, 3,3'- | 119-90-4 | 244.30 | EPI Dermwin v2.0 | 1.90E-09 | 4.66E-11 | EPI HenryWin v3.2 | | | | | | | 5.09E+02 | EPI KOCWIN v2.0 | 6.00E+01 | EPI WATERNT v.01 |
| Dimethyl methylphosphonate | 756-79-6 | 124.08 | EPI Dermwin v2.0 | 5.10E-05 | 1.25E-06 | EPI HenryWin v3.2 | 1.1684 | CRC 89th Ed | 6.70E-02 | EPA 2002 | 9.20E-06 | EPA 2002 | 5.41E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dimethylamino azobenzene [p-] | 60-11-7 | 225.30 | EPI Dermwin v2.0 | 9.60E-06 | 2.34E-07 | EPI HenryWin v3.2 | | | | | | | 2.03E+03 | EPI KOCWIN v2.0 | 2.30E-01 | EPI WATERNT v.01 |
| Dimethylaniline HCl, 2,4- | 21436-96-4 | 121.18 | EPI Dermwin v2.0 | 1.00E-04 | 2.50E-06 | EPI HenryWin v3.2 | | | 7.80E-02 | USEPA 1987 | 9.10E-06 | USEPA 1987 | 1.85E+02 | EPI KOCWIN v2.0 | 2.18E+03 | EPI WATERNT v.01 |
| Dimethylaniline, 2,4- | 95-68-1 | 121.18 | EPI Dermwin v2.0 | 1.00E-04 | 2.50E-06 | EPI HenryWin v3.2 | 0.9723 | CRC 89th Ed | 6.30E-02 | EPA 2002 | 8.40E-06 | EPA 2002 | 1.85E+02 | EPI KOCWIN v2.0 | 2.18E+03 | EPI WATERNT v.01 |
| Dimethylaniline, N,N- | 121-69-7 | 121.18 | EPI Dermwin v2.0 | 2.30E-03 | 5.68E-05 | EPI HenryWin v3.2 | 0.9557 | CRC 89th Ed | 6.30E-02 | USEPA 2001 | 8.30E-06 | USEPA 2001 | 7.87E+01 | EPI KOCWIN v2.0 | 1.45E+03 | EPI WATERNT v.01 |
| Dimethylbenzidine, 3,3'- | 119-93-7 | 212.30 | EPI Dermwin v2.0 | 3.30E-09 | 8.10E-11 | EPI HenryWin v3.2 | | | | | | | 3.19E+03 | EPI KOCWIN v2.0 | 1.30E+03 | EPI WATERNT v.01 |
| Dimethylformamide | 68-12-2 | 73.10 | EPI Dermwin v2.0 | 3.00E-06 | 7.39E-08 | EPI HenryWin v3.2 | 0.9445 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dimethylhydrazine, 1,1- | 57-14-7 | 60.10 | EPI Dermwin v2.0 | 2.80E-06 | 6.95E-08 | EPI HenryWin v3.2 | 0.791 | CRC 89th Ed | | | | | 1.20E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dimethylhydrazine, 1,2- | 540-73-8 | 60.10 | EPI Dermwin v2.0 | 2.80E-06 | 6.95E-08 | EPI HenryWin v3.2 | 0.8274 | CRC 89th Ed | | | | | 1.49E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dimethylphenol, 2,4- | 105-67-9 | 122.17 | EPI Dermwin v2.0 | 3.90E-05 | 9.51E-07 | EPI HenryWin v3.2 | 0.965 | CRC 89th Ed | 6.20E-02 | EPA 2002 | 8.30E-06 | EPA 2002 | 4.92E+02 | EPI KOCWIN v2.0 | 7.87E+03 | EPI WATERNT v.01 |
| Dimethylphenol, 2,6- | 576-26-1 | 122.17 | EPI Dermwin v2.0 | 2.70E-04 | 6.65E-06 | EPI HenryWin v3.2 | | | 7.70E-02 | USEPA 1987 | 9.00E-06 | USEPA 1987 | 5.02E+02 | EPI KOCWIN v2.0 | 6.05E+03 | EPI WATERNT v.01 |
| Dimethylphenol, 3,4- | 95-65-8 | 122.17 | EPI Dermwin v2.0 | 1.70E-05 | 4.15E-07 | EPI HenryWin v3.2 | 0.983 | CRC 89th Ed | 6.30E-02 | EPA 2002 | 8.40E-06 | EPA 2002 | 4.92E+02 | EPI KOCWIN v2.0 | 4.76E+03 | EPI WATERNT v.01 |
| Dimethylterephthalate | 120-61-6 | 194.19 | EPI Dermwin v2.0 | 5.50E-03 | 1.34E-04 | EPI HenryWin v3.2 | 1.075 | CRC 89th Ed | 2.90E-02 | USEPA 2001 | 6.70E-06 | USEPA 2001 | 3.10E+01 | EPI KOCWIN v2.0 | 1.90E+01 | EPI WATERNT v.01 |
| Dimethylvinylchloride | 513-37-1 | 90.55 | EPI Dermwin v2.0 | 3.30E+00 | 8.10E-02 | EPI HenryWin v3.2 | 0.9186 | CRC 89th Ed | 8.10E-02 | USEPA 2001 | 9.70E-06 | USEPA 2001 | 6.07E+01 | EPI KOCWIN v2.0 | 1.00E+03 | EPI WATERNT v.01 |
| Dinitro-o-cresol, 4,6- | 534-52-1 | 198.14 | EPI Dermwin v2.0 | 5.70E-05 | 1.40E-06 | EPI HenryWin v3.2 | | | 5.60E-02 | USEPA 1987 | 6.50E-06 | USEPA 1987 | 7.54E+02 | EPI KOCWIN v2.0 | 1.98E+02 | EPI WATERNT v.01 |
| Dinitro-o-cyclohexyl Phenol, 4,6- | 131-89-5 | 266.26 | EPI Dermwin v2.0 | 1.40E-09 | 3.38E-11 | EPI HenryWin v3.2 | | | | | | | 1.65E+04 | EPI KOCWIN v2.0 | 1.50E+01 | EPI WATERNT v.01 |
| Dinitrobenzene, 1,2- | 528-29-0 | 168.11 | EPI Dermwin v2.0 | 2.20E-06 | 5.33E-08 | EPI HenryWin v3.2 | 1.3119 | CRC 89th Ed | 4.50E-02 | EPA 2002 | 8.30E-06 | EPA 2002 | 3.59E+02 | EPI KOCWIN v2.0 | 1.33E+02 | EPI WATERNT v.01 |
| Dinitrobenzene, 1,3- | 99-65-0 | 168.11 | EPI Dermwin v2.0 | 2.00E-06 | 4.90E-08 | EPI HenryWin v3.2 | 1.5751 | CRC 89th Ed | | | | | 3.52E+02 | EPI KOCWIN v2.0 | 5.33E+02 | EPI WATERNT v.01 |
| Dinitrobenzene, 1,4- | 100-25-4 | 168.11 | EPI Dermwin v2.0 | 1.50E-05 | 3.70E-07 | EPI HenryWin v3.2 | 1.625 | CRC 89th Ed | 4.90E-02 | EPA 2002 | 9.40E-06 | EPA 2002 | 3.52E+02 | EPI KOCWIN v2.0 | 6.90E+01 | EPI WATERNT v.01 |
| Dinitrophenol, 2,4- | 51-28-5 | 184.11 | EPI Dermwin v2.0 | 3.50E-06 | 8.60E-08 | EPI HenryWin v3.2 | 1.683 | CRC 89th Ed | | | | | 4.61E+02 | EPI KOCWIN v2.0 | 2.79E+03 | EPI WATERNT v.01 |
| Dinitrotoluene Mixture, 2,4/2,6- | 25321-14-6 | 182.14 | EPI Dermwin v2.0 | 1.60E-05 | 3.97E-07 | EPI HenryWin v3.2 | | | 5.90E-02 | USEPA 1987 | 6.90E-06 | USEPA 1987 | 5.87E+02 | EPI KOCWIN v2.0 | 2.70E+02 | EPI WATERNT v.01 |
| Dinitrotoluene, 2,4- | 121-14-2 | 182.14 | EPI Dermwin v2.0 | 2.20E-06 | 5.40E-08 | EPI HenryWin v3.2 | 1.3208 | CRC 89th Ed | | | | | 5.76E+02 | EPI KOCWIN v2.0 | 2.00E+02 | EPI WATERNT v.01 |
| Dinitrotoluene, 2,6- | 606-20-2 | 182.14 | EPI Dermwin v2.0 | 3.10E-05 | 7.47E-07 | EPI HenryWin v3.2 | 1.2833 | CRC 89th Ed | 3.70E-02 | EPA 2002 | 7.80E-06 | EPA 2002 | 5.87E+02 | EPI KOCWIN v2.0 | 1.51E+02 | EPI WATERNT v.01 |
| Dinitrotoluene, 2-Amino-4,6- | 35572-78-2 | 197.15 | EPI Dermwin v2.0 | 6.60E-09 | 1.62E-10 | EPI HenryWin v3.2 | | | | | | | 2.83E+02 | EPI KOCWIN v2.0 | 3.19E+02 | EPI WATERNT v.01 |
| Dinitrotoluene, 4-Amino-2,6- | 19406-51-0 | 197.15 | EPI Dermwin v2.0 | 6.60E-09 | 1.62E-10 | EPI HenryWin v3.2 | | | | | | | 2.83E+02 | EPI KOCWIN v2.0 | 3.19E+02 | EPI WATERNT v.01 |
| Dinoseb | 88-85-7 | 240.22 | EPI Dermwin v2.0 | 1.90E-05 | 4.56E-07 | EPI HenryWin v3.2 | 1.265 | CRC 89th Ed | | | | | 4.29E+03 | EPI KOCWIN v2.0 | 5.20E+01 | EPI WATERNT v.01 |
| Dioxane, 1,4- | 123-91-1 | 88.11 | EPI Dermwin v2.0 | 2.00E-04 | 4.80E-06 | EPI HenryWin v3.2 | 1.0337 | CRC 89th Ed | 8.70E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 2.63E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Dioxins | | | | | | | | | | | | | | | | |
| ~Hexachlorodibenzo-p-dioxin, Mixture | NA | 390.87 | EPI | 1.00E-03 | 2.56E-05 | EPI (HenryWin) | | | | | | | 4.17E+05 | EPI (PCKOCWIN) | 2.65E-05 | EPI (WSKOWWIN) |
| ~TCDD, 2,3,7,8- | 1746-01-6 | 321.98 | EPI Dermwin v2.0 | 2.00E-03 | 5.00E-05 | EPI HenryWin v3.2 | | | | | | | 2.49E+05 | EPI KOCWIN v2.0 | 2.00E-04 | EPI WATERNT v.01 |
| Diphenamid | 957-51-7 | 239.32 | EPI Dermwin v2.0 | 1.50E-09 | 3.63E-11 | EPI HenryWin v3.2 | 1.17 | CRC 89th Ed | | | | | 4.80E+03 | EPI KOCWIN v2.0 | 2.60E+02 | EPI WATERNT v.01 |
| Diphenyl Sulfone | 127-63-9 | 218.27 | EPI Dermwin v2.0 | 1.00E-05 | 2.49E-07 | EPI HenryWin v3.2 | 1.252 | CRC 89th Ed | | | | | 1.11E+03 | EPI KOCWIN v2.0 | 9.42E+00 | EPI WATERNT v.01 |
| Diphenylamine | 122-39-4 | 169.23 | EPI Dermwin v2.0 | 1.10E-04 | 2.69E-06 | EPI HenryWin v3.2 | 1.158 | CRC 89th Ed | 4.20E-02 | EPA 2002 | 7.60E-06 | EPA 2002 | 8.26E+02 | EPI KOCWIN v2.0 | 5.30E+01 | EPI WATERNT v.01 |
| Diphenylhydrazine, 1,2- | 122-66-7 | 184.24 | EPI Dermwin v2.0 | 2.00E-05 | 4.78E-07 | EPI HenryWin v3.2 | 1.158 | CRC 89th Ed | | | | | 1.51E+03 | EPI KOCWIN v2.0 | 2.21E+02 | EPI WATERNT v.01 |
| Diquat | 85-00-7 | 344.05 | EPI Dermwin v2.0 | 5.80E-12 | 1.42E-13 | EPI HenryWin v3.2 | 1.24 | CRC 89th Ed | | | | | 9.27E+03 | EPI KOCWIN v2.0 | 7.08E+05 | EPI WATERNT v.01 |
| Direct Black 38 | 1937-37-7 | 737.77 | EPI Dermwin v2.0 | 3.40E-38 | 8.23E-40 | EPI HenryWin v3.2 | | | | | | | 2.42E+08 | EPI KOCWIN v2.0 | 5.59E+01 | EPI WATERNT v.01 |
| Direct Blue 6 | 2602-46-2 | 821.67 | EPI Dermwin v2.0 | 6.70E-42 | 1.64E-43 | EPI HenryWin v3.2 | | | | | | | 7.91E+08 | EPI KOCWIN v2.0 | 8.22E-07 | EPI WATERNT v.01 |
| Direct Brown 95 | 16071-86-6 | 760.11 | EPI Dermwin v2.0 | | | | | | | | | | 6.99E+06 | EPI KOCWIN v2.0 | 9.71E-07 | EPI WATERNT v.01 |
| Disulfoton | 298-04-4 | 274.39 | EPI Dermwin v2.0 | 8.80E-05 | 2.16E-06 | EPI HenryWin v3.2 | 1.144 | CRC 89th Ed | | | | | 8.38E+02 | EPI KOCWIN v2.0 | 1.63E+01 | EPI WATERNT v.01 |
| Dithiane, 1,4- | 505-29-3 | 120.23 | EPI Dermwin v2.0 | 1.70E-03 | 4.20E-05 | EPI HenryWin v3.2 | | | 7.80E-02 | USEPA 1987 | 9.10E-06 | USEPA 1987 | 1.46E+02 | EPI KOCWIN v2.0 | 3.00E+03 | EPI WATERNT v.01 |
| Diuron | 330-54-1 | 233.10 | EPI Dermwin v2.0 | 2.10E-08 | 5.04E-10 | EPI HenryWin v3.2 | | | | | | | 1.09E+02 | EPI KOCWIN v2.0 | 4.20E+01 | EPI WATERNT v.01 |
| Dodine | 2439-10-3 | 287.45 | EPI Dermwin v2.0 | 3.70E-09 | 9.01E-11 | EPI HenryWin v3.2 | | | | | | | 2.48E+03 | EPI KOCWIN v2.0 | 6.30E+02 | EPI WATERNT v.01 |
| EPTC | 759-94-4 | 189.32 | EPI Dermwin v2.0 | 6.50E-04 | 1.59E-05 | EPI HenryWin v3.2 | 0.9546 | CRC 89th Ed | 2.90E-02 | USEPA 2001 | 6.40E-06 | USEPA 2001 | 1.64E+02 | EPI KOCWIN v2.0 | 3.75E+02 | EPI WATERNT v.01 |
| Endosulfan | 115-29-7 | 406.92 | EPI Dermwin v2.0 | 2.70E-03 | 6.50E-05 | EPI HenryWin v3.2 | 1.745 | CRC 89th Ed | | | | | 6.76E+03 | EPI KOCWIN v2.0 | 3.25E-01 | EPI WATERNT v.01 |
| Endothall | 145-73-3 | 186.17 | EPI Dermwin v2.0 | 1.60E-14 | 3.85E-16 | EPI HenryWin v3.2 | 1.431 | CRC 89th Ed | | | | | 1.94E+01 | EPI KOCWIN v2.0 | 1.00E+05 | EPI WATERNT v.01 |
| Endrin | 72-20-8 | 380.91 | EPI Dermwin v2.0 | 4.10E-04 | 1.00E-05 | EPI HenryWin v3.2 | | | | | | | 2.01E+04 | EPI KOCWIN v2.0 | 2.50E-01 | EPI WATERNT v.01 |
| Epichlorohydrin | 106-89-8 | 92.53 | EPI Dermwin v2.0 | 1.20E-03 | 3.04E-05 | EPI HenryWin v3.2 | 1.1812 | Merk | 8.90E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 9.91E+00 | EPI KOCWIN v2.0 | 6.59E+04 | EPI WATERNT v.01 |
| Epoxybutane, 1,2- | 106-88-7 | 72.11 | EPI Dermwin v2.0 | 7.40E-03 | 1.80E-04 | EPI HenryWin v3.2 | 0.8297 | CRC 89th Ed | 9.30E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 9.91E+00 | EPI KOCWIN v2.0 | 9.50E+04 | EPI WATERNT v.01 |
| Ethephon | 16672-87-0 | 144.50 | EPI Dermwin v2.0 | 2.30E-10 | 5.70E-12 | EPI HenryWin v3.2 | 1.2 | CRC 89th Ed | | | | | 5.03E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethion | 563-12-2 | 384.46 | EPI Dermwin v2.0 | 1.50E-05 | 3.79E-07 | EPI HenryWin v3.2 | 1.22 | CRC 89th Ed | | | | | 8.82E+02 | EPI KOCWIN v2.0 | 2.00E+00 | EPI WATERNT v.01 |
| Ethoxyethanol Acetate, 2- | 111-15-9 | 132.16 | EPI Dermwin v2.0 | 1.30E-04 | 3.20E-06 | EPI HenryWin v3.2 | 0.974 | CRC 89th Ed | 5.70E-02 | EPA 2002 | 8.00E-06 | EPA 2002 | 4.54E+00 | EPI KOCWIN v2.0 | 2.47E+05 | EPI WATERNT v.01 |
| Ethoxyethanol, 2- | 110-80-5 | 90.12 | EPI Dermwin v2.0 | 1.90E-05 | 4.70E-07 | EPI HenryWin v3.2 | 0.9253 | CRC 89th Ed | 8.20E-02 | EPA 2002 | 9.70E-06 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Ethyl Acetate | 141-78-6 | 88.11 | EPI Demwin v2.0 | 5.50E-03 | 1.34E-04 | EPI HenryWin v3.2 | 0.9003 | CRC 89th Ed | 8.20E-02 | USEPA 2001 | 9.70E-06 | USEPA 2001 | 5.58E+00 | EPI KOCWIN v2.0 | 8.00E+04 | EPI WATERNT v.01 |
| Ethyl Acrylate | 140-88-5 | 100.12 | EPI Demwin v2.0 | 1.40E-02 | 3.39E-04 | EPI HenryWin v3.2 | 0.9234 | CRC 89th Ed | 7.50E-02 | USEPA 2001 | 9.10E-06 | USEPA 2001 | 1.07E+01 | EPI KOCWIN v2.0 | 1.50E+04 | EPI WATERNT v.01 |
| Ethyl Chloride | 75-00-3 | 64.52 | EPI Demwin v2.0 | 4.50E-01 | 1.11E-02 | EPI HenryWin v3.2 | 0.8902 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 6.71E+03 | EPI WATERNT v.01 |
| Ethyl Ether | 60-29-7 | 74.12 | EPI Demwin v2.0 | 5.00E-02 | 1.23E-03 | EPI HenryWin v3.2 | 0.7138 | CRC 89th Ed | 8.50E-02 | USEPA 2001 | 9.40E-06 | USEPA 2001 | 9.70E+00 | EPI KOCWIN v2.0 | 6.04E+04 | EPI WATERNT v.01 |
| Ethyl Methacrylate | 97-63-2 | 114.15 | EPI Demwin v2.0 | 2.30E-02 | 5.73E-04 | EPI HenryWin v3.2 | 0.9135 | CRC 89th Ed | 6.50E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 1.67E+01 | EPI KOCWIN v2.0 | 5.40E+03 | EPI WATERNT v.01 |
| Ethyl-p-nitrophenyl Phosphonate | 2104-64-5 | 323.31 | EPI Demwin v2.0 | 1.80E-05 | 4.44E-07 | EPI HenryWin v3.2 | 1.27 | CRC 89th Ed | | | | | 1.55E+04 | EPI KOCWIN v2.0 | 3.11E+00 | EPI WATERNT v.01 |
| Ethylbenzene | 100-41-4 | 106.17 | EPI Demwin v2.0 | 3.20E-01 | 7.88E-03 | EPI HenryWin v3.2 | 0.8626 | CRC 89th Ed | 6.80E-02 | USEPA 2001 | 8.50E-06 | USEPA 2001 | 4.46E+02 | EPI KOCWIN v2.0 | 1.69E+02 | EPI WATERNT v.01 |
| Ethylene Cyanohydrin | 109-78-4 | 71.08 | EPI Demwin v2.0 | 3.10E-07 | 7.50E-09 | EPI HenryWin v3.2 | 1.0404 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylene Diamine | 107-15-3 | 60.10 | EPI Demwin v2.0 | 7.10E-08 | 1.73E-09 | EPI HenryWin v3.2 | 0.8979 | CRC 89th Ed | | | | | 1.49E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylene Glycol | 107-21-1 | 62.07 | EPI Demwin v2.0 | 2.50E-06 | 6.00E-08 | EPI HenryWin v3.2 | 1.1135 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylene Glycol Monobutyl Ether | 111-76-2 | 118.18 | EPI Demwin v2.0 | 6.50E-05 | 1.60E-06 | EPI HenryWin v3.2 | 0.9015 | CRC 89th Ed | 6.30E-02 | EPA 2002 | 8.10E-06 | EPA 2002 | 2.82E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylene Oxide | 75-21-8 | 44.05 | EPI Demwin v2.0 | 6.10E-03 | 1.48E-04 | EPI HenryWin v3.2 | 0.8821 | CRC 89th Ed | 1.30E-01 | USEPA 2001 | 1.50E-05 | USEPA 2001 | 3.24E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylene Thiourea | 96-45-7 | 102.15 | EPI Demwin v2.0 | 1.40E-05 | 3.36E-07 | EPI HenryWin v3.2 | | | 8.70E-02 | USEPA 1987 | 1.00E-05 | USEPA 1987 | 1.30E+01 | EPI KOCWIN v2.0 | 2.00E+04 | EPI WATERNT v.01 |
| Ethyleneimine | 151-56-4 | 43.07 | EPI Demwin v2.0 | 4.90E-04 | 1.21E-05 | EPI HenryWin v3.2 | 0.832 | CRC 89th Ed | 1.30E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 9.04E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Ethylphthalyl Ethyl Glycolate | 84-72-0 | 280.28 | EPI Demwin v2.0 | 3.20E-08 | 7.73E-10 | EPI HenryWin v3.2 | | | | | | | 1.02E+03 | EPI KOCWIN v2.0 | 9.93E+02 | EPI WATERNT v.01 |
| Express | 101200-48-0 | 395.39 | EPI Demwin v2.0 | 4.20E-12 | 1.02E-13 | EPI HenryWin v3.2 | | | | | | | 9.47E+01 | EPI KOCWIN v2.0 | 5.00E+01 | EPI WATERNT v.01 |
| Fenamiphos | 22224-92-6 | 303.36 | EPI Demwin v2.0 | 4.90E-08 | 1.21E-09 | EPI HenryWin v3.2 | 1.15 | CRC 89th Ed | | | | | 3.98E+02 | EPI KOCWIN v2.0 | 3.29E+02 | EPI WATERNT v.01 |
| Fenpropathrin | 39515-41-8 | 349.43 | EPI Demwin v2.0 | 3.10E-04 | 7.64E-06 | EPI HenryWin v3.2 | | | | | | | 2.25E+04 | EPI KOCWIN v2.0 | 3.30E-01 | EPI WATERNT v.01 |
| Fluometuron | 2164-17-2 | 232.21 | EPI Demwin v2.0 | 1.10E-07 | 2.61E-09 | EPI HenryWin v3.2 | | | | | | | 2.85E+02 | EPI KOCWIN v2.0 | 1.10E+02 | EPI WATERNT v.01 |
| Fluoride | 16984-48-8 | 38.00 | EPI Demwin v2.0 | | | | | | | | | | | | 1.69E+00 | EPI WATERNT v.01 |
| Fluorine (Soluble Fluoride) | 7782-41-4 | 38.00 | EPI Demwin v2.0 | | | | 1.553 | CRC 89th Ed | | | | | | | 1.69E+00 | EPI WATERNT v.01 |
| Fluridone | 59756-60-4 | 329.32 | EPI Demwin v2.0 | 3.30E-07 | 8.10E-09 | EPI HenryWin v3.2 | | | | | | | 5.68E+04 | EPI KOCWIN v2.0 | 1.20E+01 | EPI WATERNT v.01 |
| Flurprimidol | 56425-91-3 | 312.29 | EPI Demwin v2.0 | 5.40E-08 | 1.31E-09 | EPI HenryWin v3.2 | | | | | | | 2.19E+03 | EPI KOCWIN v2.0 | 1.14E+02 | EPI WATERNT v.01 |
| Flutolanil | 66332-96-5 | 323.32 | EPI Demwin v2.0 | 1.30E-07 | 3.18E-09 | EPI HenryWin v3.2 | | | | | | | 2.56E+03 | EPI KOCWIN v2.0 | 6.53E+00 | EPI WATERNT v.01 |
| Fluvalinate | 69409-94-5 | 502.92 | EPI Demwin v2.0 | 5.90E-07 | 1.45E-08 | EPI HenryWin v3.2 | | | | | | | 7.30E+05 | EPI KOCWIN v2.0 | 5.00E-03 | EPI WATERNT v.01 |
| Folpet | 133-07-3 | 296.56 | EPI Demwin v2.0 | 3.10E-06 | 7.66E-08 | EPI HenryWin v3.2 | | | | | | | 1.77E+01 | EPI KOCWIN v2.0 | 8.00E-01 | EPI WATERNT v.01 |
| Fomesafen | 72178-02-0 | 438.76 | EPI Demwin v2.0 | 3.10E-11 | 7.53E-13 | EPI HenryWin v3.2 | 1.28 | CRC 89th Ed | | | | | 1.55E+03 | EPI KOCWIN v2.0 | 5.00E+01 | EPI WATERNT v.01 |
| Fonofos | 944-22-9 | 246.32 | EPI Demwin v2.0 | 2.90E-04 | 6.98E-06 | EPI HenryWin v3.2 | 1.16 | CRC 89th Ed | | | | | 8.56E+02 | EPI KOCWIN v2.0 | 1.57E+01 | EPI WATERNT v.01 |
| Formaldehyde | 50-00-0 | 30.03 | EPI Demwin v2.0 | 1.40E-05 | 3.37E-07 | EPI HenryWin v3.2 | 0.815 | CRC 89th Ed | 1.70E-01 | EPA 2002 | 1.70E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 4.00E+05 | EPI WATERNT v.01 |
| Formic Acid | 64-18-6 | 46.03 | EPI Demwin v2.0 | 6.80E-06 | 1.67E-07 | EPI HenryWin v3.2 | 1.22 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Fosetyl-AL | 39148-24-8 | 354.11 | EPI Demwin v2.0 | | | | | | | | | | 6.49E+03 | EPI KOCWIN v2.0 | 1.11E+05 | EPI WATERNT v.01 |
| Furans | | | | | | | | | | | | | | | | |
| ~Dibenzofuran | 132-64-9 | 168.20 | EPI Demwin v2.0 | 8.70E-03 | 2.13E-04 | EPI HenryWin v3.2 | 1.0886 | CRC 89th Ed | 4.10E-02 | USEPA 2001 | 7.40E-06 | USEPA 2001 | 9.16E+03 | EPI KOCWIN v2.0 | 3.10E+00 | EPI WATERNT v.01 |
| ~Furan | 110-00-9 | 68.08 | EPI Demwin v2.0 | 2.20E-01 | 5.40E-03 | EPI HenryWin v3.2 | 0.9514 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 8.00E+01 | EPI KOCWIN v2.0 | 1.00E+04 | EPI WATERNT v.01 |
| Furazolidone | 67-45-8 | 225.16 | EPI Demwin v2.0 | 1.30E-09 | 3.26E-11 | EPI HenryWin v3.2 | | | | | | | 8.58E+02 | EPI KOCWIN v2.0 | 4.00E+01 | EPI WATERNT v.01 |
| Furfural | 98-01-1 | 96.09 | EPI Demwin v2.0 | 1.50E-04 | 3.77E-06 | EPI HenryWin v3.2 | 1.1594 | CRC 89th Ed | 8.50E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 6.08E+00 | EPI KOCWIN v2.0 | 7.41E+04 | EPI WATERNT v.01 |
| Furium | 531-82-8 | 253.23 | EPI Demwin v2.0 | 5.40E-14 | 1.33E-15 | EPI HenryWin v3.2 | | | | | | | 5.78E+02 | EPI KOCWIN v2.0 | 4.21E+03 | EPI WATERNT v.01 |
| Furmecyclox | 60568-05-0 | 251.33 | EPI Demwin v2.0 | 2.80E-07 | 6.89E-09 | EPI HenryWin v3.2 | | | | | | | 4.29E+02 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Glufosinate, Ammonium | 77182-82-2 | 198.16 | EPI Demwin v2.0 | 1.00E-22 | 2.53E-24 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.37E+06 | EPI WATERNT v.01 |
| Glutaraldehyde | 111-30-8 | 100.12 | EPI Demwin v2.0 | 9.80E-07 | 2.39E-08 | EPI HenryWin v3.2 | | | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 7.10E+05 | EPI WATERNT v.01 |
| Glycidyl | 765-34-4 | 72.06 | EPI Demwin v2.0 | 3.20E-05 | 7.84E-07 | EPI HenryWin v3.2 | 1.1403 | CRC 89th Ed | 1.10E-01 | EPA 2002 | 1.30E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Glyphosate | 1071-83-6 | 169.07 | EPI Demwin v2.0 | 8.60E-11 | 2.10E-12 | EPI HenryWin v3.2 | | | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.05E+04 | EPI WATERNT v.01 |
| Goal | 42874-03-3 | 361.71 | EPI Demwin v2.0 | 3.40E-05 | 8.20E-07 | EPI HenryWin v3.2 | 1.35 | CRC 89th Ed | | | | | 3.99E+04 | EPI KOCWIN v2.0 | 1.16E-01 | EPI WATERNT v.01 |
| Guthion | 86-50-0 | 317.32 | EPI Demwin v2.0 | 9.80E-07 | 2.39E-08 | EPI HenryWin v3.2 | 1.44 | CRC 89th Ed | | | | | 5.19E+01 | EPI KOCWIN v2.0 | 2.09E+01 | EPI WATERNT v.01 |
| Haloxyfop, Methyl | 69806-40-2 | 375.73 | EPI Demwin v2.0 | 1.30E-05 | 3.19E-07 | EPI HenryWin v3.2 | | | | | | | 5.45E+03 | EPI KOCWIN v2.0 | 9.30E+00 | EPI WATERNT v.01 |
| Harmony | 79277-27-3 | 387.39 | EPI Demwin v2.0 | 1.70E-12 | 4.08E-14 | EPI HenryWin v3.2 | | | | | | | 5.08E+01 | EPI KOCWIN v2.0 | 2.24E+03 | EPI WATERNT v.01 |
| Heptachlor | 76-44-8 | 373.32 | EPI Demwin v2.0 | 1.20E-02 | 2.94E-04 | EPI HenryWin v3.2 | 1.57 | CRC 89th Ed | | | | | 4.13E+04 | EPI KOCWIN v2.0 | 1.80E-01 | EPI WATERNT v.01 |
| Heptachlor Epoxide | 1024-57-3 | 389.32 | EPI Demwin v2.0 | 8.60E-04 | 2.10E-05 | EPI HenryWin v3.2 | | | | | | | 1.01E+04 | EPI KOCWIN v2.0 | 2.00E-01 | EPI WATERNT v.01 |
| Hexabromobenzene | 87-82-1 | 551.49 | EPI Demwin v2.0 | 1.10E-03 | 2.81E-05 | EPI HenryWin v3.2 | | | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 1.60E-04 | EPI WATERNT v.01 |
| Hexabromodiphenyl ether, 2,2',4,4',5,5'- (BDE-153) | 68631-49-2 | | | | | | | | | | | | | | 9.00E-04 | IRIS Profile |
| Hexachlorobenzene | 118-74-1 | 284.78 | EPI Demwin v2.0 | 7.00E-02 | 1.70E-03 | EPI HenryWin v3.2 | 2.044 | CRC 89th Ed | | | | | 6.20E+03 | EPI KOCWIN v2.0 | 6.20E-03 | EPI WATERNT v.01 |
| Hexachlorobutadiene | 87-68-3 | 260.76 | EPI Demwin v2.0 | 4.20E-01 | 1.03E-02 | EPI HenryWin v3.2 | 1.556 | CRC 89th Ed | | | | | 8.45E+02 | EPI KOCWIN v2.0 | 3.20E+00 | EPI WATERNT v.01 |
| Hexachlorocyclohexane, Alpha- | 319-84-6 | 290.83 | EPI Demwin v2.0 | 2.10E-04 | 5.14E-06 | EPI HenryWin v3.2 | | | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 2.00E+00 | EPI WATERNT v.01 |
| Hexachlorocyclohexane, Beta- | 319-85-7 | 290.83 | EPI Demwin v2.0 | 2.10E-04 | 5.14E-06 | EPI HenryWin v3.2 | 1.89 | CRC 89th Ed | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 2.40E-01 | EPI WATERNT v.01 |
| Hexachlorocyclohexane, Gamma- (Lindane) | 58-89-9 | 290.83 | EPI Demwin v2.0 | 2.10E-04 | 5.14E-06 | EPI HenryWin v3.2 | | | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 7.30E+00 | EPI WATERNT v.01 |
| Hexachlorocyclohexane, Technical | 608-73-1 | 290.83 | EPI Demwin v2.0 | 2.10E-04 | 5.14E-06 | EPI HenryWin v3.2 | | | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 8.00E+00 | EPI WATERNT v.01 |
| Hexachlorocyclopentadiene | 77-47-4 | 272.77 | EPI Demwin v2.0 | 1.10E+00 | 2.70E-02 | EPI HenryWin v3.2 | 1.7019 | CRC 89th Ed | | | | | 1.40E+03 | EPI KOCWIN v2.0 | 1.80E+00 | EPI WATERNT v.01 |
| Hexachloroethane | 67-72-1 | 236.74 | EPI Demwin v2.0 | 1.60E-01 | 3.89E-03 | EPI HenryWin v3.2 | 2.091 | CRC 89th Ed | | | | | 1.97E+02 | EPI KOCWIN v2.0 | 5.00E+01 | EPI WATERNT v.01 |
| Hexachlorophene | 70-30-4 | 406.91 | EPI Demwin v2.0 | 2.20E-11 | 5.48E-13 | EPI HenryWin v3.2 | | | | | | | 6.69E+05 | EPI KOCWIN v2.0 | 1.40E+02 | EPI WATERNT v.01 |
| Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) | 121-82-4 | 222.12 | EPI Demwin v2.0 | 8.20E-10 | 2.01E-11 | EPI HenryWin v3.2 | 1.82 | CRC 89th Ed | | | | | 8.91E+01 | EPI KOCWIN v2.0 | 5.97E+01 | EPI WATERNT v.01 |
| Hexamethylene Diisocyanate, 1,6- | 822-06-0 | 168.20 | EPI Demwin v2.0 | 2.00E-03 | 4.80E-05 | EPI HenryWin v3.2 | 1.0528 | CRC 89th Ed | 4.00E-02 | USEPA 2001 | 7.20E-06 | USEPA 2001 | 4.82E+03 | EPI KOCWIN v2.0 | 1.79E+02 | EPI WATERNT v.01 |
| Hexane, N- | 110-54-3 | 86.18 | EPI Demwin v2.0 | 7.40E+01 | 1.80E+00 | EPI HenryWin v3.2 | 0.6606 | CRC 89th Ed | 7.30E-02 | USEPA 2001 | 8.20E-06 | USEPA 2001 | 1.32E+02 | EPI KOCWIN v2.0 | 9.50E+00 | EPI WATERNT v.01 |
| Hexanedioic Acid | 124-04-9 | 146.14 | EPI Demwin v2.0 | 1.90E-10 | 4.71E-12 | EPI HenryWin v3.2 | 1.36 | CRC 89th Ed | | | | | 2.43E+01 | EPI KOCWIN v2.0 | 3.08E+04 | EPI WATERNT v.01 |
| Hexanone, 2- | 591-78-6 | 100.16 | EPI Demwin v2.0 | 3.80E-03 | 9.32E-05 | EPI HenryWin v3.2 | 0.8113 | CRC 89th Ed | 7.00E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 1.50E+01 | EPI KOCWIN v2.0 | 1.72E+04 | EPI WATERNT v.01 |
| Hexazinone | 51235-04-2 | 252.32 | EPI Demwin v2.0 | 9.20E-11 | 2.26E-12 | EPI HenryWin v3.2 | 1.25 | CRC 89th Ed | | | | | 1.29E+02 | EPI KOCWIN v2.0 | 3.30E+04 | EPI WATERNT v.01 |
| Hydrazine | 302-01-2 | 32.05 | EPI Demwin v2.0 | | | | 1.0036 | CRC 89th Ed | | | | | | | 1.00E+06 | EPI WATERNT v.01 |
| Hydrazine Sulfate | 10034-93-2 | 128.10 | EPI Demwin v2.0 | | | | 1.378 | CRC 89th Ed | | | | | | | 3.06E+04 | CRC 89th Ed |
| Hydrogen Chloride | 7647-01-0 | 35.45 | EPI Demwin v2.0 | | | | 1.49 | CRC 89th Ed | | | | | | | 7.20E+05 | CRC 89th Ed |
| Hydrogen Fluoride | 7664-39-3 | 20.01 | EPI Demwin v2.0 | | | | 0.818 | CRC 89th Ed | | | | | | | | CRC 89th Ed |
| Hydrogen Sulfide | 7783-06-4 | 34.08 | EPI Demwin v2.0 | | | | 1.393 | CRC 89th Ed | | | | | | | 5.13E+03 | CRC 89th Ed |
| Hydroquinone | 123-31-9 | 110.11 | EPI Demwin v2.0 | 1.90E-09 | 4.73E-11 | EPI HenryWin v3.2 | 1.33 | CRC 89th Ed | | | | | 2.41E+02 | EPI KOCWIN v2.0 | 7.20E+04 | EPI WATERNT v.01 |
| Imazalil | 35554-44-0 | 297.19 | EPI Demwin v2.0 | 1.10E-07 | 2.59E-09 | EPI HenryWin v3.2 | 1.243 | CRC 89th Ed | | | | | 8.50E+03 | EPI KOCWIN v2.0 | 1.80E+02 | EPI WATERNT v.01 |
| Imazaquin | 81335-37-7 | 311.34 | EPI Demwin v2.0 | 2.80E-16 | 6.91E-18 | EPI HenryWin v3.2 | | | | | | | 2.39E+03 | EPI KOCWIN v2.0 | 9.00E+01 | EPI WATERNT v.01 |
| Iodine | 7553-56-2 | 253.81 | EPI Demwin v2.0 | | | | 4.933 | CRC 89th Ed | | | | | | | 3.30E+02 | EPI WATERNT v.01 |
| Iprodione | 36734-19-7 | 330.17 | EPI Demwin v2.0 | 1.30E-07 | 3.12E-09 | EPI HenryWin v3.2 | | | | | | | 5.25E+01 | EPI KOCWIN v2.0 | 1.39E+01 | EPI WATERNT v.01 |
| Iron | 7439-89-6 | 55.85 | EPI Demwin v2.0 | | | | 7.87 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Isobutyl Alcohol | 78-83-1 | 74.12 | EPI Demwin v2.0 | 4.00E-04 | 9.78E-06 | EPI HenryWin v3.2 | 0.8018 | CRC 89th Ed | 9.00E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 2.92E+00 | EPI KOCWIN v2.0 | 8.50E+04 | EPI WATERNT v.01 |
| Isophorone | 78-59-1 | 138.21 | EPI Demwin v2.0 | 2.70E-04 | 6.64E-06 | EPI HenryWin v3.2 | 0.9255 | CRC 89th Ed | 5.30E-02 | EPA 2002 | 7.50E-06 | EPA 2002 | 6.52E+01 | EPI KOCWIN v2.0 | 1.20E+04 | EPI WATERNT v.01 |
| Isopropalin | 33820-53-0 | 309.37 | EPI Demwin v2.0 | 4.50E-03 | 1.11E-04 | EPI HenryWin v3.2 | | | | | | | 1.14E+04 | EPI KOCWIN v2.0 | 1.10E-01 | EPI WATERNT v.01 |
| Isopropanol | 67-63-0 | 60.10 | EPI Demwin v2.0 | 3.30E-04 | 8.10E-06 | EPI HenryWin v3.2 | 0.7809 | CRC 89th Ed | 1.00E-01 | EPA 2002 | 1.10E-05 | EPA 2002 | 1.53E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Isopropyl Methyl Phosphonic Acid | 1832-54-8 | 138.10 | EPI Demwin v2.0 | 2.80E-07 | 6.88E-09 | EPI HenryWin v3.2 | | | | | | | 7.71E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Isoxaben | 82558-50-7 | 332.40 | EPI Demwin v2.0 | 5.20E-08 | 1.27E-09 | EPI HenryWin v3.2 | | | | | | | 1.26E+03 | EPI KOCWIN v2.0 | 1.42E+00 | EPI WATERNT v.01 |
| JP-7 | NA | | | | | | | | | USEPA 1987 | | USEPA 1987 | | | | |
| Kerb | 23950-58-5 | 256.13 | EPI Demwin v2.0 | 4.00E-07 | 9.77E-09 | EPI HenryWin v3.2 | | | | | | | 4.05E+02 | EPI KOCWIN v2.0 | 1.50E+01 | EPI WATERNT v.01 |
| Lactofen | 77501-63-4 | 461.78 | EPI Demwin v2.0 | 1.90E-05 | 4.72E-07 | EPI HenryWin v3.2 | | | | | | | 2.30E+04 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| Lead Compounds | | | | | | | | | | | | | | | | |
| ~Lead and Compounds | 7439-92-1 | 207.20 | EPI Demwin v2.0 | | | | 11.3 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 85th Ed |
| ~Tetraethyl Lead | 78-00-2 | 323.45 | EPI Demwin v2.0 | 2.30E+01 | 5.68E-01 | EPI HenryWin v3.2 | 1.653 | CRC 89th Ed | | | | | 6.48E+02 | EPI KOCWIN v2.0 | 2.90E-01 | EPI WATERNT v.01 |
| Lead acetate | 301-04-2 | 325.29 | EPI Demwin v2.0 | | | | 3.25 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.60E+03 | EPI WATERNT v.01 |
| Lead subacetate | 1335-32-6 | 805.70 | EPI Demwin v2.0 | | | | | | | | | | 1.04E+01 | EPI KOCWIN v2.0 | 6.25E+04 | EPI WATERNT v.01 |
| Linuron | 330-55-2 | 249.10 | EPI Demwin v2.0 | 2.60E-07 | 6.25E-09 | EPI HenryWin v3.2 | | | | | | | 3.40E+02 | EPI KOCWIN v2.0 | 7.50E+01 | EPI WATERNT v.01 |
| Lithium | 7439-93-2 | 6.94 | EPI Demwin v2.0 | | | | 0.534 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Lithium Perchlorate | 7791-03-9 | 106.39 | EPI | | | | 2.428 | CRC 89th Ed | | | | | | | 5.87E+05 | CRC 89th Ed |
| Londax | 83055-99-6 | 410.40 | EPI Demwin v2.0 | 1.50E-13 | 3.78E-15 | EPI HenryWin v3.2 | | | | | | | 2.78E+01 | EPI KOCWIN v2.0 | 1.20E+02 | EPI WATERNT v.01 |
| MCPA | 94-74-6 | 200.62 | EPI Demwin v2.0 | 5.40E-08 | 1.33E-09 | EPI HenryWin v3.2 | | | | | | | 2.96E+01 | EPI KOCWIN v2.0 | 6.30E+02 | EPI WATERNT v.01 |
| MCPB | 94-81-5 | 228.68 | EPI Demwin v2.0 | 1.10E-07 | 2.71E-09 | EPI HenryWin v3.2 | | | | | | | 9.84E+01 | EPI KOCWIN v2.0 | 4.80E+01 | EPI WATERNT v.01 |
| MCPP | 93-65-2 | 214.65 | EPI Demwin v2.0 | 3.70E-08 | 8.96E-10 | EPI HenryWin v3.2 | | | | | | | 4.85E+01 | EPI KOCWIN v2.0 | 6.20E+02 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Malathion | 121-75-5 | 330.35 | EPI Demwin v2.0 | 2.00E-07 | 4.89E-09 | EPI HenryWin v3.2 | 1.2076 | CRC 89th Ed | | | | | 3.13E+01 | EPI KOCWIN v2.0 | 1.43E+02 | EPI WATERNT v.01 |
| Maleic Anhydride | 108-31-6 | 98.06 | EPI Demwin v2.0 | 1.60E-04 | 3.93E-06 | EPI HenryWin v3.2 | 1.314 | CRC 89th Ed | 8.80E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 4.60E+05 | EPI WATERNT v.01 |
| Maleic Hydrazide | 123-33-1 | 112.09 | EPI Demwin v2.0 | 1.10E-09 | 2.65E-11 | EPI HenryWin v3.2 | | | 8.20E-02 | USEPA 1987 | 9.50E-06 | USEPA 1987 | 3.30E+00 | EPI KOCWIN v2.0 | 4.51E+03 | EPI WATERNT v.01 |
| Malononitrile | 109-77-3 | 66.06 | EPI Demwin v2.0 | 5.40E-06 | 1.31E-07 | EPI HenryWin v3.2 | 1.191 | CRC 89th Ed | 1.20E-01 | EPA 2002 | 1.40E-05 | EPA 2002 | 3.33E+00 | EPI KOCWIN v2.0 | 1.33E+05 | EPI WATERNT v.01 |
| Mancozeb | 8018-01-7 | 212.36 | EPI Demwin v2.0 | 2.30E-05 | 5.64E-07 | EPI HenryWin v3.2 | | | | | | | 6.08E+02 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Maneb | 12427-38-2 | 212.36 | EPI Demwin v2.0 | 2.30E-05 | 5.64E-07 | EPI HenryWin v3.2 | | | | | | | 6.08E+02 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Manganese (Diet) | 7439-96-5 | 54.94 | EPI Demwin v2.0 | | | | 7.3 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.), reacts in water. |
| Manganese (Water) | 7439-96-5 | 54.94 | EPI Demwin v2.0 | | | | 7.3 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.), reacts in water. |
| Mephosfolan | 950-10-7 | 269.32 | EPI Demwin v2.0 | 4.90E-09 | 1.19E-10 | EPI HenryWin v3.2 | | | | | | | 6.36E+02 | EPI KOCWIN v2.0 | 5.70E+01 | EPI WATERNT v.01 |
| Mepiquat Chloride | 24307-26-4 | 149.67 | EPI Demwin v2.0 | 1.80E-10 | 4.31E-12 | EPI HenryWin v3.2 | | | | | | | 6.62E+01 | EPI KOCWIN v2.0 | 5.00E+05 | EPI WATERNT v.01 |
| Mercury Compounds | | | | | | | | | | | | | | | | |
| ~Mercuric Chloride | 7487-94-7 | 271.50 | EPI Demwin v2.0 | | | | 5.6 | CRC 89th Ed | | | | | | | 6.90E+04 | EPI WATERNT v.01 |
| ~Mercuric Sulfide | 1344-48-5 | 232.65 | EPI Demwin v2.0 | | | | 8.17 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| ~Mercury (elemental) | 7439-97-6 | 200.59 | EPI Demwin v2.0 | 4.70E-01 | 1.14E-02 | SSL | 13.534 | CRC 89th Ed | 3.10E-02 | SSL | 6.30E-06 | SSL | | | 6.00E-02 | EPI WATERNT v.01 |
| ~Mercury, Inorganic Salts | NA | 200.59 | MW Other | | | | | | | | | | | | 6.00E-02 | PHYSPROP, measured at 25 C. |
| ~Methyl Mercury | 22967-92-6 | 215.63 | EPI Demwin v2.0 | | | | | | | | | | | | | |
| ~Phenylmercuric Acetate | 62-38-4 | 336.74 | EPI Demwin v2.0 | 2.30E-08 | 5.66E-10 | EPI HenryWin v3.2 | | | | | | | 5.64E+01 | EPI KOCWIN v2.0 | 4.37E+03 | EPI WATERNT v.01 |
| Merphos | 150-50-5 | 298.50 | EPI Demwin v2.0 | 9.30E-04 | 2.27E-05 | EPI HenryWin v3.2 | 1.02 | CRC 89th Ed | | | | | 4.90E+04 | EPI KOCWIN v2.0 | 9.97E-04 | EPI WATERNT v.01 |
| Merphos Oxide | 78-48-8 | 314.50 | EPI Demwin v2.0 | 1.20E-05 | 2.94E-07 | EPI HenryWin v3.2 | 1.057 | CRC 89th Ed | | | | | 2.35E+03 | EPI KOCWIN v2.0 | 2.30E+00 | EPI WATERNT v.01 |
| Metalaxyl | 57837-19-1 | 279.34 | EPI Demwin v2.0 | 1.20E-07 | 2.95E-09 | EPI HenryWin v3.2 | | | | | | | 3.86E+01 | EPI KOCWIN v2.0 | 8.40E+03 | EPI WATERNT v.01 |
| Methacrylonitrile | 126-98-7 | 67.09 | EPI Demwin v2.0 | 1.00E-02 | 2.47E-04 | EPI HenryWin v3.2 | 0.8001 | CRC 89th Ed | 9.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 1.31E+01 | EPI KOCWIN v2.0 | 2.54E+04 | EPI WATERNT v.01 |
| Methamidophos | 10265-92-6 | 141.13 | EPI Demwin v2.0 | 3.50E-08 | 8.68E-10 | EPI HenryWin v3.2 | 1.31 | CRC 89th Ed | | | | | 5.41E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Methanol | 67-56-1 | 32.04 | EPI Demwin v2.0 | 1.90E-04 | 4.55E-06 | EPI HenryWin v3.2 | 0.7914 | CRC 89th Ed | 1.60E-01 | EPA 2002 | 1.60E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Methidathion | 950-37-8 | 302.32 | EPI Demwin v2.0 | 2.90E-07 | 7.17E-09 | EPI HenryWin v3.2 | | | | | | | 2.12E+01 | EPI KOCWIN v2.0 | 1.87E+02 | EPI WATERNT v.01 |
| Methomyl | 16752-77-5 | 162.21 | EPI Demwin v2.0 | 8.10E-10 | 1.97E-11 | EPI HenryWin v3.2 | 1.2946 | CRC 89th Ed | 4.80E-02 | EPA 2002 | 8.40E-06 | EPA 2002 | 1.00E+01 | EPI KOCWIN v2.0 | 5.80E+04 | EPI WATERNT v.01 |
| Methoxy-5-nitroaniline, 2- | 99-59-2 | 168.15 | EPI Demwin v2.0 | 6.00E-07 | 1.47E-08 | EPI HenryWin v3.2 | 1.2068 | CRC 89th Ed | | | | | 7.13E+01 | EPI KOCWIN v2.0 | 1.15E+02 | EPI WATERNT v.01 |
| Methoxychlor | 72-43-5 | 345.66 | EPI Demwin v2.0 | 8.30E-06 | 2.03E-07 | EPI HenryWin v3.2 | 1.41 | CRC 89th Ed | | | | | 2.69E+04 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| Methoxyethanol Acetate, 2- | 110-49-6 | 118.13 | EPI Demwin v2.0 | 1.30E-05 | 3.11E-07 | EPI HenryWin v3.2 | 1.0074 | CRC 89th Ed | 6.60E-02 | EPA 2002 | 8.70E-06 | EPA 2002 | 2.49E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Methoxyethanol, 2- | 109-86-4 | 76.10 | EPI Demwin v2.0 | 1.30E-05 | 3.30E-07 | EPI HenryWin v3.2 | 0.9647 | CRC 89th Ed | 9.50E-02 | EPA 2002 | 1.10E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Methyl Acetate | 79-20-9 | 74.08 | EPI Demwin v2.0 | 4.70E-03 | 1.15E-04 | EPI HenryWin v3.2 | 0.9342 | CRC 89th Ed | 9.60E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 3.06E+00 | EPI KOCWIN v2.0 | 2.43E+05 | EPI WATERNT v.01 |
| Methyl Acrylate | 96-33-3 | 86.09 | EPI Demwin v2.0 | 8.10E-03 | 1.99E-04 | EPI HenryWin v3.2 | 0.9535 | CRC 89th Ed | 8.60E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 5.84E+00 | EPI KOCWIN v2.0 | 4.94E+04 | EPI WATERNT v.01 |
| Methyl Ethyl Ketone (2-Butanone) | 78-93-3 | 72.11 | EPI Demwin v2.0 | 2.30E-03 | 5.69E-05 | EPI HenryWin v3.2 | 0.7999 | CRC 89th Ed | 9.10E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 4.51E+00 | EPI KOCWIN v2.0 | 2.23E+05 | EPI WATERNT v.01 |
| Methyl Isobutyl Ketone (4-methyl-2-pentanone) | 108-10-1 | 100.16 | EPI Demwin v2.0 | 5.60E-03 | 1.38E-04 | EPI HenryWin v3.2 | 0.7965 | CRC 89th Ed | 7.00E-02 | USEPA 2001 | 8.30E-06 | USEPA 2001 | 1.26E+01 | EPI KOCWIN v2.0 | 1.90E+04 | EPI WATERNT v.01 |
| Methyl Isocyanate | 624-83-9 | 57.05 | EPI Demwin v2.0 | 3.80E-02 | 9.26E-04 | EPI HenryWin v3.2 | 0.9588 | CRC 89th Ed | 1.20E-01 | USEPA 2001 | 1.30E-05 | USEPA 2001 | 3.96E+01 | EPI KOCWIN v2.0 | 4.83E+04 | EPI WATERNT v.01 |
| Methyl Methacrylate | 80-62-6 | 100.12 | EPI Demwin v2.0 | 1.30E-02 | 3.19E-04 | EPI HenryWin v3.2 | 0.9377 | CRC 89th Ed | 7.50E-02 | USEPA 2001 | 9.20E-06 | USEPA 2001 | 9.14E+00 | EPI KOCWIN v2.0 | 1.50E+04 | EPI WATERNT v.01 |
| Methyl Parathion | 298-00-0 | 263.21 | EPI Demwin v2.0 | 4.10E-06 | 1.00E-07 | EPI HenryWin v3.2 | 1.358 | CRC 89th Ed | | | | | 7.29E+02 | EPI KOCWIN v2.0 | 3.77E+01 | EPI WATERNT v.01 |
| Methyl Phosphonic Acid | 993-13-5 | 96.02 | EPI Demwin v2.0 | 5.00E-10 | 1.22E-11 | EPI HenryWin v3.2 | | | | | | | 1.41E+00 | EPI KOCWIN v2.0 | 2.00E+04 | EPI WATERNT v.01 |
| Methyl Styrene (Mixed Isomers) | 25013-15-4 | 118.18 | EPI Demwin v2.0 | 1.00E-01 | 2.55E-03 | EPI HenryWin v3.2 | | | 7.90E-02 | USEPA 1987 | 9.20E-06 | USEPA 1987 | 6.98E+02 | EPI KOCWIN v2.0 | 8.90E+01 | EPI WATERNT v.01 |
| Methyl methanesulfonate | 66-27-3 | 110.13 | EPI Demwin v2.0 | 1.60E-04 | 4.03E-06 | EPI HenryWin v3.2 | 1.2943 | CRC 89th Ed | | | | | 4.33E+00 | EPI KOCWIN v2.0 | 8.38E+05 | EPI WATERNT v.01 |
| Methyl tert-Butyl Ether (MTBE) | 1634-04-4 | 88.15 | EPI Demwin v2.0 | 2.40E-02 | 5.87E-04 | EPI HenryWin v3.2 | 0.7353 | CRC 89th Ed | 7.50E-02 | USEPA 2001 | 8.60E-06 | USEPA 2001 | 1.16E+01 | EPI KOCWIN v2.0 | 5.10E+04 | EPI WATERNT v.01 |
| Methyl-5-Nitroaniline, 2- | 99-55-8 | 152.15 | EPI Demwin v2.0 | 7.90E-07 | 1.94E-08 | EPI HenryWin v3.2 | | | | | | | 1.79E+02 | EPI KOCWIN v2.0 | 6.13E+02 | EPI WATERNT v.01 |
| Methyl-N-nitro-N-nitrosoguanidine, N- | 70-25-7 | 147.09 | EPI Demwin v2.0 | 5.00E-11 | 1.22E-12 | EPI HenryWin v3.2 | | | | | | | 7.20E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Methylaniline Hydrochloride, 2- | 636-21-5 | 107.16 | EPI Demwin v2.0 | 8.10E-05 | 1.98E-06 | EPI HenryWin v3.2 | | | 8.40E-02 | USEPA 1987 | 9.80E-06 | USEPA 1987 | 1.15E+02 | EPI KOCWIN v2.0 | 1.66E+04 | EPI WATERNT v.01 |
| Methylarsonic acid | 124-58-3 | 139.97 | EPI Demwin v2.0 | | | | | | | | | | 4.39E+01 | EPI KOCWIN v2.0 | 2.56E+05 | EPI WATERNT v.01 |
| Methylcholanthrene, 3- | 56-49-5 | 268.36 | EPI Demwin v2.0 | 2.10E-04 | 5.24E-06 | EPI HenryWin v3.2 | 1.28 | CRC 89th Ed | | | | | 9.62E+05 | EPI KOCWIN v2.0 | 2.90E-03 | EPI WATERNT v.01 |
| Methylene Chloride | 75-09-2 | 84.93 | EPI Demwin v2.0 | 1.30E-01 | 3.25E-03 | EPI HenryWin v3.2 | 1.3266 | CRC 89th Ed | 1.00E-01 | USEPA 2001 | 1.30E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 1.30E+04 | EPI WATERNT v.01 |
| Methylene-bis(2-chloroaniline), 4,4'- | 101-14-4 | 267.16 | EPI Demwin v2.0 | 4.70E-10 | 1.14E-11 | EPI HenryWin v3.2 | | | | | | | 5.70E+03 | EPI KOCWIN v2.0 | 1.39E+01 | EPI WATERNT v.01 |
| Methylene-bis(N,N-dimethyl) Aniline, 4,4'- | 101-61-1 | 254.38 | EPI Demwin v2.0 | 4.90E-06 | 1.21E-07 | EPI HenryWin v3.2 | | | | | | | 2.67E+03 | EPI KOCWIN v2.0 | 5.49E+00 | EPI WATERNT v.01 |
| Methylenebisbenzenamine, 4,4'- | 101-77-9 | 198.27 | EPI Demwin v2.0 | 6.50E-10 | 1.58E-11 | EPI HenryWin v3.2 | | | | | | | 2.13E+03 | EPI KOCWIN v2.0 | 1.00E+03 | EPI WATERNT v.01 |
| Methylenediphenyl Diisocyanate | 101-68-8 | 250.26 | EPI Demwin v2.0 | 3.70E-05 | 8.95E-07 | EPI HenryWin v3.2 | 1.197 | CRC 89th Ed | | | | | 2.85E+05 | EPI KOCWIN v2.0 | 1.84E+00 | EPI WATERNT v.01 |
| Methylstyrene, Alpha- | 98-83-9 | 118.18 | EPI Demwin v2.0 | 1.00E-01 | 2.55E-03 | EPI HenryWin v3.2 | 0.9106 | CRC 89th Ed | 6.30E-02 | USEPA 2001 | 8.20E-06 | USEPA 2001 | 6.98E+02 | EPI KOCWIN v2.0 | 1.16E+02 | EPI WATERNT v.01 |
| Metolachlor | 51218-45-2 | 283.80 | EPI Demwin v2.0 | 3.70E-07 | 9.00E-09 | EPI HenryWin v3.2 | 1.12 | CRC 89th Ed | | | | | 4.89E+02 | EPI KOCWIN v2.0 | 5.30E+02 | EPI WATERNT v.01 |
| Metribuzin | 21087-64-9 | 214.29 | EPI Demwin v2.0 | 4.80E-09 | 1.17E-10 | EPI HenryWin v3.2 | 1.31 | CRC 89th Ed | | | | | 5.31E+01 | EPI KOCWIN v2.0 | 1.05E+03 | EPI WATERNT v.01 |
| Mineral oils | 8012-95-1 | 170.34 | EPI Demwin v2.0 | 3.30E+02 | 8.18E+00 | EPI HenryWin v3.2 | | | 6.20E-02 | USEPA 1987 | 7.20E-06 | USEPA 1987 | 4.82E+03 | EPI KOCWIN v2.0 | 3.70E-03 | EPI WATERNT v.01 |
| Mirex | 2385-85-5 | 545.55 | EPI Demwin v2.0 | 3.30E-02 | 8.11E-04 | EPI HenryWin v3.2 | | | | | | | 3.57E+05 | EPI KOCWIN v2.0 | 8.50E-02 | EPI WATERNT v.01 |
| Molinate | 2212-67-1 | 187.30 | EPI Demwin v2.0 | 1.70E-04 | 4.10E-06 | EPI HenryWin v3.2 | 1.063 | CRC 89th Ed | 3.20E-02 | EPA 2002 | 6.80E-06 | EPA 2002 | 1.82E+02 | EPI KOCWIN v2.0 | 9.70E+02 | EPI WATERNT v.01 |
| Molybdenum | 7439-98-7 | 95.94 | EPI Demwin v2.0 | | | | 10.2 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Monochloramine | 10599-90-3 | 51.48 | EPI Demwin v2.0 | | | | | | | | | | | | | CRC 89th Ed |
| Monomethylaniline | 100-61-8 | 107.16 | EPI Demwin v2.0 | 3.60E-04 | 8.88E-06 | EPI HenryWin v3.2 | 0.9891 | CRC 89th Ed | 7.20E-02 | EPA 2002 | 9.10E-06 | EPA 2002 | 8.21E+01 | EPI KOCWIN v2.0 | 5.62E+03 | EPI WATERNT v.01 |
| N,N'-Diphenyl-1,4-benzenediamine | 74-31-7 | 260.34 | EPI Demwin v2.0 | 8.40E-09 | 2.05E-10 | EPI HenryWin v3.2 | | | | | | | 5.19E+04 | EPI KOCWIN v2.0 | 1.59E+00 | EPI WATERNT v.01 |
| Naled | 300-76-5 | 380.79 | EPI Demwin v2.0 | 2.70E-03 | 6.51E-05 | EPI HenryWin v3.2 | 1.96 | CRC 89th Ed | | | | | 1.27E+02 | EPI KOCWIN v2.0 | 1.50E+00 | EPI WATERNT v.01 |
| Naphtha, High Flash Aromatic (HFAN) | 64724-95-6 | | | | | | | | | | | | | | | |
| Naphthylamine, 2- | 91-59-8 | 143.19 | EPI Demwin v2.0 | 3.30E-06 | 8.10E-08 | EPI HenryWin v3.2 | 1.6414 | CRC 89th Ed | | | | | 2.48E+03 | EPI KOCWIN v2.0 | 1.89E+02 | EPI WATERNT v.01 |
| Napropamide | 15299-99-7 | 271.36 | EPI Demwin v2.0 | 3.40E-08 | 8.41E-10 | EPI HenryWin v3.2 | | | | | | | 3.22E+03 | EPI KOCWIN v2.0 | 7.30E+01 | EPI WATERNT v.01 |
| Nickel Carbonyl | 13463-39-3 | 170.73 | EPI | | | | 1.31 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Nickel Oxide | 1313-99-1 | 74.69 | EPI Demwin v2.0 | | | | 6.72 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Nickel Refinery Dust | NA | | | | | | | | | | | | | | | |
| Nickel Soluble Salts | 7440-02-0 | 58.69 | EPI Demwin v2.0 | | | | 8.9 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Nickel Subsulfide | 12035-72-2 | 240.21 | EPI | | | | 5.87 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Nitrate | 14797-55-8 | 62.00 | EPI Demwin v2.0 | | | | 1.5129 | CRC 89th Ed (nitric acid value) | | | | | | | | |
| Nitrite | 14797-65-0 | 47.01 | EPI Demwin v2.0 | | | | | | | | | | | | | |
| Nitroaniline, 2- | 88-74-4 | 138.13 | EPI Demwin v2.0 | 2.40E-06 | 5.90E-08 | EPI HenryWin v3.2 | 0.9015 | CRC 89th Ed | | | | | 1.11E+02 | EPI KOCWIN v2.0 | 1.47E+03 | EPI WATERNT v.01 |
| Nitroaniline, 4- | 100-01-6 | 138.13 | EPI Demwin v2.0 | 5.20E-08 | 1.26E-09 | EPI HenryWin v3.2 | 1.424 | CRC 89th Ed | | | | | 1.09E+02 | EPI KOCWIN v2.0 | 7.28E+02 | EPI WATERNT v.01 |
| Nitrobenzene | 98-95-3 | 123.11 | EPI Demwin v2.0 | 9.80E-04 | 2.40E-05 | EPI HenryWin v3.2 | 1.2037 | CRC 89th Ed | 6.80E-02 | USEPA 2001 | 9.40E-06 | USEPA 2001 | 2.26E+02 | EPI KOCWIN v2.0 | 2.09E+03 | EPI WATERNT v.01 |
| Nitrocellulose | 9004-70-0 | 387.30 | EPI Demwin v2.0 | 1.30E-21 | 3.29E-23 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Nitrofurantoin | 67-20-9 | 238.16 | EPI Demwin v2.0 | 5.40E-11 | 1.33E-12 | EPI HenryWin v3.2 | | | | | | | 1.17E+02 | EPI KOCWIN v2.0 | 7.95E+01 | EPI WATERNT v.01 |
| Nitrofurazone | 59-87-0 | 198.14 | EPI Demwin v2.0 | 1.30E-11 | 3.10E-13 | EPI HenryWin v3.2 | | | | | | | 3.50E+02 | EPI KOCWIN v2.0 | 2.10E+02 | EPI WATERNT v.01 |
| Nitroglycerin | 55-63-0 | 227.09 | EPI Demwin v2.0 | 3.50E-06 | 8.66E-08 | EPI HenryWin v3.2 | 1.5931 | CRC 89th Ed | | | | | 1.16E+02 | EPI KOCWIN v2.0 | 1.38E+03 | EPI WATERNT v.01 |
| Nitroguanidine | 556-88-7 | 104.07 | EPI Demwin v2.0 | 1.80E-10 | 4.49E-12 | EPI HenryWin v3.2 | | | | | | | 2.07E+01 | EPI KOCWIN v2.0 | 4.40E+03 | EPI WATERNT v.01 |
| Nitromethane | 75-52-5 | 61.04 | EPI Demwin v2.0 | 1.20E-03 | 2.86E-05 | EPI HenryWin v3.2 | 1.1371 | CRC 89th Ed | 1.20E-01 | USEPA 2001 | 1.40E-05 | USEPA 2001 | 1.03E+01 | EPI KOCWIN v2.0 | 1.11E+05 | EPI WATERNT v.01 |
| Nitropropane, 2- | 79-46-9 | 89.09 | EPI Demwin v2.0 | 4.90E-03 | 1.19E-04 | EPI HenryWin v3.2 | 0.9821 | CRC 89th Ed | 8.50E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 3.08E+01 | EPI KOCWIN v2.0 | 1.70E+04 | EPI WATERNT v.01 |
| Nitroso-N-ethylurea, N- | 759-73-9 | 117.11 | EPI Demwin v2.0 | 5.40E-09 | 1.32E-10 | EPI HenryWin v3.2 | | | | | | | 2.10E+01 | EPI KOCWIN v2.0 | 1.30E+04 | EPI WATERNT v.01 |
| Nitroso-N-methylurea, N- | 684-93-5 | 103.08 | EPI Demwin v2.0 | 4.10E-09 | 9.91E-11 | EPI HenryWin v3.2 | | | | | | | 1.10E+01 | EPI KOCWIN v2.0 | 1.44E+04 | EPI WATERNT v.01 |
| Nitroso-di-N-butylamine, N- | 924-16-3 | 158.25 | EPI Demwin v2.0 | 5.40E-04 | 1.32E-05 | EPI HenryWin v3.2 | | | 6.50E-02 | USEPA 1987 | 7.60E-06 | USEPA 1987 | 9.15E+02 | EPI KOCWIN v2.0 | 1.27E+03 | EPI WATERNT v.01 |
| Nitroso-di-N-propylamine, N- | 621-64-7 | 130.19 | EPI Demwin v2.0 | 2.20E-04 | 5.38E-06 | EPI HenryWin v3.2 | 0.9163 | CRC 89th Ed | 5.60E-02 | EPA 2002 | 7.80E-06 | EPA 2002 | 2.75E+02 | EPI KOCWIN v2.0 | 1.30E+04 | EPI WATERNT v.01 |
| Nitrosodiethanolamine, N- | 1116-54-7 | 134.14 | EPI Demwin v2.0 | 9.30E-15 | 2.28E-16 | EPI HenryWin v3.2 | | | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Nitrosodiethylamine, N- | 55-18-5 | 102.14 | EPI Demwin v2.0 | 1.50E-04 | 3.63E-06 | EPI HenryWin v3.2 | 0.9422 | CRC 89th Ed | 7.40E-02 | EPA 2002 | 9.10E-06 | EPA 2002 | 8.29E+01 | EPI KOCWIN v2.0 | 1.06E+05 | EPI WATERNT v.01 |
| Nitrosodimethylamine, N- | 62-75-9 | 74.08 | EPI Demwin v2.0 | 7.40E-05 | 1.82E-06 | EPI HenryWin v3.2 | 1.0048 | CRC 89th Ed | 9.90E-02 | EPA 2002 | 1.20E-05 | EPA 2002 | 2.28E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Nitrosodiphenylamine, N- | 86-30-6 | 198.23 | EPI Demwin v2.0 | 4.90E-05 | 1.21E-06 | EPI HenryWin v3.2 | | | 5.60E-02 | USEPA 1987 | 6.50E-06 | USEPA 1987 | 2.63E+03 | EPI KOCWIN v2.0 | 3.50E+01 | EPI WATERNT v.01 |
| Nitrosomethylethylamine, N- | 10595-95-6 | 88.11 | EPI Demwin v2.0 | 5.90E-05 | 1.44E-06 | EPI HenryWin v3.2 | | | 9.60E-02 | USEPA 1987 | 1.10E-05 | USEPA 1987 | 4.35E+01 | EPI KOCWIN v2.0 | 3.00E+05 | EPI WATERNT v.01 |
| Nitrosomorpholine [N-] | 59-89-2 | 116.12 | EPI Demwin v2.0 | 1.00E-06 | 2.45E-08 | EPI HenryWin v3.2 | | | | | | | 2.25E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Nitrosopiperidine [N-] | 100-75-4 | 114.15 | EPI Demwin v2.0 | 3.50E-05 | 8.44E-07 | EPI HenryWin v3.2 | 1.0631 | CRC 89th Ed | | | | | 1.68E+02 | EPI KOCWIN v2.0 | 7.65E+04 | EPI WATERNT v.01 |
| Nitrosopyrrolidine, N- | 930-55-2 | 100.12 | EPI Demwin v2.0 | 2.00E-06 | 4.89E-08 | EPI HenryWin v3.2 | 1.085 | CRC 89th Ed | | | | | 9.19E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Nitrotoluene, m- | 99-08-1 | 137.14 | EPI Demwin v2.0 | 3.80E-04 | 9.30E-06 | EPI HenryWin v3.2 | 1.1581 | CRC 89th Ed | 5.90E-02 | EPA 2002 | 8.70E-06 | EPA 2002 | 3.63E+02 | EPI KOCWIN v2.0 | 5.00E+02 | EPI WATERNT v.01 |
| Nitrotoluene, o- | 88-72-2 | 137.14 | EPI Demwin v2.0 | 5.10E-04 | 1.25E-05 | EPI HenryWin v3.2 | 1.1611 | CRC 89th Ed | 5.90E-02 | USEPA 2001 | 8.70E-06 | USEPA 2001 | 3.71E+02 | EPI KOCWIN v2.0 | 6.50E+02 | EPI WATERNT v.01 |
| Nitrotoluene, p- | 99-99-0 | 137.14 | EPI Demwin v2.0 | 2.30E-04 | 5.63E-06 | EPI HenryWin v3.2 | 1.1038 | CRC 89th Ed | 5.70E-02 | EPA 2002 | 8.40E-06 | EPA 2002 | 3.63E+02 | EPI KOCWIN v2.0 | 4.42E+02 | EPI WATERNT v.01 |
| Nonane, n- | 111-84-2 | 128.26 | EPI Demwin v2.0 | 1.40E+02 | 3.40E+00 | EPI HenryWin v3.2 | 0.7192 | CRC 89th Ed | 5.10E-02 | USEPA 2001 | 6.80E-06 | USEPA 2001 | 7.96E+02 | EPI KOCWIN v2.0 | 2.20E-01 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Norflurazon | 27314-13-2 | 303.67 | EPI Demwin v2.0 | 1.40E-08 | 3.43E-10 | EPI HenryWin v3.2 | | | | | | | 3.12E+03 | EPI KOCWIN v2.0 | 3.37E+01 | EPI WATERNT v.01 |
| Nustar | 85509-19-9 | 315.40 | EPI Demwin v2.0 | 2.10E-05 | 5.06E-07 | EPI HenryWin v3.2 | | | | | | | 8.11E+04 | EPI KOCWIN v2.0 | 5.40E+01 | EPI WATERNT v.01 |
| Octabromodiphenyl Ether | 32536-52-0 | 801.38 | EPI Demwin v2.0 | 1.00E-05 | 2.56E-07 | EPI HenryWin v3.2 | | | | | | | 9.90E+04 | EPI KOCWIN v2.0 | 7.43E-05 | EPI WATERNT v.01 |
| Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetra (HMX) | 2691-41-0 | 296.16 | EPI Demwin v2.0 | 3.50E-08 | 8.67E-10 | EPI HenryWin v3.2 | | | | | | | 5.32E+02 | EPI KOCWIN v2.0 | 5.00E+00 | EPI WATERNT v.01 |
| Octamethylpyrophosphoramide | 152-16-9 | 286.25 | EPI Demwin v2.0 | 2.60E-15 | 6.31E-17 | EPI HenryWin v3.2 | 1.09 | CRC 89th Ed | | | | | 2.01E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Oryzalin | 19044-88-3 | 346.36 | EPI Demwin v2.0 | 7.80E-08 | 1.91E-09 | EPI HenryWin v3.2 | | | | | | | 8.25E+02 | EPI KOCWIN v2.0 | 2.50E+00 | EPI WATERNT v.01 |
| Oxadiazon | 19666-30-9 | 345.23 | EPI Demwin v2.0 | 3.00E-06 | 7.27E-08 | EPI HenryWin v3.2 | | | | | | | 5.00E+03 | EPI KOCWIN v2.0 | 7.00E-01 | EPI WATERNT v.01 |
| Oxamyl | 23135-22-0 | 219.26 | EPI Demwin v2.0 | 9.70E-09 | 2.37E-10 | EPI HenryWin v3.2 | 0.97 | CRC 89th Ed | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 2.80E+05 | EPI WATERNT v.01 |
| Paclobutrazol | 76738-62-0 | 293.80 | EPI Demwin v2.0 | 3.40E-09 | 8.28E-11 | EPI HenryWin v3.2 | 1.22 | CRC 89th Ed | | | | | 9.23E+02 | EPI KOCWIN v2.0 | 2.60E+01 | EPI WATERNT v.01 |
| Paraquat Dichloride | 1910-42-5 | 257.16 | EPI Demwin v2.0 | 1.30E-11 | 3.22E-13 | EPI HenryWin v3.2 | | | | | | | 6.78E+03 | EPI KOCWIN v2.0 | 7.00E+05 | EPI WATERNT v.01 |
| Parathion | 56-38-2 | 291.26 | EPI Demwin v2.0 | 1.20E-05 | 2.98E-07 | EPI HenryWin v3.2 | 1.2681 | CRC 89th Ed | | | | | 2.42E+03 | EPI KOCWIN v2.0 | 1.10E+01 | EPI WATERNT v.01 |
| Pebulate | 1114-71-2 | 203.35 | EPI Demwin v2.0 | 9.70E-03 | 2.37E-04 | EPI HenryWin v3.2 | 0.9458 | CRC 89th Ed | | | | | 2.99E+02 | EPI KOCWIN v2.0 | 1.00E+02 | EPI WATERNT v.01 |
| Pendimethalin | 40487-42-1 | 281.31 | EPI Demwin v2.0 | 3.50E-05 | 8.56E-07 | EPI HenryWin v3.2 | 1.19 | CRC 89th Ed | | | | | 5.62E+03 | EPI KOCWIN v2.0 | 3.00E-01 | EPI WATERNT v.01 |
| Pentabromodiphenyl Ether | 32534-81-9 | 564.69 | EPI Demwin v2.0 | 1.40E-04 | 3.54E-06 | EPI HenryWin v3.2 | | | | | | | 2.17E+04 | EPI KOCWIN v2.0 | 9.00E-07 | EPI WATERNT v.01 |
| Pentabromodiphenyl ether, 2,2',4,4',5- (BDE-99) | 60348-60-9 | 564.69 | EPI Demwin v2.0 | 1.40E-04 | 3.54E-06 | EPI HenryWin v3.2 | 2.28 | IRIS Profile | | | | | 2.17E+04 | EPI KOCWIN v2.0 | 9.00E-07 | EPI WATERNT v.01 |
| Pentachlorobenzene | 608-93-5 | 250.34 | EPI Demwin v2.0 | 2.90E-02 | 7.03E-04 | EPI HenryWin v3.2 | 1.8342 | CRC 89th Ed | | | | | 3.71E+03 | EPI KOCWIN v2.0 | 8.31E-01 | EPI WATERNT v.01 |
| Pentachloroethane | 76-01-7 | 202.30 | EPI Demwin v2.0 | 7.90E-02 | 1.94E-03 | EPI HenryWin v3.2 | 1.6796 | CRC 89th Ed | | | | | 1.36E+02 | EPI KOCWIN v2.0 | 4.80E+02 | EPI WATERNT v.01 |
| Pentachloronitrobenzene | 82-68-8 | 295.34 | EPI Demwin v2.0 | 1.80E-03 | 4.42E-05 | EPI HenryWin v3.2 | 1.718 | CRC 89th Ed | | | | | 6.00E+03 | EPI KOCWIN v2.0 | 4.40E-01 | EPI WATERNT v.01 |
| Pentachlorophenol | 87-86-5 | 266.34 | EPI Demwin v2.0 | 1.00E-06 | 2.45E-08 | EPI HenryWin v3.2 | 1.978 | CRC 89th Ed | | | | | 4.96E+03 | EPI KOCWIN v2.0 | 1.40E+01 | EPI WATERNT v.01 |
| Pentane, n- | 109-66-0 | 72.15 | EPI Demwin v2.0 | 5.10E+01 | 1.25E+00 | EPI HenryWin v3.2 | 0.6262 | CRC 89th Ed | 8.20E-02 | USEPA 2001 | 8.80E-06 | USEPA 2001 | 7.22E+01 | EPI KOCWIN v2.0 | 3.80E+01 | EPI WATERNT v.01 |
| Perchlorate and Perchlorate Salts | 14797-73-0 | 117.49 | EPI | | | | | | | | | | | | 2.45E+05 | CRC 85th edition, measured at 25 C. |
| Permethrin | 52645-53-1 | 391.30 | EPI Demwin v2.0 | 7.60E-05 | 1.87E-06 | EPI HenryWin v3.2 | 1.23 | CRC 89th Ed | | | | | 1.19E+05 | EPI KOCWIN v2.0 | 6.00E-03 | EPI WATERNT v.01 |
| Phenacetin | 62-44-2 | 179.22 | EPI Demwin v2.0 | 8.70E-09 | 2.13E-10 | EPI HenryWin v3.2 | | | | | | | 4.10E+01 | EPI KOCWIN v2.0 | 7.66E+02 | EPI WATERNT v.01 |
| Phenmedipham | 13684-63-4 | 300.32 | EPI Demwin v2.0 | 3.40E-11 | 8.41E-13 | EPI HenryWin v3.2 | | | | | | | 2.59E+03 | EPI KOCWIN v2.0 | 4.70E+00 | EPI WATERNT v.01 |
| Phenol | 108-95-2 | 94.11 | EPI Demwin v2.0 | 1.40E-05 | 3.33E-07 | EPI HenryWin v3.2 | 1.0545 | CRC 89th Ed | 8.30E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 1.87E+02 | EPI KOCWIN v2.0 | 8.28E+04 | EPI WATERNT v.01 |
| Phenylenediamine, m- | 108-45-2 | 108.14 | EPI Demwin v2.0 | 5.10E-08 | 1.25E-09 | EPI HenryWin v3.2 | 1.0096 | CRC 89th Ed | | | | | 3.38E+01 | EPI KOCWIN v2.0 | 2.38E+05 | EPI WATERNT v.01 |
| Phenylenediamine, o- | 95-54-5 | 108.14 | EPI Demwin v2.0 | 2.90E-07 | 7.20E-09 | EPI HenryWin v3.2 | | | | | | | 3.45E+01 | EPI KOCWIN v2.0 | 4.04E+04 | EPI WATERNT v.01 |
| Phenylenediamine, p- | 106-50-3 | 108.14 | EPI Demwin v2.0 | 3.60E-08 | 8.88E-10 | EPI HenryWin v3.2 | | | | | | | 3.38E+01 | EPI KOCWIN v2.0 | 3.70E+04 | EPI WATERNT v.01 |
| Phenylphenol, 2- | 90-43-7 | 170.21 | EPI Demwin v2.0 | 4.30E-05 | 1.05E-06 | EPI HenryWin v3.2 | 1.213 | CRC 89th Ed | 4.20E-02 | EPA 2002 | 7.80E-06 | EPA 2002 | 6.72E+03 | EPI KOCWIN v2.0 | 7.00E+02 | EPI WATERNT v.01 |
| Phorate | 298-02-2 | 260.37 | EPI Demwin v2.0 | 1.80E-04 | 4.37E-06 | EPI HenryWin v3.2 | 1.16 | CRC 89th Ed | | | | | 4.60E+02 | EPI KOCWIN v2.0 | 5.00E+01 | EPI WATERNT v.01 |
| Phosgene | 75-44-5 | 98.92 | EPI Demwin v2.0 | 6.80E-01 | 1.67E-02 | EPI HenryWin v3.2 | 1.3719 | CRC 89th Ed | 8.90E-02 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 1.00E+00 | EPI KOCWIN v2.0 | 6.83E+03 | Yaws 2001 |
| Phosmet | 732-11-6 | 317.32 | EPI Demwin v2.0 | 3.40E-07 | 8.38E-09 | EPI HenryWin v3.2 | | | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 2.44E+01 | EPI WATERNT v.01 |
| Phosphine | 7803-51-2 | 34.00 | EPI Demwin v2.0 | | | | 1.39 | CRC 89th Ed | | | | | | | 3.30E+00 | EPI WATERNT v.01 |
| Phosphoric Acid | 7664-38-2 | 98.00 | EPI Demwin v2.0 | | | | | | | | | | | | 5.48E+06 | CRC 89th Ed |
| Phosphorus, White | 7723-14-0 | 34.00 | EPI Demwin v2.0 | | | | 2.69 | CRC 89th Ed | | | | | | | 3.30E+00 | EPI WATERNT v.01 |
| Phthalic Acid, P- | 100-21-0 | 166.13 | EPI Demwin v2.0 | 1.60E-11 | 3.88E-13 | EPI HenryWin v3.2 | | | | | | | 7.92E+01 | EPI KOCWIN v2.0 | 1.50E+01 | EPI WATERNT v.01 |
| Phthalic Anhydride | 85-44-9 | 148.12 | EPI Demwin v2.0 | 6.70E-07 | 1.63E-08 | EPI HenryWin v3.2 | 1.527 | CRC 89th Ed | | | | | 1.00E+01 | EPI KOCWIN v2.0 | 6.20E+03 | EPI WATERNT v.01 |
| Picloram | 1918-02-1 | 241.46 | EPI Demwin v2.0 | 2.20E-12 | 5.33E-14 | EPI HenryWin v3.2 | | | | | | | 3.88E+01 | EPI KOCWIN v2.0 | 4.30E+02 | EPI WATERNT v.01 |
| Picramic Acid (2-Amino-4,6-dinitrophenol) | 96-91-3 | 199.12 | EPI Demwin v2.0 | 7.60E-13 | 1.86E-14 | EPI HenryWin v3.2 | | | 5.60E-02 | USEPA 1987 | 6.50E-06 | USEPA 1987 | 2.27E+02 | EPI KOCWIN v2.0 | 1.40E+03 | EPI WATERNT v.01 |
| Pirimiphos, Methyl | 29232-93-7 | 305.33 | EPI Demwin v2.0 | 2.90E-05 | 7.01E-07 | EPI HenryWin v3.2 | 1.17 | CRC 89th Ed | | | | | 3.75E+02 | EPI KOCWIN v2.0 | 8.60E+00 | EPI WATERNT v.01 |
| Polybrominated Biphenyls | 59536-65-1 | | EPI | | | EPI (HenryWin) | | | | | | | | EPI (PCKOCWIN) | | EPI (WSKOWWIN) |
| Polychlorinated Biphenyls (PCBs) | | | | | | | | | | | | | | | | |
| ~Aroclor 1016 | 12674-11-2 | 257.55 | EPI Demwin v2.0 | 8.20E-03 | 2.00E-04 | EPI HenryWin v3.2 | | | | | | | 4.77E+04 | EPI KOCWIN v2.0 | 4.20E-01 | EPI WATERNT v.01 |
| ~Aroclor 1221 | 11104-28-2 | 188.66 | EPI Demwin v2.0 | 3.00E-02 | 7.36E-04 | EPI HenryWin v3.2 | | | 5.80E-02 | USEPA 1987 | 6.70E-06 | USEPA 1987 | 8.40E+03 | EPI KOCWIN v2.0 | 1.50E+01 | EPI WATERNT v.01 |
| ~Aroclor 1232 | 11141-16-5 | 188.66 | EPI Demwin v2.0 | 3.00E-02 | 7.36E-04 | EPI HenryWin v3.2 | | | 5.80E-02 | USEPA 1987 | 6.70E-06 | USEPA 1987 | 8.40E+03 | EPI KOCWIN v2.0 | 1.45E+00 | EPI WATERNT v.01 |
| ~Aroclor 1242 | 53469-21-9 | 291.99 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 2.77E-01 | EPI WATERNT v.01 |
| ~Aroclor 1248 | 12672-29-6 | 291.99 | EPI Demwin v2.0 | 1.80E-02 | 4.40E-04 | EPI HenryWin v3.2 | | | | | | | 7.65E+04 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| ~Aroclor 1254 | 11097-69-1 | 326.44 | EPI Demwin v2.0 | 1.20E-02 | 2.83E-04 | EPI HenryWin v3.2 | | | | | | | 1.31E+05 | EPI KOCWIN v2.0 | 4.30E-02 | EPI WATERNT v.01 |
| ~Aroclor 1260 | 11096-82-5 | 395.33 | EPI Demwin v2.0 | 1.40E-02 | 3.36E-04 | EPI HenryWin v3.2 | | | | | | | 3.50E+05 | EPI KOCWIN v2.0 | 1.44E-02 | EPI WATERNT v.01 |
| ~Heptachlorobiphenyl, 2,3,3',4,4',5,5'- (PCB 189) | 39635-31-9 | 395.33 | EPI Demwin v2.0 | 5.60E-03 | 1.38E-04 | EPI HenryWin v3.2 | | | | | | | 3.50E+05 | EPI KOCWIN v2.0 | 7.53E-04 | EPI WATERNT v.01 |
| ~Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) | 52663-72-6 | 360.88 | EPI Demwin v2.0 | 6.60E-03 | 1.62E-04 | EPI HenryWin v3.2 | | | | | | | 2.09E+05 | EPI KOCWIN v2.0 | 2.23E-03 | EPI WATERNT v.01 |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) | 69782-90-7 | 360.88 | EPI Demwin v2.0 | 6.60E-03 | 1.62E-04 | EPI HenryWin v3.2 | | | | | | | 2.14E+05 | EPI KOCWIN v2.0 | 1.65E-03 | EPI WATERNT v.01 |
| ~Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) | 38380-08-4 | 360.88 | EPI Demwin v2.0 | 5.80E-03 | 1.43E-04 | EPI HenryWin v3.2 | | | | | | | 2.14E+05 | EPI KOCWIN v2.0 | 5.33E-03 | EPI WATERNT v.01 |
| ~Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) | 32774-16-6 | 360.88 | EPI Demwin v2.0 | 6.60E-03 | 1.62E-04 | EPI HenryWin v3.2 | | | | | | | 2.09E+05 | EPI KOCWIN v2.0 | 5.10E-04 | EPI WATERNT v.01 |
| ~Pentachlorobiphenyl, 2',3,4,4',5- (PCB 123) | 65510-44-3 | 326.44 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 1.31E+05 | EPI KOCWIN v2.0 | 1.60E-02 | EPI WATERNT v.01 |
| ~Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) | 31508-00-6 | 326.44 | EPI Demwin v2.0 | 1.20E-02 | 2.88E-04 | EPI HenryWin v3.2 | | | | | | | 1.28E+05 | EPI KOCWIN v2.0 | 1.34E-02 | EPI WATERNT v.01 |
| ~Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) | 32598-14-4 | 326.44 | EPI Demwin v2.0 | 1.20E-02 | 2.83E-04 | EPI HenryWin v3.2 | | | | | | | 1.31E+05 | EPI KOCWIN v2.0 | 3.40E-03 | EPI WATERNT v.01 |
| ~Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) | 74472-37-0 | 326.44 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 1.31E+05 | EPI KOCWIN v2.0 | 1.60E-02 | EPI WATERNT v.01 |
| ~Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) | 57465-28-8 | 326.44 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 1.28E+05 | EPI KOCWIN v2.0 | 7.33E-03 | EPI WATERNT v.01 |
| ~Polychlorinated Biphenyls (high risk) | 1336-36-3 | 291.99 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 7.00E-01 | EPI WATERNT v.01 |
| ~Polychlorinated Biphenyls (low risk) | 1336-36-3 | 291.99 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 7.00E-01 | EPI WATERNT v.01 |
| ~Polychlorinated Biphenyls (lowest risk) | 1336-36-3 | 291.99 | EPI Demwin v2.0 | 7.80E-03 | 1.90E-04 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 7.00E-01 | EPI WATERNT v.01 |
| ~Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) | 32598-13-3 | 291.99 | EPI Demwin v2.0 | 3.80E-04 | 9.40E-06 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 5.69E-04 | EPI WATERNT v.01 |
| ~Tetrachlorobiphenyl, 3,4,4',5- (PCB 81) | 70362-50-4 | 291.99 | EPI Demwin v2.0 | 9.10E-03 | 2.23E-04 | EPI HenryWin v3.2 | | | | | | | 7.81E+04 | EPI KOCWIN v2.0 | 3.22E-02 | EPI WATERNT v.01 |
| Polymeric Methylene Diphenyl Diisocyanate (PMDI) | 9016-87-9 | 512.53 | EPI Demwin v2.0 | 5.40E-10 | 1.32E-11 | EPI HenryWin v3.2 | | | | | | | 1.00E+10 | EPI KOCWIN v2.0 | 1.76E-06 | EPI WATERNT v.01 |
| Polynuclear Aromatic Hydrocarbons (PAHs) | | | | | | | | | | | | | | | | |
| ~Acenaphthene | 83-32-9 | 154.21 | EPI Demwin v2.0 | 7.50E-03 | 1.84E-04 | EPI HenryWin v3.2 | 1.222 | CRC 89th Ed | 5.10E-02 | USEPA 2001 | 8.30E-06 | USEPA 2001 | 5.03E+03 | EPI KOCWIN v2.0 | 3.90E+00 | EPI WATERNT v.01 |
| ~Anthracene | 120-12-7 | 178.24 | EPI Demwin v2.0 | 2.30E-03 | 5.56E-05 | EPI HenryWin v3.2 | 1.28 | CRC 89th Ed | 3.90E-02 | USEPA 2001 | 7.90E-06 | USEPA 2001 | 1.64E+04 | EPI KOCWIN v2.0 | 4.34E-02 | EPI WATERNT v.01 |
| ~Benz[a]anthracene | 56-55-3 | 228.30 | EPI Demwin v2.0 | 4.90E-04 | 1.20E-05 | EPI HenryWin v3.2 | | | | | | | 1.77E+05 | EPI KOCWIN v2.0 | 9.40E-03 | EPI WATERNT v.01 |
| ~Benzo(j)fluoranthene | 205-82-3 | 252.32 | EPI Demwin v2.0 | 8.30E-06 | 2.03E-07 | EPI HenryWin v3.2 | | | | | | | 5.99E+05 | EPI KOCWIN v2.0 | 2.50E-03 | EPI WATERNT v.01 |
| ~Benzo[a]pyrene | 50-32-8 | 252.32 | EPI Demwin v2.0 | 1.90E-05 | 4.57E-07 | EPI HenryWin v3.2 | | | | | | | 5.87E+05 | EPI KOCWIN v2.0 | 1.62E-03 | EPI WATERNT v.01 |
| ~Benzo[b]fluoranthene | 205-99-2 | 252.32 | EPI Demwin v2.0 | 2.70E-05 | 6.57E-07 | EPI HenryWin v3.2 | | | | | | | 5.99E+05 | EPI KOCWIN v2.0 | 1.50E-03 | EPI WATERNT v.01 |
| ~Benzo[k]fluoranthene | 207-08-9 | 252.32 | EPI Demwin v2.0 | 2.40E-05 | 5.84E-07 | EPI HenryWin v3.2 | | | | | | | 5.87E+05 | EPI KOCWIN v2.0 | 8.00E-04 | EPI WATERNT v.01 |
| ~Chrysene | 218-01-9 | 228.30 | EPI Demwin v2.0 | 2.10E-04 | 5.23E-06 | EPI HenryWin v3.2 | 1.274 | CRC 89th Ed | | | | | 1.81E+05 | EPI KOCWIN v2.0 | 2.00E-03 | EPI WATERNT v.01 |
| ~Dibenz[a,h]anthracene | 53-70-3 | 278.36 | EPI Demwin v2.0 | 5.80E-06 | 1.41E-07 | EPI HenryWin v3.2 | | | | | | | 1.91E+06 | EPI KOCWIN v2.0 | 2.49E-03 | EPI WATERNT v.01 |
| ~Dibenzo(a,e)pyrene | 192-65-4 | 302.38 | EPI Demwin v2.0 | 5.80E-07 | 1.41E-08 | EPI HenryWin v3.2 | | | | | | | 6.48E+06 | EPI KOCWIN v2.0 | 4.25E-05 | EPI WATERNT v.01 |
| ~Dimethylbenz(a)anthracene, 7,12- | 57-97-6 | 256.35 | EPI Demwin v2.0 | 1.50E-04 | 3.76E-06 | EPI HenryWin v3.2 | | | | | | | 4.94E+05 | EPI KOCWIN v2.0 | 6.10E-02 | EPI WATERNT v.01 |
| ~Fluoranthene | 206-44-0 | 202.26 | EPI Demwin v2.0 | 3.60E-04 | 8.86E-06 | EPI HenryWin v3.2 | 1.252 | CRC 89th Ed | | | | | 5.55E+04 | EPI KOCWIN v2.0 | 2.60E-01 | EPI WATERNT v.01 |
| ~Fluorene | 86-73-7 | 166.22 | EPI Demwin v2.0 | 3.90E-03 | 9.62E-05 | EPI HenryWin v3.2 | 1.203 | CRC 89th Ed | 4.40E-02 | USEPA 2001 | 7.90E-06 | USEPA 2001 | 9.16E+03 | EPI KOCWIN v2.0 | 1.69E+00 | EPI WATERNT v.01 |
| ~Indeno[1,2,3-cd]pyrene | 193-39-5 | 276.34 | EPI Demwin v2.0 | 1.40E-05 | 3.48E-07 | EPI HenryWin v3.2 | | | | | | | 1.95E+06 | EPI KOCWIN v2.0 | 1.90E-04 | EPI WATERNT v.01 |
| ~Methylnaphthalene, 1- | 90-12-0 | 142.20 | EPI Demwin v2.0 | 2.10E-02 | 5.14E-04 | EPI HenryWin v3.2 | 1.0202 | CRC 89th Ed | 5.30E-02 | USEPA 2001 | 7.80E-06 | USEPA 2001 | 2.53E+03 | EPI KOCWIN v2.0 | 2.58E+01 | EPI WATERNT v.01 |
| ~Methylnaphthalene, 2- | 91-57-6 | 142.20 | EPI Demwin v2.0 | 2.10E-02 | 5.18E-04 | EPI HenryWin v3.2 | 1.0058 | CRC 89th Ed | 5.20E-02 | USEPA 2001 | 7.80E-06 | USEPA 2001 | 2.48E+03 | EPI KOCWIN v2.0 | 2.46E+01 | EPI WATERNT v.01 |
| ~Naphthalene | 91-20-3 | 128.18 | EPI Demwin v2.0 | 1.80E-02 | 4.40E-04 | EPI HenryWin v3.2 | 1.0253 | CRC 89th Ed | 6.00E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 1.54E+03 | EPI KOCWIN v2.0 | 3.10E+01 | EPI WATERNT v.01 |
| ~Nitropyrene, 4- | 57835-92-4 | 247.26 | EPI Demwin v2.0 | 1.00E-06 | 2.45E-08 | EPI HenryWin v3.2 | | | | | | | 8.61E+04 | EPI KOCWIN v2.0 | 4.45E-02 | EPI WATERNT v.01 |
| ~Pyrene | 129-00-0 | 202.26 | EPI Demwin v2.0 | 4.90E-04 | 1.19E-05 | EPI HenryWin v3.2 | 1.271 | CRC 89th Ed | 2.80E-02 | EPA 2002 | 7.20E-06 | EPA 2002 | 5.43E+04 | EPI KOCWIN v2.0 | 1.35E-01 | EPI WATERNT v.01 |
| Potassium Perchlorate | 7778-74-7 | 138.55 | EPI Demwin v2.0 | | | | 2.52 | CRC 89th Ed | | | | | | | 1.50E+04 | EPI WATERNT v.01 |
| Prochloraz | 67747-09-5 | 376.67 | EPI Demwin v2.0 | 6.70E-07 | 1.64E-08 | EPI HenryWin v3.2 | | | | | | | 2.43E+03 | EPI KOCWIN v2.0 | 3.40E+01 | EPI WATERNT v.01 |
| Profluralin | 26399-36-0 | 347.30 | EPI Demwin v2.0 | 1.20E-02 | 2.90E-04 | EPI HenryWin v3.2 | | | | | | | 3.05E+04 | EPI KOCWIN v2.0 | 1.00E-01 | EPI WATERNT v.01 |
| Prometon | 1610-18-0 | 225.30 | EPI Demwin v2.0 | 3.70E-08 | 9.09E-10 | EPI HenryWin v3.2 | | | | | | | 1.37E+02 | EPI KOCWIN v2.0 | 7.50E+02 | EPI WATERNT v.01 |
| Prometryn | 7287-19-6 | 241.36 | EPI Demwin v2.0 | 4.90E-07 | 1.19E-08 | EPI HenryWin v3.2 | 1.157 | CRC 89th Ed | | | | | 6.56E+02 | EPI KOCWIN v2.0 | 3.30E+01 | EPI WATERNT v.01 |
| Propachlor | 1918-16-7 | 211.69 | EPI Demwin v2.0 | 1.50E-05 | 3.60E-07 | EPI HenryWin v3.2 | 1.242 | CRC 89th Ed | | | | | 2.05E+02 | EPI KOCWIN v2.0 | 5.80E+02 | EPI WATERNT v.01 |
| Propanil | 709-98-8 | 218.08 | EPI Demwin v2.0 | 7.00E-08 | 1.71E-09 | EPI HenryWin v3.2 | 1.25 | CRC 89th Ed | | | | | 1.76E+02 | EPI KOCWIN v2.0 | 1.52E+02 | EPI WATERNT v.01 |
| Propargite | 2312-35-8 | 350.48 | EPI Demwin v2.0 | 2.60E-05 | 6.40E-07 | EPI HenryWin v3.2 | 1.1 | CRC 89th Ed | | | | | 3.67E+04 | EPI KOCWIN v2.0 | 2.15E-01 | EPI WATERNT v.01 |
| Propargyl Alcohol | 107-19-7 | 56.06 | EPI Demwin v2.0 | 4.70E-05 | 1.15E-06 | EPI HenryWin v3.2 | 0.9478 | CRC 89th Ed | 1.20E-01 | EPA 2002 | 1.30E-05 | EPA 2002 | 1.90E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Propazine | 139-40-2 | 229.71 | EPI Demwin v2.0 | 1.90E-07 | 4.60E-09 | EPI HenryWin v3.2 | 1.162 | CRC 89th Ed | | | | | 3.44E+02 | EPI KOCWIN v2.0 | 8.60E+00 | EPI WATERNT v.01 |
| Propham | 122-42-9 | 179.22 | EPI Demwin v2.0 | 7.50E-06 | 1.84E-07 | EPI HenryWin v3.2 | 1.09 | CRC 89th Ed | | | | | 2.19E+02 | EPI KOCWIN v2.0 | 1.79E+02 | EPI WATERNT v.01 |
| Propiconazole | 60207-90-1 | 342.23 | EPI Demwin v2.0 | 7.00E-08 | 1.72E-09 | EPI HenryWin v3.2 | 1.27 | CRC 89th Ed | | | | | 1.56E+03 | EPI KOCWIN v2.0 | 1.10E+02 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density ($g/cm^3$) | | Diffusivity in Air ($cm^2/s$) | | Diffusivity in Water ($cm^2/s$) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-$m^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Propionaldehyde | 123-38-6 | 58.08 | EPI Demwin v2.0 | 3.00E-03 | 7.34E-05 | EPI HenryWin v3.2 | 0.8657 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 1.00E+00 | EPI KOCWIN v2.0 | 3.06E+05 | EPI WATERNT v.01 |
| Propyl benzene | 103-65-1 | 120.20 | EPI Demwin v2.0 | 4.30E-01 | 1.05E-02 | EPI HenryWin v3.2 | 0.8593 | CRC 89th Ed | 6.00E-02 | USEPA 2001 | 7.80E-06 | USEPA 2001 | 8.13E+02 | EPI KOCWIN v2.0 | 5.22E+01 | EPI WATERNT v.01 |
| Propylene | 115-07-1 | 42.08 | EPI Demwin v2.0 | 8.00E+00 | 1.96E-01 | EPI HenryWin v3.2 | 0.505 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 2.00E+02 | EPI WATERNT v.01 |
| Propylene Glycol | 57-55-6 | 76.10 | EPI Demwin v2.0 | 5.30E-07 | 1.29E-08 | EPI HenryWin v3.2 | 1.0361 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Propylene Glycol Dinitrate | 6423-43-4 | 166.09 | EPI Demwin v2.0 | 3.90E-05 | 9.42E-07 | EPI HenryWin v3.2 | | | 6.30E-02 | USEPA 1987 | 7.30E-06 | USEPA 1987 | 6.07E+01 | EPI KOCWIN v2.0 | 3.26E+03 | EPI WATERNT v.01 |
| Propylene Glycol Monoethyl Ether | 1569-02-4 | 104.15 | EPI Demwin v2.0 | 1.00E-06 | 2.45E-08 | EPI HenryWin v3.2 | | | | | | | 1.30E+00 | EPI KOCWIN v2.0 | 7.90E+05 | EPI WATERNT v.01 |
| Propylene Glycol Monomethyl Ether | 107-98-2 | 90.12 | EPI Demwin v2.0 | 3.80E-05 | 9.20E-07 | EPI HenryWin v3.2 | 0.962 | CRC 89th Ed | 8.30E-02 | EPA 2002 | 1.00E-05 | EPA 2002 | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Propylene Oxide | 75-56-9 | 58.08 | EPI Demwin v2.0 | 2.80E-03 | 6.96E-05 | EPI HenryWin v3.2 | | | 1.30E-01 | USEPA 1987 | 1.50E-05 | USEPA 1987 | 5.19E+00 | EPI KOCWIN v2.0 | 5.90E+05 | EPI WATERNT v.01 |
| Pursuit | 81335-77-5 | 289.34 | EPI Demwin v2.0 | 4.30E-15 | 1.04E-16 | EPI HenryWin v3.2 | | | | | | | 3.39E+02 | EPI KOCWIN v2.0 | 1.40E+03 | EPI WATERNT v.01 |
| Pydrin | 51630-58-1 | 419.91 | EPI Demwin v2.0 | 1.40E-06 | 3.45E-08 | EPI HenryWin v3.2 | 1.15 | CRC 89th Ed | | | | | 3.17E+05 | EPI KOCWIN v2.0 | 2.40E-02 | EPI WATERNT v.01 |
| Pyridine | 110-86-1 | 79.10 | EPI Demwin v2.0 | 4.50E-04 | 1.10E-05 | EPI HenryWin v3.2 | 0.9819 | CRC 89th Ed | 9.30E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 7.17E+01 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Quinalphos | 13593-03-8 | 298.30 | EPI Demwin v2.0 | 1.90E-06 | 4.64E-08 | EPI HenryWin v3.2 | | | | | | | 4.19E+03 | EPI KOCWIN v2.0 | 2.20E+01 | EPI WATERNT v.01 |
| Quinoline | 91-22-5 | 129.16 | EPI Demwin v2.0 | 6.80E-05 | 1.67E-06 | EPI HenryWin v3.2 | 1.0977 | CRC 89th Ed | 6.20E-02 | EPA 2002 | 8.70E-06 | EPA 2002 | 1.54E+03 | EPI KOCWIN v2.0 | 6.11E+03 | EPI WATERNT v.01 |
| Refractory Ceramic Fibers | NA | | | | | | | | | | | | | | | |
| Resmethrin | 10453-86-8 | 338.45 | EPI Demwin v2.0 | 5.40E-06 | 1.33E-07 | EPI HenryWin v3.2 | | | | | | | 3.11E+05 | EPI KOCWIN v2.0 | 3.79E-02 | EPI WATERNT v.01 |
| Ronnel | 299-84-3 | 321.54 | EPI Demwin v2.0 | 1.30E-03 | 3.20E-05 | EPI HenryWin v3.2 | 1.44 | CRC 89th Ed | | | | | 4.46E+03 | EPI KOCWIN v2.0 | 1.00E+00 | EPI WATERNT v.01 |
| Rotenone | 83-79-4 | 394.43 | EPI Demwin v2.0 | 4.60E-12 | 1.12E-13 | EPI HenryWin v3.2 | | | | | | | 2.61E+05 | EPI KOCWIN v2.0 | 2.00E-01 | EPI WATERNT v.01 |
| Safrole | 94-59-7 | 162.19 | EPI Demwin v2.0 | 3.70E-04 | 9.07E-06 | EPI HenryWin v3.2 | 1.1 | CRC 89th Ed | | | | | 2.07E+02 | EPI KOCWIN v2.0 | 5.90E+00 | EPI WATERNT v.01 |
| Savey | 78587-05-0 | 352.88 | EPI Demwin v2.0 | 9.70E-07 | 2.37E-08 | EPI HenryWin v3.2 | | | | | | | 2.12E+03 | EPI KOCWIN v2.0 | 5.00E-01 | EPI WATERNT v.01 |
| Selenious Acid | 7783-00-8 | 128.97 | EPI Demwin v2.0 | | | | 3 | CRC 89th Ed | | | | | | | 9.00E+05 | CRC 89th Ed |
| Selenium | 7782-49-2 | 80.98 | EPI Demwin v2.0 | | | | 4.809 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Selenium Sulfide | 7446-34-6 | 111.02 | EPI Demwin v2.0 | | | | | | | | | | | | 0.00E+00 | CRC 85th Ed |
| Sethoxydim | 74051-80-2 | 327.49 | EPI Demwin v2.0 | 8.80E-10 | 2.16E-11 | EPI HenryWin v3.2 | 1.043 | CRC 89th Ed | | | | | 4.37E+03 | EPI KOCWIN v2.0 | 2.50E+01 | EPI WATERNT v.01 |
| Silica (crystalline, respirable) | 7631-86-9 | 60.08 | EPI Demwin v2.0 | | | | | | | | | | | | | |
| Silver | 7440-22-4 | 107.87 | EPI Demwin v2.0 | | | | 10.5 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Simazine | 122-34-9 | 201.66 | EPI Demwin v2.0 | 3.90E-08 | 9.42E-10 | EPI HenryWin v3.2 | 1.302 | CRC 89th Ed | | | | | 1.47E+02 | EPI KOCWIN v2.0 | 6.20E+00 | EPI WATERNT v.01 |
| Sodium Acifluorfen | 62476-59-9 | 383.65 | EPI Demwin v2.0 | 2.50E-09 | 6.05E-11 | EPI HenryWin v3.2 | | | | | | | 3.88E+03 | EPI KOCWIN v2.0 | 2.50E+05 | EPI WATERNT v.01 |
| Sodium Azide | 26628-22-8 | 65.01 | EPI Demwin v2.0 | | | | 1.846 | CRC 89th Ed | | | | | | | 4.08E+05 | CRC 89th Ed |
| Sodium Diethyldithiocarbamate | 148-18-5 | 171.25 | EPI Demwin v2.0 | | | | | | | | | | 2.05E+02 | EPI KOCWIN v2.0 | 4.28E+05 | EPI WATERNT v.01 |
| Sodium Fluoride | 7681-49-4 | 41.99 | EPI Demwin v2.0 | | | | 2.78 | CRC 89th Ed | | | | | | | 4.22E+04 | EPI WATERNT v.01 |
| Sodium Fluoroacetate | 62-74-8 | 100.03 | EPI Demwin v2.0 | 4.50E-05 | 1.09E-06 | EPI HenryWin v3.2 | | | 8.80E-02 | USEPA 1987 | 1.00E-05 | USEPA 1987 | 1.44E+00 | EPI KOCWIN v2.0 | 1.11E+06 | EPI WATERNT v.01 |
| Sodium Metavanadate | 13718-26-8 | | EPI | | | | | | | | | | | | 2.10E+05 | CRC 89th Ed |
| Sodium Perchlorate | 7601-89-0 | 122.44 | EPI Demwin v2.0 | | | | 2.52 | CRC 89th Ed | | | | | | | 2.10E+06 | EPI WATERNT v.01 |
| Stirofos (Tetrachlorovinphos) | 961-11-5 | 365.97 | EPI Demwin v2.0 | 7.50E-08 | 1.84E-09 | EPI HenryWin v3.2 | | | | | | | 1.38E+03 | EPI KOCWIN v2.0 | 1.10E+01 | EPI WATERNT v.01 |
| Strontium, Stable | 7440-24-6 | 87.62 | EPI Demwin v2.0 | | | | 2.64 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Strychnine | 57-24-9 | 334.42 | EPI Demwin v2.0 | 2.40E-12 | 5.96E-14 | EPI HenryWin v3.2 | 1.36 | CRC 89th Ed | | | | | 5.40E+03 | EPI KOCWIN v2.0 | 1.60E+02 | EPI WATERNT v.01 |
| Styrene | 100-42-5 | 104.15 | EPI Demwin v2.0 | 1.10E-01 | 2.75E-03 | EPI HenryWin v3.2 | 0.9016 | CRC 89th Ed | 7.10E-02 | USEPA 2001 | 8.80E-06 | USEPA 2001 | 4.46E+02 | EPI KOCWIN v2.0 | 3.10E+02 | EPI WATERNT v.01 |
| Sulfonylbis(4-chlorobenzene), 1,1'- | 80-07-9 | 287.16 | EPI Demwin v2.0 | 5.60E-06 | 1.37E-07 | EPI HenryWin v3.2 | | | | | | | 2.86E+03 | EPI KOCWIN v2.0 | 5.12E-01 | EPI WATERNT v.01 |
| Sulfuric Acid | 7664-93-9 | 98.07 | EPI Demwin v2.0 | | | | 1.8302 | CRC 89th Ed | | | | | | | 1.00E+06 | EPI WATERNT v.01 |
| Systhane | 88671-89-0 | 288.78 | EPI Demwin v2.0 | 1.70E-07 | 4.28E-09 | EPI HenryWin v3.2 | | | | | | | 6.08E+03 | EPI KOCWIN v2.0 | 1.42E+02 | EPI WATERNT v.01 |
| TCMTB | 21564-17-0 | 238.34 | EPI Demwin v2.0 | 2.70E-10 | 6.49E-12 | EPI HenryWin v3.2 | | | | | | | 3.37E+03 | EPI KOCWIN v2.0 | 1.25E+02 | EPI WATERNT v.01 |
| Tebuthiuron | 34014-18-1 | 228.31 | EPI Demwin v2.0 | 4.90E-09 | 1.20E-10 | EPI HenryWin v3.2 | | | | | | | 4.24E+01 | EPI KOCWIN v2.0 | 2.50E+03 | EPI WATERNT v.01 |
| Temephos | 3383-96-8 | 466.46 | EPI Demwin v2.0 | 8.00E-08 | 1.96E-09 | EPI HenryWin v3.2 | 1.32 | CRC 89th Ed | | | | | 9.51E+04 | EPI KOCWIN v2.0 | 2.70E-01 | EPI WATERNT v.01 |
| Terbacil | 5902-51-2 | 216.67 | EPI Demwin v2.0 | 4.90E-09 | 1.20E-10 | EPI HenryWin v3.2 | 1.34 | CRC 89th Ed | | | | | 5.01E+01 | EPI KOCWIN v2.0 | 7.10E+02 | EPI WATERNT v.01 |
| Terbufos | 13071-79-9 | 288.42 | EPI Demwin v2.0 | 9.80E-04 | 2.40E-05 | EPI HenryWin v3.2 | 1.105 | CRC 89th Ed | | | | | 9.99E+02 | EPI KOCWIN v2.0 | 5.07E+00 | EPI WATERNT v.01 |
| Terbutryn | 886-50-0 | 241.36 | EPI Demwin v2.0 | 8.80E-07 | 2.15E-08 | EPI HenryWin v3.2 | 1.115 | CRC 89th Ed | | | | | 6.07E+02 | EPI KOCWIN v2.0 | 2.50E+01 | EPI WATERNT v.01 |
| Tetrabromodiphenyl ether, 2,2',4,4'- (BDE-47) | 5436-43-1 | 485.80 | EPI Demwin v2.0 | 3.50E-04 | 8.48E-06 | EPI HenryWin v3.2 | | | | | | | 1.32E+04 | EPI KOCWIN v2.0 | 5.42E-02 | EPI WATERNT v.01 |
| Tetrachlorobenzene, 1,2,4,5- | 95-94-3 | 215.89 | EPI Demwin v2.0 | 4.10E-02 | 1.00E-03 | EPI HenryWin v3.2 | 1.858 | CRC 89th Ed | | | | | 2.22E+03 | EPI KOCWIN v2.0 | 5.95E-01 | EPI WATERNT v.01 |
| Tetrachloroethane, 1,1,1,2- | 630-20-6 | 167.85 | EPI Demwin v2.0 | 1.00E-01 | 2.50E-03 | EPI HenryWin v3.2 | 1.5406 | CRC 89th Ed | 4.80E-02 | USEPA 2001 | 9.10E-06 | USEPA 2001 | 8.60E+01 | EPI KOCWIN v2.0 | 1.07E+03 | EPI WATERNT v.01 |
| Tetrachloroethane, 1,1,2,2- | 79-34-5 | 167.85 | EPI Demwin v2.0 | 1.50E-02 | 3.67E-04 | EPI HenryWin v3.2 | 1.5953 | CRC 89th Ed | 4.90E-02 | USEPA 2001 | 9.30E-06 | USEPA 2001 | 9.49E+01 | EPI KOCWIN v2.0 | 2.83E+03 | EPI WATERNT v.01 |
| Tetrachloroethylene | 127-18-4 | 165.83 | EPI Demwin v2.0 | 7.20E-01 | 1.77E-02 | EPI HenryWin v3.2 | 1.623 | CRC 89th Ed | 5.00E-02 | USEPA 2001 | 9.50E-06 | USEPA 2001 | 9.49E+01 | EPI KOCWIN v2.0 | 2.06E+02 | EPI WATERNT v.01 |
| Tetrachlorophenol, 2,3,4,6- | 58-90-2 | 231.89 | EPI Demwin v2.0 | 3.60E-04 | 8.84E-06 | EPI HenryWin v3.2 | | | | | | | 2.97E+03 | EPI KOCWIN v2.0 | 2.30E+01 | EPI WATERNT v.01 |
| Tetrachlorotoluene, p- alpha, alpha, alpha- | 5216-25-1 | 229.92 | EPI Demwin v2.0 | 7.90E-03 | 1.93E-04 | EPI HenryWin v3.2 | 1.4463 | CRC 89th Ed | | | | | 1.61E+03 | EPI KOCWIN v2.0 | 6.11E+00 | EPI WATERNT v.01 |
| Tetraethyl Dithiopyrophosphate | 3689-24-5 | 322.31 | EPI Demwin v2.0 | 1.80E-04 | 4.45E-06 | EPI HenryWin v3.2 | 1.196 | CRC 89th Ed | | | | | 2.66E+02 | EPI KOCWIN v2.0 | 3.00E+01 | EPI WATERNT v.01 |
| Tetrafluoroethane, 1,1,1,2- | 811-97-2 | 102.03 | EPI Demwin v2.0 | 2.00E+00 | 5.00E-02 | EPI HenryWin v3.2 | 1.2072 | CRC 89th Ed | 8.20E-02 | USEPA 2001 | 1.10E-05 | USEPA 2001 | 8.60E+01 | EPI KOCWIN v2.0 | 1.09E+03 | EPI WATERNT v.01 |
| Tetryl (Trinitrophenylmethylnitramine) | 479-45-8 | 287.15 | EPI Demwin v2.0 | 1.10E-07 | 2.71E-09 | EPI HenryWin v3.2 | 1.57 | CRC 89th Ed | | | | | 4.61E+03 | EPI KOCWIN v2.0 | 7.40E+01 | EPI WATERNT v.01 |
| Thallium (Soluble Salts) | 7440-28-0 | 204.38 | EPI Demwin v2.0 | | | | 11.8 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Thiobencarb | 28249-77-6 | 257.78 | EPI Demwin v2.0 | 1.10E-05 | 2.67E-07 | EPI HenryWin v3.2 | 1.16 | CRC 89th Ed | | | | | 1.63E+03 | EPI KOCWIN v2.0 | 2.80E+01 | EPI WATERNT v.01 |
| Thiodiglycol | 111-48-8 | 122.18 | EPI Demwin v2.0 | 1.10E-11 | 2.74E-13 | EPI HenryWin v3.2 | 1.1793 | CRC 89th Ed | | | | | 1.00E+00 | EPI KOCWIN v2.0 | 1.00E+06 | EPI WATERNT v.01 |
| Thiofanox | 39196-18-4 | 218.32 | EPI Demwin v2.0 | 3.80E-07 | 9.39E-09 | EPI HenryWin v3.2 | | | | | | | 7.24E+01 | EPI KOCWIN v2.0 | 5.20E+03 | EPI WATERNT v.01 |
| Thiophanate, Methyl | 23564-05-8 | 342.39 | EPI Demwin v2.0 | 4.90E-08 | 1.21E-09 | EPI HenryWin v3.2 | | | | | | | 3.27E+02 | EPI KOCWIN v2.0 | 2.66E+01 | EPI WATERNT v.01 |
| Thiram | 137-26-8 | 240.42 | EPI Demwin v2.0 | 7.40E-06 | 1.82E-07 | EPI HenryWin v3.2 | | | | | | | 6.11E+02 | EPI KOCWIN v2.0 | 3.00E+01 | EPI WATERNT v.01 |
| Tin | 7440-31-5 | 120.73 | EPI Demwin v2.0 | | | | 7.287 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Titanium Tetrachloride | 7550-45-0 | 189.68 | EPI Demwin v2.0 | | | | 1.73 | CRC 89th Ed | | | | | | | | CRC 89th Ed |
| Toluene | 108-88-3 | 92.14 | EPI Demwin v2.0 | 2.70E-01 | 6.64E-03 | EPI HenryWin v3.2 | 0.8623 | CRC 89th Ed | 7.80E-02 | USEPA 2001 | 9.20E-06 | USEPA 2001 | 2.34E+02 | EPI KOCWIN v2.0 | 5.26E+02 | EPI WATERNT v.01 |
| Toluidine, p- | 106-49-0 | 107.16 | EPI Demwin v2.0 | 8.30E-05 | 2.02E-06 | EPI HenryWin v3.2 | 0.9619 | CRC 89th Ed | 7.10E-02 | EPA 2002 | 9.00E-06 | EPA 2002 | 1.13E+02 | EPI KOCWIN v2.0 | 6.50E+03 | EPI WATERNT v.01 |
| Toxaphene | 8001-35-2 | 413.82 | EPI Demwin v2.0 | 2.50E-04 | 6.00E-06 | EPI HenryWin v3.2 | | | | | | | 7.72E+04 | EPI KOCWIN v2.0 | 6.97E-03 | EPI WATERNT v.01 |
| Tralomethrin | 66841-25-6 | 665.02 | EPI Demwin v2.0 | 1.60E-08 | 3.94E-10 | EPI HenryWin v3.2 | | | | | | | 1.91E+05 | EPI KOCWIN v2.0 | 8.00E-02 | EPI WATERNT v.01 |
| Tri-n-butyltin | 688-73-3 | 291.07 | EPI Demwin v2.0 | 6.20E+01 | 1.52E+00 | EPI HenryWin v3.2 | 1.103 | CRC 89th Ed | | | | | 8.09E+03 | EPI KOCWIN v2.0 | 8.25E-01 | EPI WATERNT v.01 |
| Triallate | 2303-17-5 | 304.66 | EPI Demwin v2.0 | 4.90E-04 | 1.20E-05 | EPI HenryWin v3.2 | 1.273 | CRC 89th Ed | | | | | 1.01E+03 | EPI KOCWIN v2.0 | 4.00E+00 | EPI WATERNT v.01 |
| Triasulfuron | 82097-50-5 | 401.83 | EPI Demwin v2.0 | 1.30E-11 | 3.23E-13 | EPI HenryWin v3.2 | | | | | | | 4.27E+02 | EPI KOCWIN v2.0 | 3.20E+01 | EPI WATERNT v.01 |
| Tribromobenzene, 1,2,4- | 615-54-3 | 314.80 | EPI Demwin v2.0 | 1.60E-02 | 3.88E-04 | EPI HenryWin v3.2 | | | 4.10E-02 | USEPA 1987 | 4.80E-06 | USEPA 1987 | 6.14E+02 | EPI KOCWIN v2.0 | 4.90E+00 | EPI WATERNT v.01 |
| Tributyl Phosphate | 126-73-8 | 266.32 | EPI Demwin v2.0 | 5.80E-05 | 1.41E-06 | EPI HenryWin v3.2 | 0.9727 | CRC 89th Ed | | | | | 2.35E+03 | EPI KOCWIN v2.0 | 2.80E+02 | EPI WATERNT v.01 |
| Tributyltin Compounds | NA | | | | | | | | | | | | | | | |
| Tributyltin Oxide | 56-35-9 | 596.12 | EPI Demwin v2.0 | 1.20E-05 | 3.02E-07 | EPI HenryWin v3.2 | 1.17 | CRC 89th Ed | | | | | 2.59E+07 | EPI KOCWIN v2.0 | 1.95E+01 | EPI WATERNT v.01 |
| Trichloro-1,2,2-trifluoroethane, 1,1,2- | 76-13-1 | 187.38 | EPI Demwin v2.0 | 2.20E+01 | 5.26E-01 | EPI HenryWin v3.2 | 1.5635 | CRC 89th Ed | 3.80E-02 | USEPA 2001 | 8.60E-06 | USEPA 2001 | 1.97E+02 | EPI KOCWIN v2.0 | 1.70E+02 | EPI WATERNT v.01 |
| Trichloroaniline HCl, 2,4,6- | 33663-50-2 | 232.93 | EPI Demwin v2.0 | 2.90E-12 | 7.18E-14 | EPI HenryWin v3.2 | | | | | | | 1.27E+03 | EPI KOCWIN v2.0 | 2.10E+01 | EPI WATERNT v.01 |
| Trichloroaniline, 2,4,6- | 634-93-5 | 196.46 | EPI Demwin v2.0 | 5.50E-05 | 1.34E-06 | EPI HenryWin v3.2 | | | | | | | 4.44E+03 | EPI KOCWIN v2.0 | 4.00E+01 | EPI WATERNT v.01 |
| Trichlorobenzene, 1,2,3- | 87-61-6 | 181.45 | EPI Demwin v2.0 | 5.10E-02 | 1.25E-03 | EPI HenryWin v3.2 | 1.4533 | CRC 89th Ed | 4.00E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 1.38E+03 | EPI KOCWIN v2.0 | 1.80E+01 | EPI WATERNT v.01 |
| Trichlorobenzene, 1,2,4- | 120-82-1 | 181.45 | EPI Demwin v2.0 | 5.80E-02 | 1.42E-03 | EPI HenryWin v3.2 | 1.459 | CRC 89th Ed | 4.00E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 1.36E+03 | EPI KOCWIN v2.0 | 4.90E+01 | EPI WATERNT v.01 |
| Trichloroethane, 1,1,1- | 71-55-6 | 133.41 | EPI Demwin v2.0 | 7.00E-01 | 1.72E-02 | EPI HenryWin v3.2 | 1.339 | CRC 89th Ed | 6.50E-02 | USEPA 2001 | 9.60E-06 | USEPA 2001 | 4.39E+01 | EPI KOCWIN v2.0 | 1.29E+03 | EPI WATERNT v.01 |
| Trichloroethane, 1,1,2- | 79-00-5 | 133.41 | EPI Demwin v2.0 | 3.40E-02 | 8.24E-04 | EPI HenryWin v3.2 | 1.4397 | CRC 89th Ed | 6.70E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 6.07E+01 | EPI KOCWIN v2.0 | 4.59E+03 | EPI WATERNT v.01 |
| Trichloroethylene | 79-01-6 | 131.39 | EPI Demwin v2.0 | 4.00E-01 | 9.85E-03 | EPI HenryWin v3.2 | 1.4642 | CRC 89th Ed | 6.90E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 6.07E+01 | EPI KOCWIN v2.0 | 1.28E+03 | EPI WATERNT v.01 |
| Trichlorofluoromethane | 75-69-4 | 137.37 | EPI Demwin v2.0 | 4.00E+00 | 9.70E-02 | EPI HenryWin v3.2 | 1.4879 | CRC 89th Ed | 6.50E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 4.39E+01 | EPI KOCWIN v2.0 | 1.10E+03 | EPI WATERNT v.01 |
| Trichlorophenol, 2,4,5- | 95-95-4 | 197.45 | EPI Demwin v2.0 | 6.60E-05 | 1.62E-06 | EPI HenryWin v3.2 | | | 5.60E-02 | USEPA 1987 | 6.50E-06 | USEPA 1987 | 1.78E+03 | EPI KOCWIN v2.0 | 1.20E+03 | EPI WATERNT v.01 |
| Trichlorophenol, 2,4,6- | 88-06-2 | 197.45 | EPI Demwin v2.0 | 1.10E-04 | 2.60E-06 | EPI HenryWin v3.2 | 1.4901 | CRC 89th Ed | 3.10E-02 | EPA 2002 | 8.10E-06 | EPA 2002 | 1.78E+03 | EPI KOCWIN v2.0 | 8.00E+02 | EPI WATERNT v.01 |
| Trichlorophenoxyacetic Acid, 2,4,5- | 93-76-5 | 255.49 | EPI Demwin v2.0 | 1.90E-06 | 4.66E-08 | EPI HenryWin v3.2 | | | | | | | 1.07E+02 | EPI KOCWIN v2.0 | 2.78E+02 | EPI WATERNT v.01 |
| Trichlorophenoxypropionic acid, -2,4,5 | 93-72-1 | 269.51 | EPI Demwin v2.0 | 3.70E-07 | 9.06E-09 | EPI HenryWin v3.2 | | | | | | | 1.75E+02 | EPI KOCWIN v2.0 | 7.10E+01 | EPI WATERNT v.01 |
| Trichloropropane, 1,1,2- | 598-77-6 | 147.43 | EPI Demwin v2.0 | 1.30E-02 | 3.17E-04 | EPI HenryWin v3.2 | 1.372 | CRC 89th Ed | 5.70E-02 | USEPA 2001 | 9.20E-06 | USEPA 2001 | 9.49E+01 | EPI KOCWIN v2.0 | 1.90E+03 | EPI WATERNT v.01 |
| Trichloropropane, 1,2,3- | 96-18-4 | 147.43 | EPI Demwin v2.0 | 1.40E-02 | 3.43E-04 | EPI HenryWin v3.2 | 1.3889 | CRC 89th Ed | 5.70E-02 | USEPA 2001 | 9.20E-06 | USEPA 2001 | 1.16E+02 | EPI KOCWIN v2.0 | 1.75E+03 | EPI WATERNT v.01 |
| Trichloropropene, 1,2,3- | 96-19-5 | 145.42 | EPI Demwin v2.0 | 7.20E-01 | 1.76E-02 | EPI HenryWin v3.2 | 1.412 | CRC 89th Ed | 5.90E-02 | USEPA 2001 | 9.40E-06 | USEPA 2001 | 1.16E+02 | EPI KOCWIN v2.0 | 4.84E+02 | EPI WATERNT v.01 |
| Tridiphane | 58138-08-2 | 320.43 | EPI Demwin v2.0 | 1.70E-05 | 4.10E-07 | EPI HenryWin v3.2 | | | | | | | 3.45E+03 | EPI KOCWIN v2.0 | 1.17E+00 | EPI WATERNT v.01 |
| Triethylamine | 121-44-8 | 101.19 | EPI Demwin v2.0 | 6.10E-03 | 1.49E-04 | EPI HenryWin v3.2 | 0.7275 | CRC 89th Ed | 6.60E-02 | USEPA 2001 | 7.90E-06 | USEPA 2001 | 5.08E+01 | EPI KOCWIN v2.0 | 6.86E+04 | EPI WATERNT v.01 |
| Trifluralin | 1582-09-8 | 335.29 | EPI Demwin v2.0 | 4.20E-03 | 1.03E-04 | EPI HenryWin v3.2 | | | | | | | 1.64E+04 | EPI KOCWIN v2.0 | 1.84E-01 | EPI WATERNT v.01 |
| Trimethyl Phosphate | 512-56-1 | 140.08 | EPI Demwin v2.0 | 2.90E-07 | 7.20E-09 | EPI HenryWin v3.2 | 1.2144 | CRC 89th Ed | | | | | 1.06E+01 | EPI KOCWIN v2.0 | 5.00E+05 | EPI WATERNT v.01 |
| Trimethylbenzene, 1,2,4- | 95-63-6 | 120.20 | EPI Demwin v2.0 | 2.50E-01 | 6.16E-03 | EPI HenryWin v3.2 | 0.8758 | CRC 89th Ed | 6.10E-02 | USEPA 2001 | 7.90E-06 | USEPA 2001 | 6.14E+02 | EPI KOCWIN v2.0 | 5.70E+01 | EPI WATERNT v.01 |
| Trimethylbenzene, 1,3,5- | 108-67-8 | 120.20 | EPI Demwin v2.0 | 3.60E-01 | 8.77E-03 | EPI HenryWin v3.2 | 0.8615 | CRC 89th Ed | 6.00E-02 | USEPA 2001 | 7.80E-06 | USEPA 2001 | 6.02E+02 | EPI KOCWIN v2.0 | 4.82E+01 | EPI WATERNT v.01 |

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| Contaminant | | Molecular Weight | | Henry's Law Constants | | | Density (g/cm$^3$) | | Diffusivity in Air (cm$^2$/s) | | Diffusivity in Water (cm$^2$/s) | | Organic carbon partition coefficient (L/kg) | | Solubility in water (mg/L) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Analyte | CAS No. | MW | MW Ref | H' (unitless) | HLC (atm-m$^3$/mole) | H' and HLC Ref | Density | Density Ref | Dia | Dia Ref | Diw | Diw Ref | Koc | Koc Ref | S | S Ref |
| Trinitrobenzene, 1,3,5- | 99-35-4 | 213.11 | EPI Dermwin v2.0 | 2.70E-07 | 6.50E-09 | EPI HenryWin v3.2 | 1.4775 | CRC 89th Ed | | | | | 1.68E+03 | EPI KOCWIN v2.0 | 2.78E+02 | EPI WATERNT v.01 |
| Trinitrotoluene, 2,4,6- | 118-96-7 | 227.13 | EPI Dermwin v2.0 | 8.50E-07 | 2.08E-08 | EPI HenryWin v3.2 | 1.654 | CRC 89th Ed | | | | | 2.81E+03 | EPI KOCWIN v2.0 | 1.15E+02 | EPI WATERNT v.01 |
| Triphenylphosphine Oxide | 791-28-6 | 278.29 | EPI Dermwin v2.0 | 2.20E-08 | 5.26E-10 | EPI HenryWin v3.2 | 1.2124 | CRC 89th Ed | | | | | 1.95E+03 | EPI KOCWIN v2.0 | 2.05E+02 | EPI WATERNT v.01 |
| Tris(2-chloroethyl)phosphate | 115-96-8 | 285.49 | EPI Dermwin v2.0 | 1.30E-04 | 3.29E-06 | EPI HenryWin v3.2 | 1.39 | CRC 89th Ed | | | | | 3.88E+02 | EPI KOCWIN v2.0 | 7.00E+03 | EPI WATERNT v.01 |
| Tris(2-ethylhexyl)phosphate | 78-42-2 | 434.65 | EPI Dermwin v2.0 | 3.20E-06 | 7.86E-08 | EPI HenryWin v3.2 | 0.99 | CRC 89th Ed | | | | | 2.47E+06 | EPI KOCWIN v2.0 | 6.00E-01 | EPI WATERNT v.01 |
| Uranium (Soluble Salts) | NA | | | | | | 19.1 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Urethane | 51-79-6 | 89.09 | EPI Dermwin v2.0 | 2.60E-06 | 6.43E-08 | EPI HenryWin v3.2 | 0.9862 | CRC 89th Ed | | | | | 1.21E+01 | EPI KOCWIN v2.0 | 4.80E+05 | EPI WATERNT v.01 |
| Vanadium Pentoxide | 1314-62-1 | 181.88 | EPI Dermwin v2.0 | | | | 3.35 | CRC 89th Ed | | | | | | | 7.00E+02 | CRC 89th Ed |
| Vanadium Sulfate | 36907-42-3 | 273.11 | CRC 89th Ed | | | | | | | | | | | | | |
| Vanadium and Compounds | NA | 50.94 | CRC 89th Ed | | | | 6 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 85th Ed |
| Vanadium, Metallic | 7440-62-2 | 50.94 | EPI Dermwin v2.0 | | | | 6 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Vernolate | 1929-77-7 | 203.35 | EPI Dermwin v2.0 | 1.30E-03 | 3.09E-05 | EPI HenryWin v3.2 | 0.952 | CRC 89th Ed | | | | | 2.99E+02 | EPI KOCWIN v2.0 | 9.00E+01 | EPI WATERNT v.01 |
| Vinclozolin | 50471-44-8 | 286.12 | EPI Dermwin v2.0 | 7.10E-07 | 1.74E-08 | EPI HenryWin v3.2 | 1.51 | CRC 89th Ed | | | | | 2.84E+02 | EPI KOCWIN v2.0 | 2.60E+00 | EPI WATERNT v.01 |
| Vinyl Acetate | 108-05-4 | 86.09 | EPI Dermwin v2.0 | 2.10E-02 | 5.11E-04 | EPI HenryWin v3.2 | 0.9256 | CRC 89th Ed | 8.50E-02 | USEPA 2001 | 1.00E-05 | USEPA 2001 | 5.58E+00 | EPI KOCWIN v2.0 | 2.00E+04 | EPI WATERNT v.01 |
| Vinyl Bromide | 593-60-2 | 106.95 | EPI Dermwin v2.0 | 5.00E-01 | 1.23E-02 | EPI HenryWin v3.2 | 1.4933 | CRC 89th Ed | 8.60E-02 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 1.04E+04 | EPI WATERNT v.01 |
| Vinyl Chloride | 75-01-4 | 62.50 | EPI Dermwin v2.0 | 1.10E+00 | 2.78E-02 | EPI HenryWin v3.2 | 0.9106 | CRC 89th Ed | 1.10E-01 | USEPA 2001 | 1.20E-05 | USEPA 2001 | 2.17E+01 | EPI KOCWIN v2.0 | 8.80E+03 | EPI WATERNT v.01 |
| Warfarin | 81-81-2 | 308.34 | EPI Dermwin v2.0 | 1.10E-07 | 2.77E-09 | EPI HenryWin v3.2 | | | | | | | 4.26E+02 | EPI KOCWIN v2.0 | 1.70E+01 | EPI WATERNT v.01 |
| Xylene, Mixture | 1330-20-7 | 106.17 | EPI Dermwin v2.0 | 2.10E-01 | 5.18E-03 | EPI HenryWin v3.2 | | | 8.50E-02 | USEPA 1987 | 9.90E-06 | USEPA 1987 | 3.83E+02 | EPI KOCWIN v2.0 | 1.06E+02 | EPI WATERNT v.01 |
| Xylene, P- | 106-42-3 | 106.17 | EPI Dermwin v2.0 | 2.80E-01 | 6.90E-03 | EPI HenryWin v3.2 | 0.8565 | CRC 89th Ed | 6.80E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 3.75E+02 | EPI KOCWIN v2.0 | 1.62E+02 | EPI WATERNT v.01 |
| Xylene, m- | 108-38-3 | 106.17 | EPI Dermwin v2.0 | 2.90E-01 | 7.18E-03 | EPI HenryWin v3.2 | 0.8598 | CRC 89th Ed | 6.80E-02 | USEPA 2001 | 8.40E-06 | USEPA 2001 | 3.75E+02 | EPI KOCWIN v2.0 | 1.61E+02 | EPI WATERNT v.01 |
| Xylene, o- | 95-47-6 | 106.17 | EPI Dermwin v2.0 | 2.10E-01 | 5.18E-03 | EPI HenryWin v3.2 | 0.8755 | CRC 89th Ed | 6.90E-02 | USEPA 2001 | 8.50E-06 | USEPA 2001 | 3.83E+02 | EPI KOCWIN v2.0 | 1.78E+02 | EPI WATERNT v.01 |
| Zinc (Metallic) | 7440-66-6 | 67.41 | EPI Dermwin v2.0 | | | | 7.134 | CRC 89th Ed | | | | | | | 0.00E+00 | Lange's (15th Ed.) |
| Zinc Phosphide | 1314-84-7 | | CRC 89th Ed | | | | 4.55 | CRC 89th Ed | | | | | | | 0.00E+00 | CRC 89th Ed |
| Zineb | 12122-67-7 | 275.74 | EPI | 6.5E-09 | 1.59E-10 | EPI HenryWin v3.2 | | | | | | | 1345 | EPI KOCWIN v2.0 | 10 | EPI WATERNT v.01 |

EPA 2002 = U.S. Environmental Protection Agency. Industrial Waste Air Model (IWAIR) User's Guide. Office of Solid Waste. February 2002.
EPA 1987 = Processes, Coefficients, and Models for Simulation Toxic Organics and Heavy Metals in Surface Waters. EPA/600/3- 87/015. Office of Research and Development, Athens, GA.
CRC = Handbook of Chemistry and Physics
MW Other = Chemfinder, Dermwin version 1.42, or Physprop Database
CRC Chrom III note = CRC 85th edition, (Values reported here are for chromium (III) oxide (CAS 1308-38-9) which is one of the water insoluble salts.)
CRC Chrom VI note = CRC 85th edition, (decomposes at this temp) Values reported here are for chromium (VI) oxide (CAS 1333-82-0)
EPI (Henry Win) 1 = EPI (HenryWin) Experimental value; citation not listed

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# National Primary Drinking Water Regulations

| Contaminant | MCL or TT[1] (mg/L)[2] | Potential health effects from long-term[3] exposure above the MCL | Common sources of contaminant in drinking water | Public Health Goal (mg/L)[2] |
|---|---|---|---|---|
| OC Acrylamide | TT[4] | Nervous system or blood problems; increased risk of cancer | Added to water during sewage/ wastewater treatment | zero |
| OC Alachlor | 0.002 | Eye, liver, kidney or spleen problems; anemia; increased risk of cancer | Runoff from herbicide used on row crops | zero |
| R Alpha/photon emitters | 15 picocuries per Liter (pCi/L) | Increased risk of cancer | Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as alpha radiation | zero |
| IOC Antimony | 0.006 | Increase in blood cholesterol; decrease in blood sugar | Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder | 0.006 |
| IOC Arsenic | 0.010 | Skin damage or problems with circulatory systems, and may have increased risk of getting cancer | Erosion of natural deposits; runoff from orchards; runoff from glass & electronics production wastes | 0 |
| IOC Asbestos (fibers >10 micrometers) | 7 million fibers per Liter (MFL) | Increased risk of developing benign intestinal polyps | Decay of asbestos cement in water mains; erosion of natural deposits | 7 MFL |
| OC Atrazine | 0.003 | Cardiovascular system or reproductive problems | Runoff from herbicide used on row crops | 0.003 |
| IOC Barium | 2 | Increase in blood pressure | Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits | 2 |
| OC Benzene | 0.005 | Anemia; decrease in blood platelets; increased risk of cancer | Discharge from factories; leaching from gas storage tanks and landfills | zero |
| OC Benzo(a)pyrene (PAHs) | 0.0002 | Reproductive difficulties; increased risk of cancer | Leaching from linings of water storage tanks and distribution lines | zero |
| IOC Beryllium | 0.004 | Intestinal lesions | Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries | 0.004 |
| R Beta photon emitters | 4 millirems per year | Increased risk of cancer | Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation | zero |
| DBP Bromate | 0.010 | Increased risk of cancer | Byproduct of drinking water disinfection | zero |
| IOC Cadmium | 0.005 | Kidney damage | Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints | 0.005 |
| OC Carbofuran | 0.04 | Problems with blood, nervous system, or reproductive system | Leaching of soil fumigant used on rice and alfalfa | 0.04 |
| OC Carbon tetrachloride | 0.005 | Liver problems; increased risk of cancer | Discharge from chemical plants and other industrial activities | zero |
| D Chloramines (as $Cl_2$) | MRDL=4.0[1] | Eye/nose irritation; stomach discomfort; anemia | Water additive used to control microbes | MRDLG=4[1] |
| OC Chlordane | 0.002 | Liver or nervous system problems; increased risk of cancer | Residue of banned termiticide | zero |
| D Chlorine (as $Cl_2$) | MRDL=4.0[1] | Eye/nose irritation; stomach discomfort | Water additive used to control microbes | MRDLG=4[1] |
| D Chlorine dioxide (as $ClO_2$) | MRDL=0.8[1] | Anemia; infants, young children, and fetuses of pregnant women: nervous system effects | Water additive used to control microbes | MRDLG=0.8[1] |
| DBP Chlorite | 1.0 | Anemia; infants, young children, and fetuses of pregnant women: nervous system effects | Byproduct of drinking water disinfection | 0.8 |
| OC Chlorobenzene | 0.1 | Liver or kidney problems | Discharge from chemical and agricultural chemical factories | 0.1 |
| IOC Chromium (total) | 0.1 | Allergic dermatitis | Discharge from steel and pulp mills; erosion of natural deposits | 0.1 |
| IOC Copper | TT[5]; Action Level = 1.3 | Short-term exposure: Gastrointestinal distress. Long-term exposure: Liver or kidney damage. People with Wilson's Disease should consult their personal doctor if the amount of copper in their water exceeds the action level | Corrosion of household plumbing systems; erosion of natural deposits | 1.3 |
| M *Cryptosporidium* | TT[7] | Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps) | Human and animal fecal waste | zero |

LEGEND

D Disinfectant | IOC Inorganic Chemical | OC Organic Chemical

DBP Disinfection Byproduct | M Microorganism | R Radionuclides

350001667

| Contaminant | MCL or TT[1] (mg/L)[2] | Potential health effects from long-term[3] exposure above the MCL | Common sources of contaminant in drinking water | Public Health Goal (mg/L)[2] |
|---|---|---|---|---|
| IOC Cyanide (as free cyanide) | 0.2 | Nerve damage or thyroid problems | Discharge from steel/metal factories; discharge from plastic and fertilizer factories | 0.2 |
| OC 2,4-D | 0.07 | Kidney, liver, or adrenal gland problems | Runoff from herbicide used on row crops | 0.07 |
| OC Dalapon | 0.2 | Minor kidney changes | Runoff from herbicide used on rights of way | 0.2 |
| OC 1,2-Dibromo-3-chloropropane (DBCP) | 0.0002 | Reproductive difficulties; increased risk of cancer | Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards | zero |
| OC o-Dichlorobenzene | 0.6 | Liver, kidney, or circulatory system problems | Discharge from industrial chemical factories | 0.6 |
| OC p-Dichlorobenzene | 0.075 | Anemia; liver, kidney or spleen damage; changes in blood | Discharge from industrial chemical factories | 0.075 |
| OC 1,2-Dichloroethane | 0.005 | Increased risk of cancer | Discharge from industrial chemical factories | zero |
| OC 1,1-Dichloroethylene | 0.007 | Liver problems | Discharge from industrial chemical factories | 0.007 |
| OC cis-1,2-Dichloroethylene | 0.07 | Liver problems | Discharge from industrial chemical factories | 0.07 |
| OC trans-1,2-Dichloroethylene | 0.1 | Liver problems | Discharge from industrial chemical factories | 0.1 |
| OC Dichloromethane | 0.005 | Liver problems; increased risk of cancer | Discharge from drug and chemical factories | zero |
| OC 1,2-Dichloropropane | 0.005 | Increased risk of cancer | Discharge from industrial chemical factories | zero |
| OC Di(2-ethylhexyl) adipate | 0.4 | Weight loss, liver problems, or possible reproductive difficulties | Discharge from chemical factories | 0.4 |
| OC Di(2-ethylhexyl) phthalate | 0.006 | Reproductive difficulties; liver problems; increased risk of cancer | Discharge from rubber and chemical factories | zero |
| OC Dinoseb | 0.007 | Reproductive difficulties | Runoff from herbicide used on soybeans and vegetables | 0.007 |
| OC Dioxin (2,3,7,8-TCDD) | 0.00000003 | Reproductive difficulties; increased risk of cancer | Emissions from waste incineration and other combustion; discharge from chemical factories | zero |
| OC Diquat | 0.02 | Cataracts | Runoff from herbicide use | 0.02 |
| OC Endothall | 0.1 | Stomach and intestinal problems | Runoff from herbicide use | 0.1 |
| OC Endrin | 0.002 | Liver problems | Residue of banned insecticide | 0.002 |
| OC Epichlorohydrin | TT[4] | Increased cancer risk; stomach problems | Discharge from industrial chemical factories; an impurity of some water treatment chemicals | zero |
| OC Ethylbenzene | 0.7 | Liver or kidney problems | Discharge from petroleum refineries | 0.7 |
| OC Ethylene dibromide | 0.00005 | Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer | Discharge from petroleum refineries | zero |
| M Fecal coliform and *E. coli* | MCL[6] | Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes may cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems. | Human and animal fecal waste | zero[6] |
| IOC Fluoride | 4.0 | Bone disease (pain and tenderness of the bones); children may get mottled teeth | Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories | 4.0 |
| M *Giardia lamblia* | TT[7] | Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps) | Human and animal fecal waste | zero |
| OC Glyphosate | 0.7 | Kidney problems; reproductive difficulties | Runoff from herbicide use | 0.7 |
| DBP Haloacetic acids (HAA5) | 0.060 | Increased risk of cancer | Byproduct of drinking water disinfection | n/a[9] |
| OC Heptachlor | 0.0004 | Liver damage; increased risk of cancer | Residue of banned termiticide | zero |
| OC Heptachlor epoxide | 0.0002 | Liver damage; increased risk of cancer | Breakdown of heptachlor | zero |
| M Heterotrophic plate count (HPC) | TT[7] | HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is. | HPC measures a range of bacteria that are naturally present in the environment | n/a |

LEGEND

D Disinfectant | IOC Inorganic Chemical | OC Organic Chemical

DBP Disinfection Byproduct | M Microorganism | R Radionuclides

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| Contaminant | | MCL or TT[1] (mg/L)[2] | Potential health effects from long-term[3] exposure above the MCL | Common sources of contaminant in drinking water | Public Health Goal (mg/L)[2] |
|---|---|---|---|---|---|
| OC | Hexachlorobenzene | 0.001 | Liver or kidney problems; reproductive difficulties; increased risk of cancer | Discharge from metal refineries and agricultural chemical factories | zero |
| OC | Hexachlorocyclopentadiene | 0.05 | Kidney or stomach problems | Discharge from chemical factories | 0.05 |
| IOC | Lead | TT5; Action Level=0.015 | Infants and children: Delays in physical or or mental development; children could show slight deficits in attention span and learning abilities; Adults: Kidney problems; high blood pressure | Corrosion of household plumbing systems; erosion of natural deposits | zero |
| M | *Legionella* | TT7 | Legionnaire's Disease, a type of pneumonia | Found naturally in water; multiplies in heating systems | zero |
| OC | Lindane | 0.0002 | Liver or kidney problems | Runoff/leaching from insecticide used on cattle, lumber, gardens | 0.0002 |
| IOC | Mercury (inorganic) | 0.002 | Kidney damage | Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands | 0.002 |
| OC | Methoxychlor | 0.04 | Reproductive difficulties | Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock | 0.04 |
| IOC | Nitrate (measured as Nitrogen) | 10 | Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome. | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits | 10 |
| IOC | Nitrite (measured as Nitrogen) | 1 | Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome. | Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits | 1 |
| OC | Oxamyl (Vydate) | 0.2 | Slight nervous system effects | Runoff/leaching from insecticide used on apples, potatoes, and tomatoes | 0.2 |
| OC | Pentachlorophenol | 0.001 | Liver or kidney problems; increased cancer risk | Discharge from wood-preserving factories | zero |
| OC | Picloram | 0.5 | Liver problems | Herbicide runoff | 0.5 |
| OC | Polychlorinated biphenyls (PCBs) | 0.0005 | Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer | Runoff from landfills; discharge of waste chemicals | zero |
| R | Radium 226 and Radium 228 (combined) | 5 pCi/L | Increased risk of cancer | Erosion of natural deposits | zero |
| IOC | Selenium | 0.05 | Hair or fingernail loss; numbness in fingers or toes; circulatory problems | Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines | 0.05 |
| OC | Simazine | 0.004 | Problems with blood | Herbicide runoff | 0.004 |
| OC | Styrene | 0.1 | Liver, kidney, or circulatory system problems | Discharge from rubber and plastic factories; leaching from landfills | 0.1 |
| OC | Tetrachloroethylene | 0.005 | Liver problems; increased risk of cancer | Discharge from factories and dry cleaners | zero |
| IOC | Thallium | 0.002 | Hair loss; changes in blood; kidney, intestine, or liver problems | Leaching from ore-processing sites; discharge from electronics, glass, and drug factories | 0.0005 |
| OC | Toluene | 1 | Nervous system, kidney, or liver problems | Discharge from petroleum factories | 1 |
| M | Total Coliforms | 5.0 percent[8] | Coliforms are bacteria that indicate that other, potentially harmful bacteria may be present. See fecal coliforms and *E. coli* | Naturally present in the environment | zero |
| DBP | Total Trihalomethanes (TTHMs) | 0.080 | Liver, kidney or central nervous system problems; increased risk of cancer | Byproduct of drinking water disinfection | n/a[9] |
| OC | Toxaphene | 0.003 | Kidney, liver, or thyroid problems; increased risk of cancer | Runoff/leaching from insecticide used on cotton and cattle | zero |
| OC | 2,4,5-TP (Silvex) | 0.05 | Liver problems | Residue of banned herbicide | 0.05 |
| OC | 1,2,4-Trichlorobenzene | 0.07 | Changes in adrenal glands | Discharge from textile finishing factories | 0.07 |
| OC | 1,1,1-Trichloroethane | 0.2 | Liver, nervous system, or circulatory problems | Discharge from metal degreasing sites and other factories | 0.2 |
| OC | 1,1,2-Trichloroethane | 0.005 | Liver, kidney, or immune system problems | Discharge from industrial chemical factories | 0.003 |
| OC | Trichloroethylene | 0.005 | Liver problems; increased risk of cancer | Discharge from metal degreasing sites and other factories | zero |

LEGEND

D Disinfectant
IOC Inorganic Chemical
OC Organic Chemical
DBP Disinfection Byproduct
M Microorganism
R Radionuclides

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| Contaminant | MCL or TT[1] (mg/L)[2] | Potential health effects from long-term[3] exposure above the MCL | Common sources of contaminant in drinking water | Public Health Goal (mg/L)[2] |
|---|---|---|---|---|
| M Turbidity | TT[7] | Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause short term symptoms such as nausea, cramps, diarrhea, and associated headaches. | Soil runoff | n/a |
| R Uranium | 30µg/L | Increased risk of cancer, kidney toxicity | Erosion of natural deposits | zero |
| OC Vinyl chloride | 0.002 | Increased risk of cancer | Leaching from PVC pipes; discharge from plastic factories | zero |
| M Viruses (enteric) | TT[7] | Short-term exposure: Gastrointestinal illness (e.g., diarrhea, vomiting, cramps) | Human and animal fecal waste | zero |
| OC Xylenes (total) | 10 | Nervous system damage | Discharge from petroleum factories; discharge from chemical factories | 10 |

LEGEND

D Disinfectant
DBP Disinfection Byproduct
IOC Inorganic Chemical
M Microorganism
OC Organic Chemical
R Radionuclides

350001670

## NOTES

**1** Definitions
- Maximum Contaminant Level Goal (MCLG)—The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.
- Maximum Contaminant Level (MCL)—The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
- Maximum Residual Disinfectant Level Goal (MRDLG)—The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- Maximum Residual Disinfectant Level (MRDL)—The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- Treatment Technique (TT)—A required process intended to reduce the level of a contaminant in drinking water.

**2** Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million (ppm).

**3** Health effects are from long-term exposure unless specified as short-term exposure.

**4** Each water system must certify annually, in writing, to the state (using third-party or manufacturers certification) that when it uses acrylamide and/or epichlorohydrin to treat water, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows: Acrylamide = 0.05 percent dosed at 1 mg/L (or equivalent); Epichlorohydrin = 0.01 percent dosed at 20 mg/L (or equivalent).

**5** Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10 percent of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.

**6** A routine sample that is fecal coliform-positive or *E. coli*-positive triggers repeat samples--if any repeat sample is total coliform-positive, the system has an acute MCL violation. A routine sample that is total coliform-positive and fecal coliform-negative or *E. coli*-negative triggers repeat samples--if any repeat sample is fecal coliform-positive or *E. coli*-positive, the system has an acute MCL violation. See also Total Coliforms.

**7** EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:
- *Cryptosporidium*: 99 percent removal for systems that filter. Unfiltered systems are required to include Cryptosporidium in their existing watershed control provisions.
- Giardia lamblia: 99.9 percent removal/inactivation
- Viruses: 99.99 percent removal/inactivation
- *Legionella*: No limit, but EPA believes that if *Giardia* and viruses are removed/inactivated according to the treatment techniques in the surface water treatment rule, *Legionella* will also be controlled.
- Turbidity: For systems that use conventional or direct filtration, at no time can turbidity (cloudiness of water) go higher than 1 nephelolometric turbidity unit (NTU), and samples for turbidity must be less than or equal to 0.3 NTU in at least 95 percent of the samples in any month. Systems that use filtration other than conventional or direct filtration must follow state limits, which must include turbidity at no time exceeding 5 NTU.
- HPC: No more than 500 bacterial colonies per milliliter
- Long Term 1 Enhanced Surface Water Treatment; Surface water systems or ground water systems under the direct influence of surface water serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, *Cryptosporidium* removal requirements, updated watershed control requirements for unfiltered systems).
- Long Term 2 Enhanced Surface Water Treatment; This rule applies to all surface water systems or ground water systems under the direct influence of surface water. The rule targets additional *Cryptosporidium* treatment requirements for higher risk systems and includes provisions to reduce risks from uncovered finished water storages facilities and to ensure that the systems maintain microbial protection as they take steps to reduce the formation of disinfection byproducts. (Monitoring start dates are staggered by system size. The largest systems (serving at least 100,000 people) will begin monitoring in October 2006 and the smallest systems (serving fewer than 10,000 people) will not begin monitoring until October 2008. After completing monitoring and determining their treatment bin, systems generally have three years to comply with any additional treatment requirements.)
- Filter Backwash Recycling: The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

**8** No more than 5.0 percent samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or *E. coli*. If two consecutive TC-positive samples, and one is also positive for *E. coli* or fecal coliforms, system has an acute MCL violation.

**9** Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L)
- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L)

# National Secondary Drinking Water Regulation

National Secondary Drinking Water Regulations are non-enforceable guidelines regarding contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water. EPA recommends secondary standards to water systems but does not require systems to comply. However, some states may choose to adopt them as enforceable standards.

| Contaminant | Secondary Maximum Contaminant Level |
|---|---|
| Aluminum | 0.05 to 0.2 mg/L |
| Chloride | 250 mg/L |
| Color | 15 (color units) |
| Copper | 1.0 mg/L |
| Corrosivity | noncorrosive |
| Fluoride | 2.0 mg/L |
| Foaming Agents | 0.5 mg/L |
| Iron | 0.3 mg/L |
| Manganese | 0.05 mg/L |
| Odor | 3 threshold odor number |
| pH | 6.5-8.5 |
| Silver | 0.10 mg/L |
| Sulfate | 250 mg/L |
| Total Dissolved Solids | 500 mg/L |
| Zinc | 5 mg/L |

## For More Information

**EPA's Safe Drinking Water Web site:**
**http://www.epa.gov/safewater/**

**EPA's Safe Drinking Water Hotline:**
**(800) 426-4791**

**To order additional posters or other ground water and drinking water publications, please contact the National Service Center for Environmental Publications at :**
**(800) 490-9198, or**
**email: nscep@bps-lmit.com.**

United States Environmental Protection Agency

EPA 816-F-09-004
May 2009

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# APPENDIX G
# REFERENCE DOCUMENTATION

3042 JACKPILE-PAGUATE MINE RECLAMATION
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REPORT
GEOTECHNICAL CONSULTATION
SEDIMENTATION IN PAGUATE RESERVOIR
SOUTH OF JACKPILE MINE
NEAR LAGUNA, NEW MEXICO
FOR ANACONDA COPPER COMPANY

**Dames & Moore**

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DAMES & MOORE JOB NO. 04010-064 & 073-06
SALT LAKE CITY, UTAH
January 9, 1980

RECEIVED
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U.S. GEOLOGICAL SURVEY
ALBUQUERQUE, NEW MEXICO

REPORT
GEOTECHNICAL CONSULTATION
SEDIMENTATION IN PAGUATE RESERVOIR
SOUTH OF JACKPILE MINE
NEAR LAGUNA, NEW MEXICO
FOR ANACONDA COPPER COMPANY

# Dames & Moore

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January 9, 1981

Anaconda Copper Company
P.O. Box 638
Grants, New Mexico 87020

Attention: Mr. Meade Stirland

Gentlemen:

Report
Geotechnical Consultation
Sedimentation in Paguate Reservoir
South of Jackpile Mine
Near Laguna, New Mexico
For Anaconda Copper Company

Transmitted with this letter are ten copies of our report regarding sedimentation in Paguate Reservoir; we have incorporated your review comments. We are also sending under separate cover reproducible copies of the oversize illustrations.

The scope of our work was planned in discussions between Mr. Meade Stirland of Anaconda and Mr. Jeffrey Keaton of Dames & Moore.

We have enjoyed assisting you or this project and look forward to working with you again. Please contact us if you have any questions or you require any additional information.

Very truly yours,

DAMES & MOORE

Larry T. Murdock
Associate

LTM:JRK:ll

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SEDIMENTATION IN PAGUATE RESERVOIR

## SUMMARY

The purpose of the geotechnical consultation described in this report was to evaluate the influence of the Jackpile Mine on sedimentation in Paguate Reservoir located approximately four miles south of the mine.

The influence of operations at the Jackpile Mine on sedimentation in Paguate Reservoir has two aspects: volume of sediment and radiological content of the sediments. This report deals chiefly with the volume aspect. The radiological aspect is being addressed by Anaconda Copper Company personnel; however, the samples of sediment submitted for radiological analyses were collected by Dames & Moore.

Three 1"=200' topographic maps of Paguate Reservoir provide the basis for computing sediment volumes. Two of the maps (1938 and 1949) were prepared prior to the establishment of the Jackpile Mine (1952); one map was prepared in 1980. Copies of the 1938 and 1949 topographic maps were obtained from the Southern Pueblos Agency Office in Albuquerque; the 1980 topographic map was produced by T.R. Mann and Associates, Inc.

Using the available topographic maps the volume of sediment deposited in the reservoir was calculated for the period between the 1940 and 1949, and also for the period between 1949 and 1980. The average rate of deposition for the nine years between 1940 and 1949 was approximately 3,085,000 cubic feet per year ($ft^3/yr$). The average rate of deposition for the 31 year period between 1949 and 1980 is calculated at approximately 977,000

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$ft^3/yr$. The Jackpile Mine began surface operations in 1952. Therefore, the average rate of sedimentation in the 28 years since mining operations began is less than one-third of what it was in the first nine years after completion of the Paguate Dam prior to mining activities.

Consequently, we conclude that operation of the Jackpile Mine did not cause more rapid deposition of sediment in Paguate Reservoir than was occurring before the mine was established.

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REPORT

GEOTECHNICAL CONSULTATION

SEDIMENTATION IN PAGUATE RESERVOIR

SOUTH OF THE JACKPILE MINE

NEAR LAGUNA, NEW MEXICO

FOR ANACONDA COPPER COMPANY

## INTRODUCTION

In this report we present the results of our geotechnical consultation regarding sedimentation in the Paguate Reservoir. The reservoir is located on Rio Paguate approximately four miles south of the Jackpile Uranium Mine in the SE 1/4, S.23; NW 1/4, S.25; and NE 1/4, S.26, T.10N., R.5W., New Mexico Principal Base and Meridian. The community of Laguna is located approximately three and one-half miles southwest of the reservoir.

## PURPOSE

The purpose of our geotechnical consultation was twofold:

1) To provide a quantitative evaluation of sedimentation in Paguate Reservoir with emphasis on the influence of the Jackpile Mine operation on the rate of sedimentation.

2) To collect of samples of sediment suitable for radiological content analyses.

## SCOPE

The scope of our consultation was formulated in discussions between Mr. Meade Stirland of Anaconda Copper Company and Mr. Jeff Keaton of Dames & Moore. The scope of our studies consisted of 1) collection and evaluation



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of available topographic maps and aerial photographs of the reservoir area, and 2) field reconnaissance and collection of surface and subsurface samples of sediment. To aid in the collection of subsurface samples, two trenches were excavated and five borings were drilled. The samples were delivered to representatives of Anaconda Copper Company who were responsible for submitting the samples for radiological analyses.

## EVALUATION OF SEDIMENTATION

### DATA INVENTORY

Five topographic maps and four sets of aerial photographs of the Paguate Reservoir area were examined and provide the basis for evaluation of sedimentation quantities in the reservoir. Pertinent information regarding these maps and photographs is listed below:

| Date | Description | Source |
|---|---|---|
| February 1, 1938 | 1"=200' Topographic map of Paguate Creek Storage Dam | Southern Pueblos Agency Office, Albuquerque, New Mexico |
| September 6, 1949 | 1"=200' Topographic map of Paguate Creek Storage Dam | Southern Pueblos Agency Office, Albuquerque, New Mexico |
| October 6, 1951 | 1"=2,625' Aerial photographs flight GS-RV, roll 2, frames 63, 64, 65, 84, and 85 | U.S. Geological Survey EROS Data Center, Sioux Falls, South Dakota |
| October 6, 1951 (1980) | 1"=500' Topographic map produced from the 1951 aerial photographs | Compiled by Olympus Aerial Surveys, Inc., Salt Lake City, Utah |
| November 4, 1977 | 1"=2,190' Aerial photographs roll 10, line 31 frames 19 and 20 | T.R. Mann and Associates, Inc. Albuquerque, New Mexico |



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| Date | Description | Source |
|---|---|---|
| June 13, 1978 | 1"=3,650' Aerial photographs flight 35061, roll 478, frames 144, 145, 154, 155, and 156 | U.S. Department of Agriculture Aerial Photography Field Office, Salt Lake City, Utah |
| June 13 1978 (1980) | 1"=500' Topographic map produced from the 1978 aerial photographs | Compiled by Olympus Aerial Surveys, Inc., Salt Lake City, Utah |
| June 26, 1980 | 1"=500' Aerial photographs roll 1, frames 001, 002, 003 and 004 | T.R. Mann and Associates, Inc. Albuquerque, New Mexico |
| June 26, 1980 | 1"=200' Topographic map produced from the 1980 aerial photographs | Compiled by T.R. Mann and Associates, Inc., Albuquerque, New Mexico |

## SEQUENCE OF KEY EVENTS

1938: The topographic map prepared this year was part of the planning for construction of Paguate Dam. A tracing of this map is reproduced as Plate 1 in this report.

1940: We understand that the dam was completed this year.

1949: The topographic map prepared this year (reproduced as Plate 2) apparently was constructed because of sediment accumulation in the reservoir. The capacity curve on the 1938 topographic map (Plate 1) shows approximately 570 acre-feet capacity at the 90-foot contour. By 1949 (Plate 2), the capacity of the reservoir at the 90-foot contour had been reduced to about 110 acre-feet.

1951: The aerial photographs flown this year by the U.S. Geological Survey were used to compile the Mesita and the Moquino 7.5 minute series topographic quadrangle maps which were released in 1957. Photograph GS-RV 2-65 covers the southern part of what is now occupied by the Jackpile Mine facilities; no evidence of the Jackpile Mine is recorded on this photograph.

In addition, the channel of the Rio Paguate at the section line separating Section 24 and Section 25 recorded on the 1951 photographs has shifted approximately 2,000 feet to the west from the position shown on the 1938 topographic map. The location of the Rio Paguate channel suggested by the shape of the topographic contours shown on the 1949 map appears to conform to the channel location recorded on the 1951 photographs.



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1952: Surface development of the Jackpile Mine began this year.

1957: The U.S. Geological Survey field checked the 1951 photographs and released the Mesita and the Moquino 7.5 minute series topographic quadrangle maps. The access road, railroad tracks, air strip, buildings and water tanks shown on the 1957 topographic quadrangle maps in the vicinity of the Jackpile Mine were located on the basis of information collected during field checking of the 1951 photographs.

1977: T.R. Mann and Associates, Inc. flew a series of aerial photographs of the uranium producing area of northwest New Mexico. These photographs show that the channel of the Rio Paguate has been diverted along a dirt road in the northwest quarter of Section 24. The channel is parallel to the southeast side of the road for a distance of about 2,000 feet at which point the channel turns south and enters the reservoir area near the corner of Sections 23, 24, 25 and 26.

We understand that the crest and spillway of Paguate Dam was raised approximately two feet in late 1977 or early 1978.

1978: The U.S. Department of Agriculture flew an aerial photography survey of the area during this year. The information recorded on these photographs is virtually identical to the information recorded on the 1977 photographs.

1980: During this year, Olympus Aerial Surveys, Inc. compiled topographic maps of the reservoir area based on the 1951 U.S. Geological Survey aerial photographs and the 1978 U.S. Department of Agriculture aerial photographs. These maps are presented as Plate 3 (1951 topography) and Plate 4 (1978 topography).

Also during this year, T.R. Mann and Associates, Inc. flew aerial photographs of the reservoir site and compiled a topographic map based on the photographs. This map is presented as Plate 5.

## QUALITATIVE EVALUATION OF TOPOGRAPHIC MAPS

### 1938 - 1949 MAPS (1"=200')

By comparing the 1938 topographic map (Plate 1) with the 1949 topographic map (Plate 2), it can be seen that substantial changes occurred in this period. The reference elevation (100 feet) for these two maps



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is the top of a pipe which marks a quarter corner (see Plate 1). The 1938 map indicates Paguate Creek channel was at an elevation of about 80 feet at a point approximately 1,200 feet northeast of the bend in the dam. The elevation of the same point on the 1949 map is about 90 feet, indicating 10 feet of sediment were deposited in this area.

These two maps also indicate that the bay on the west side of the reservoir was at an elevation of about 80 feet in 1938 and at an elevation of about 88 feet in 1949, indicating 8 feet of sediment accumulation.

Area-capacity curves for the reservoir are presented on both the 1938 and the 1949 maps. The capacity values are tabulated below:

| Contour | Capacity (Hundred Acre-Feet) 1938 | 1949 | Capacity Loss (Hundred Acre-Feet) |
|---|---|---|---|
| 80 | 0.1 | 0 | 0.1 |
| 82 | 0.4 | 0 | 0.4 |
| 84 | 0.9 | 0 | 0.9 |
| 86 | 1.7 | 0 | 1.7 |
| 88 | 3.3 | 0.2 | 3.1 |
| 90 | 5.7 | 1.1 | 4.6 |
| 92 | 9.2 | 2.9 | 6.3 |
| 92.5* | 10.4 | 4.5 | 5.9 |

*Spillway elevation

From these values, it can be seen that the capacity of the reservoir was reduced approximately 57 percent at the spillway elevation by 1949.

1951 - 1978 MAPS (1"=500')

By comparing the 1951 topographic map (Plate 3) with the 1978 topographic map (Plate 4), it can be seen that relatively minor changes occurred



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during this 27 year period. These maps were compiled before the 1938 and 1949 maps were obtained. The detail recorded on the 1938 and 1949 maps is better than the detail recorded on the 1951 and 1978 maps; consequently, the 1951 and 1978 maps were not used in the quantitative evaluation of sedimentation in the reservoir.

### 1949 - 1980 MAPS (1"=200')

By comparing the 1949 topographic map (Plate 2) with the 1980 topographic map (Plate 5), it can be seen that moderate changes occurred between these two years. The reference elevation used to compile the 1980 map is the same as that used for the 1938 map. The 1949 map indicates that the bottom of the reservoir was at an elevation of about 90 feet at a point approximately 1,200 feet northeast of the bend in the dam. The elevation of the same point on the 1980 map is about 94 feet, indicating 4 feet of sediment were deposited in this area.

These two maps also indicate that the bay on the west side of the reservoir was at an elevation of about 88 feet in 1949; the water surface in the bay was at an elevation of 93 feet in 1980. Therefore, less than 5 feet of sediment were deposited in the bay over this period.

## QUANTITATIVE EVALUATION OF TOPOGRAPHIC MAPS

### METHOD OF COMPUTATION

The computation of sediment volumes deposited in the reservoir within 2,000 feet of the dam was based on the 1938, 1949 and 1980 1"=200' topographic maps (Plates 1, 2 and 5, respectively). The maximum elevation on



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the 1949 map is the 92.5-foot contour which extends approximately 2,000 feet from the dam. Consequently, 2,000 feet from the dam is the limit of the quantitative evaluation. To provide a means for comparing directly the elevations recorded on the individual maps, the 1938 contours and the 1949 contours were traced onto the 1980 topographic map. The axis of the dam was superimposed and the contours simply traced. Plate 6 shows the composite topography from the three individual maps.

Five profiles were constructed at locations shown on Plate 6. The profiles are parallel to the axis of the dam and are presented on Plate 7. Profile A-A'-A" is located 200 feet from the upstream toe of the dam; the other four profiles are 400 feet apart. Each profile represents a 400-foot-wide strip (200 feet on each side of the profile line) across the reservoir area.

The topography for each of the three years of survey is shown on the profiles by distinct line patterns. The areas between topographic configurations on the profiles were planimetered with a standard compensating polar planimeter. The true area was computed on the basis of horizontal and vertical scale: 1 square inch on the profile is equal to 200 feet (horizontal) by 10 feet (vertical) or 2,000 square feet.

Because the 1949 topography was terminated at the spillway elevation (92.5 feet), it was necessary to extrapolate the topography for computation of the area between the 1980 and 1949 topographic configurations. As shown on the profiles, Plate 7, all extrapolations are straight lines.



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Volumes of sediment were computed by multiplying the total area between topographic configurations on each profile by a horizontal distance of 400 feet (strip width). Total sediment volumes within the reservoir area are summations of the volumes of the individual strips.

## RESULTS OF COMPUTATION

Tabulated below are the areas computed for each profile, the distance of the profile line from the upstream toe of the dam, and the distance from the upstream toe of the dam represented by each profile.

| Profile | Area ($ft^2$) 1938-1949 | Area ($ft^2$) 1949-1980 | Distance of Profile From Toe of Dam (ft) | Distance From Toe of Dam Represented by Profile (ft) |
|---|---|---|---|---|
| A-A'-A" | 18,160 | 15,120 | 200 | 0 to 400 |
| B-B'-B" | 17,920 | 18,820 | 600 | 400 to 800 |
| C-C'-C" | 13,360 | 18,500 | 1,000 | 800 to 1,200 |
| D-D'-D" | 12,180 | 12,680 | 1,400 | 1,200 to 1,600 |
| E-E'-E" | 7,800 | 10,620 | 1,800 | 1,600 to 2,000 |

Tabulated below are the volumes of sediment computed for each profile by multiplying the areas from each profile by the 400-foot strip width.

| Profile | Sediment Volume ($ft^3$) (Hundred acre-feet) 1938-1949 | 1949-1980 | 1938-1980 |
|---|---|---|---|
| A-A'-A" | 7,264,000 (1.67) | 6,048,000 (1.39) | 13,312,000 (3.06) |
| B-B'-B" | 7,168,000 (1.65) | 7,528,000 (1.73) | 14,696,000 (3.38) |
| C-C'-C" | 5,344,000 (1.22) | 7,400,000 (1.70) | 12,744,000 (2.92) |
| D-D'-D" | 4,872,000 (1.12) | 5,072,000 (1.16) | 9,944,000 (2.28) |
| E-E'-E" | 3,120,000 (0.71) | 4,248,000 (0.98) | 7,368,000 (1.69) |
| Total Volume | 27,768,000 (6.37) | 30,296,000 (6.96) | 58,064,000 (13.33) |

It should be noted that the capacity loss determined from the area-capacity curves on the 1938 and 1949 maps (Plates 1 and 2) is 5.9 hundred



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acre-feet (25,700,400 $ft^3$). The computed sediment volume is about 8 percent larger than the capacity loss value because of extrapolation on the profiles above the 92.5 foot spillway elevation.

SEDIMENTATION RATES

Since the dam was completed in 1940, the volume of sediment computed on the basis of 1938 and 1949 topography represents nine years of sediment accumulation. Therefore, the average rate of sedimentation prior to 1949 is computed by dividing the 1938-1949 sediment volume by nine years:

$$\frac{27{,}768{,}000\ ft^3}{9\ \text{years}} = 3{,}085{,}300\ ft^3/\text{year}\ (0.71\ \text{hundred acre-feet/year})$$

Using the capacity loss value from the area-capacity curves the rate of sedimentation would be

$$\frac{25{,}700{,}400\ ft^3}{9\ \text{years}} = 2{,}855{,}600\ ft^3/\text{year}\ (0.65\ \text{hundred acre-feet/year})$$

Similarly, the volume of sediment computed on the basis of 1949 and 1980 topography represents 31 years of sediment accumulation. Therefore, the average rate of sedimentation after 1949 is computed by dividing the 1949-1980 sediment volume by 31 years:

$$\frac{30{,}296{,}000\ ft^3}{31\ \text{years}} = 977{,}300\ ft^3\text{year}\ (0.22\ \text{hundred acre-feet/year})$$

Consequently, an average of more than 3 times more sediment was deposited in the reservoir each year during the first 9 years than during the last 31 years.

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## DISCUSSION

The sedimentation rate computed for the first nine years of reservoir life (1940-1949) is probably lower than the actual sedimentation rate. It is very likely that the material used to construct the dam was excavated from the area adjacent to the upstream toe of the dam. This concept is substantiated by borings drilled in the reservoir area (discussed later in this report) in which reservoir sediments (clay) were encountered below the level of the 1938 surface (as shown by the topography). This is a relatively standard practice because the storage volume of the reservoir can be increased at the same time material is obtained for construction of the dam. Consequently, the volume of sediment computed on the basis of the 1938 and 1949 topography may be low by an amount equal to the volume of the dam.

The sedimentation rate computed for the last 31 years of reservoir life (1949-1980) may be higher than the actual sedimentation rate. The water surface recorded on the 1980 topographic map was used in the volume computations as the sediment surface because the sediment surface could not be determined in water areas. Consequently, the volume of water currently present in the reservoir was included as part of the volume of sediment in the computation. This factor may be offset by intermittent removal of some sediment during the last 31 years of reservoir life.

The Jackpile Mine began surface operations in 1952. Therefore, sedimentation in the reservoir from 1949 to 1952 occurred before mining. The volume of sediment deposited in the reservoir within 2,000 feet of the dam before and after mining began can be estimated on the basis of the 1940-1949 sedimentation rate or the 1949-1980 sedimentation rate.



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Comparison of the 1951 and 1978 aerial photographs and topographic maps show minor changes, but the 1938 and 1949 topographic maps show substantial changes. Therefore, we believe that the average rate of sedimentation probably changed before 1951 and may have changed before 1949. For comparison, however, computations are presented using both sedimentation rates.

The period of time from construction of the dam in 1940 to the beginning of mining in 1952 is 12 years. If the 1940-1949 sedimentation rate (3,085,300 $ft^3$/year) is used as the basis for computation, then the volume of sediment deposited in the reservoir before mining began is the average 1940-1949 sedimentation rate times 12 years:

3,085,300 $ft^3$/year x 12 years = 37,023,600 $ft^3$ (8.50 hundred acre-feet)

The volume of sediment deposited in the reservoir after mining began is the total volume minus the volume deposited during the first 12 years.

58,064,000 $ft^3$ - 37,023,600 $ft^3$ = 21,040,400 $ft^3$.

13.33 hundred acre-feet - 8.50 hundred acre-feet = 4.83 hundred acre-feet

Similarly, if the 1949-1980 sedimentation rate (977,300 $ft^3$/year) is used as the basis for computation, then the volume of sediment deposited in the reservoir after mining began (1952 to 1980--a period of 28 years) is the average 1949-1980 sedimentation rate times 28 years:

977,300 $ft^3$/year x 28 years = 27,364,400 $ft^3$ (6.28 hundred acre-feet)



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The volume of sediment deposited in the reservoir before mining began is the total volume minus the volume deposited during the last 28 years:

$58{,}064{,}000\ ft^3 - 27{,}364{,}400\ ft^3 = 30{,}699{,}600\ ft^3$

13.33 hundred acre-feet - 6.28 hundred acre-feet = 7.05 hundred acre-feet.

These volumes and the percentages of the total volume that they represent are tabulated below:

| | 1940-1949 Sedimentation Rate | 1949-1980 Sedimentation Rate |
|---|---|---|
| Before Mining (1940-1952) | $37{,}023{,}600\ ft^3$<br>8.50 hundred ac-ft<br>(63.8%) | $30{,}699{,}600\ ft^3$<br>7.05 hundred ac-ft<br>(52.9%) |
| After Mining (1952-1980) | $21{,}040{,}400\ ft^3$<br>4.83 hundred ac-ft<br>(36.2%) | $27{,}364{,}400\ ft^3$<br>6.28 hundred ac-ft<br>(47.1%) |
| Total (1940-1980) | $58{,}064{,}000\ ft^3$<br>13.33 hundred ac-ft<br>(100%) | $58{,}064{,}000\ ft^3$<br>13.33 hundred ac-ft<br>(100%) |

On the basis of either sedimentation rate, it is clear that more sediment was deposited in the reservoir before mining began than after mining began.

## CONCLUSION

On the basis of the information presented above, we conclude that operation of the Jackpile Mine did not cause more rapid deposition of sediment in Paguate Reservoir than was occurring before the mine was established. Conversely, our volume and sedimentation rate computations indicate that sediment accumulated in the reservoir more rapidly before the mine was established than after the mine was established.



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## COLLECTION OF SEDIMENT SAMPLES

### GENERAL

Surface and subsurface samples of sediment were collected from a number of locations and delivered to representatives of Anaconda Copper Company who were responsible for submitting them for radiological analyses. Subsurface samples were extracted from two trenches and five borings; surface samples were collected from selected locations in the vicinity of Paguate Reservoir and the Jackpile Mine. Trench locations, boring locations and surface sample locations are shown on Plate 8, Trench, Boring and Surface Sample Locations.

The following sections of this report contain discussions of the rationale associated with selection of the sample locations and the methods of sample collection. Information regarding the radiological content of the samples is not included in this report; the radiological content of the samples is being addressed by Anaconda Copper Company personnel.

### SUBSURFACE SAMPLES

#### TRENCH SAMPLES

Two trenches were excavated with a rubber-tire-mounted backhoe in the NE 1/4, NW 1/4, S.24, T.10N., R.5W. as shown on Plate 8. The logs of these trenches are presented on Plate 9, Trench Logs. The locations of the trench samples are indicated on the logs.



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The 1951 aerial photographs show Rio Paguate flowing south into the northeast part of Paguate Reservoir. The 1977 and 1978 aerial photographs show that Rio Paguate has been diverted from its 1951 channel at a point about 1.5 miles north of the dam creating Paguate Reservoir.

At the point where the diversion has occurred,the active channel of Rio Paguate is approximately six feet below the elevation of the surrounding flood plain. Trench No. 1 was excavated about 15 feet south of the point of diversion along a projection of the channel documented in the 1951 photographs. Two marker beds were exposed in Trench No. 1 in a configuration indicating a buried stream channel. On this basis, we believe that Trench No. 1 intersected the channel shown on the 1951 photographs.

Five samples were taken from the wall of the trench above and below both of the marker beds. All of the material exposed in Trench No. 1 is historic in age, because a piece of lumber with a nail in it was exposed at the base of the trench about five feet below the lower of the two marker beds as shown on Plate 9.

The lumber could have come from the Jackpile Mine which would indicate that all of the material in the trench was deposited after the mine was in operation. Alternatively, the piece of lumber could have been associated with pre-mining activity, possibly construction of the dam. If the piece of lumber represents pre-mining activity, then the layer exposed in the trench which represents the start of mining is unknown. However, we believe that material above the upper of the two marker beds is clearly younger than 1951 on the basis of the location of the channel documented in the 1951 aerial photographs.



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The cause and timing of the diversion of Rio Paguate is unknown. However, some greenish clayey and silty sand material was observed in the east bank of the Rio Paguate channel at the point of diversion. A piece of wire in this material clearly indicates that it is fill; the material has the appearance of uranium mine waste. A sample of this material (surface sample No.6) was collected. The influence of the radiological content of the fill material or the radiological content of the samples from Trench No. 1 is unknown. The radiological content of materials in the old channel downstream from the fill very likely was influenced by the radiological content of this fill.

Trench No. 2 was excavated in the flood plain about 360 feet east of Trench No. 1. The material exposed in this trench consisted of a two-foot layer of loose interbedded sands overlying stiff silty clay. One sample of this silty clay material was obtained for radiological analysis.

On the basis of the degree of consolidation, difference in material properties, and distance away from the channel shown in the 1951 aerial photographs, we believe that the material exposed in Trench No. 2 is clearly much older than the beginning of the Jackpile Mine operation. We also believe that this material is sufficiently young that the ore body was exposed by the stream channel at the time the material was deposited.

BORING SAMPLES

Five borings were drilled in the reservoir area at locations shown on Plate 6 and Plate 8. These borings were drilled to depths ranging from 18 to 26 feet with truck-mounted, continuous-flight, hollow-stem auger



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equipment and sampled nearly continuously using 30-inch Shelby tubes or a standard split-spoon sampler.

Virtually all of the material encountered in the borings was silty clay deposited in the reservoir. The material below the clay was medium to coarse sand. Boring sample intervals are shown on Plate 10, Boring Logs; 1938 and 1949 ground surface locations are also indicated.

The boring locations were selected on the basis of 1) accessibility and 2) 1938 topography. Certain portions of the reservoir area were inaccessible to truck-mounted equipment because of the presence of very soft sediments, standing water, or dense vegetation. An attempt was made to locate the borings over low elevations shown on 1938 topographic map so that the maximum amount of reservoir sediment could be sampled.

As shown on Plate 10, reservoir sediments (soft silty clay) were found below the surface indicated on the 1938 topographic map (Plate 1). The presence of soft silty clay below the 1938 surface indicates that 1) the 1938 topographic map is inaccurate, 2) soft silty clay existed in the reservoir area before the dam was constructed, or 3) material used to construct the dam was obtained from the reservoir area.

Although the 1938 topographic map may be locally inaccurate, we believe that it is unreasonable to assume that errors in elevation of 5 to 13 feet would have been made over such a small area.

Judging from the nature of the sediments located adjacent to the downstream toe of the dam, we believe that it is unreasonable to expect soft silty clay in the reservoir area prior to construction of the dam. One



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possible exception to this might be in the area now occupied by the bay on the west side of the reservoir. The 1938 topographic map shows a closed contour (80-foot elevation) in the west bay. Because of the closed contour, accumulation of soft silty clay in this local area may have been possible.

It is generally standard practice to obtain materials to construct dams from the reservoir-side of the dam. We suspect that this was done at the Paguate Reservoir site.

SURFACE SAMPLES

Fifty surface samples were collected from the vicinity of the Paguate Reservoir and the Jackpile Mine at locations shown on Plate 8. Information regarding sample number, sample location and the age of deposition of the sediment is presented in Table 1.

In general, the samples were collected in pairs: one sample from the active channel and one sample from the bank of the stream above the active channel. At some locations, samples were also collected from stream terrace deposits which were considered to be intermediate in age between the very young active channel sediments and the older stream bank sediments.

Samples from active channels represent sediment that is currently moving through the stream system, samples from stream banks represent sediment that moved through the stream system before the existing arroyos formed. Hence, active channel sediments represent conditions after mining began; stream bank sediments represent conditions before mining began.



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Consequently, the radiological content of these two types of samples should provide the basis for evaluating changes possibly related to mining.

oOo

DAMES & MOORE

Larry T. Murdock
Associate

Jeffrey R. Keaton
Engineering Geologist

LTM:JRK:11



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TABLE I

SURFACE SAMPLE SUMMARY

| Sample No. | Location | Remarks | Sediment Age(1) |
|---|---|---|---|
| 1 | SE 1/4 NE 1/4 S.21 T.11N., R.4W. | Cross-bedded sandstone outcrop on west side of Canada de Pedro Padilla. | - |
| 2 | SW 1/4 NW 1/4 S.22 T.11N., R.4W. | Sandstone boulder on east side of Canada de Pedro Padilla. | - |
| 3 | NE 1/4 SW 1/4 S.2 T.10N. R.5W. | Sand from top of concrete low-water bridge on Rio Paguate at south side of Jackpile Mine. | + |
| 4 | 50' south of No. 3 | Sand from channel fill on east side of Rio Paguate about 6-8' above active channel. | - |
| 5 | 75' south of No. 3 | Clayey sand (buried soil horizon) on east side of Rio Paguate about 6-8' above active channel. | - |
| 6 | NE 1/4 NW 1/4 S.24 T.10N., R.5W. | Green clayey and silty sand (fill) on east bank of Rio Paguate 15' north of Trench No. 1. | * |
| 7 | NW 1/4 NE 1/4 S.1 T.10N., R.5W. | Sand from active channel about 1/4 mile below Woodrow Mine. | + |
| 8 | 10' east of No. 7 | Silty sand below buried soil horizon about 2' above active channel. | - |
| 9 | NW 1/4 SE 1/4 S.10 T.10N., R.5W. | Sand from active channel of South Fork of Oak Canyon. | + |
| 10 | 10' southeast of No. 9 | Silty sand about 6' above active channel. | - |
| 11 | NW 1/4 SW 1/4 S.11 T.10N., R.5W. | Sand from active channel of Oak Canyon. | + |

(1)Sediment age is designated by + if the mine was in operation at the time the sediment was deposited in its present position or by - if the sediment was deposited prior to beginning of mining. Sample No. 6, designated by * was probably deposited after mining began, since it is fill but is not considered to be representative of naturally-occurring sediments.

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TABLE I (Cont)

| Sample No. | Location | Remarks | Sediment Age(1) |
|---|---|---|---|
| 12 | 10' north of No. 11 | Silty sand about 6' above active channel. | - |
| 13 | NW 1/4 SE 1/4 S.11 T.10N., R.5W. | Sand from active channel or Oak Canyon. | + |
| 14 | 10' south of No. 13 | Sand from terrace in stream about 3' above active channel. | - |
| 15 | NW 1/4 NW 1/4 S.13 T.10N., R.5W. | Salty sand from active channel of Rio Paguate. | + |
| 16 | 20' north-northeast of No. 15 | Red brown sand about 3' above active channel. | - |
| 17 | 20' north-northeast of No. 15 | Silty sand-sandy silt about 7' above active channel. | - |
| 18 | SE 1/4 NE 1/4 S.26 T.10N., R.5W. | Sand from active channel below Paguate Dam. | + |
| 19 | 10' northwest of No. 18 | Silty sand about 4' above active channel. | - |
| 20 | 100' northwest of No. 18 | Silty clay 1' below flood plain surface. | - |
| 21 | SW 1/4 SE 1/4 S.31 T.11N., R.4W. | Sand from subtle channel near bulldozer cut in Jackpile sandstone about 2 miles east of Jackpile Mine. | + |
| 22 | SE 1/4 SE 1/4 S.31 T.11N., R.4W. | Sand from minor channel downslope from bulldozer cut in Jackpile sandstone about 2 miles east of Jackpile Mine. | + |
| 23 | NE 1/4 NW 1/4 S.5 T.10N., R.4W. | Silt from active channel of unnamed stream down slope of Nos. 21 and 22. | + |

(1)Sediment age is designated by + if the mine was in operation at the time the sediment was deposited in its present position or by - if the sediment was deposited prior to beginning of mining. Sample No. 6, designated by * was probably deposited after mining began, since it is fill but is not considered to be representative of naturally-occurring sediments.

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TABLE I (Cont)

| Sample No. | Location | Remarks | Sediment Age(1) |
|---|---|---|---|
| 24 | SE 1/4 NE 1/4 S.8 T.10N., R.4W. | Silty sand from active channel of unnamed stream downslope of No. 23. | + |
| 25 | 20' southwest of No. 24 | Sand about 5' above active channel. | - |
| 26 | 20' southwest of No. 24 | Silty sand 6' above active channel. | - |
| 27 | 30' west of No. 24 | Silt 9' above active channel (1' below flood plain surface). | - |
| 28 | NW 1/4 SE 1/4 S.4 T.10N., R.4W. | Sand from active channel of Arroyo de Piedra Lumbre. | + |
| 29 | 20' west of No. 28 | Silty sand 4' above active channel. | - |
| 30 | NE 1/4 SE 1/4 S.33 T.11N., R.4W. | Sand from active channel of Arroyo de Piedra Lumbre. | + |
| 31 | 10' east of No. 30 | Sand 5' above active channel. | - |
| 32 | 30' west of No. 30 | Sand from terrace 5' above active channel. | - |
| 33 | 50' west of No. 30 | Sand from terrace 10' above active channel. | - |
| 34 | 80' west of No. 30 | Silty sand 18' above active channel (2' below flood plain surface) | - |
| 35 | NE 1/4 SE 1/4 S.26 T.10N., R.5W. | Silty sand from active channel below spillway in Paguate Dam. | + |
| 36 | 50' northwest of No. 35 | Silty sand 6' above active channel. | - |

(1)Sediment age is designated by + if the mine was in operation at the time the sediment was deposited in its present position or by - if the sediment was deposited prior to beginning of mining. Sample No. 6, designated by * was probably deposited after mining began, since it is fill but is not considered to be representative of naturally-occurring sediments.

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TABLE I (Cont)

| Sample No. | Location | Remarks | Sediment Age(1) |
|---|---|---|---|
| 37 | SW 1/4 NW 1/4 S.24 T.10N., R.5W. | Sand from active channel of diverted Rio Paguate. | + |
| 38 | 10' west of No. 37 | Silty sand 3' above active channel. | - |
| 39 | NE 1/4 NW 1/4 S.24 T.10N., R.5W. | Sand from active channel of Rio Paguate about 10' upstream of the fill sampled as No. 6. | + |
| 40 | 10' east of No. 39 | Silty sand 3' above active channel. | - |
| 41 | SW 1/4 NW 1/4 S.13 T.10N., R.5W. | Sand from active channel of Rio Paguate. | + |
| 42 | 10' west of No. 41 | Silty sand 4' above active channel. | - |
| 43 | SE 1/4 NE 1/4 S.11 T.10N., R.5W. | Sand from active channel of Rio Paguate. | + |
| 44 | 100' west of No. 43 | Sand from terrace 5' above active channel. | - |
| 45 | SE 1/4 SE 1/4 S.11 T.10N., R.5W. | Sand from active channel of Oak Canyon. | + |
| 46 | 75' east of No. 45 | Sand 4' above active channel. | - |
| 47 | SW 1/4 NE 1/4 S.22 T.10N., R.5W. | Sand from active channel of unnamed drainage. | + |
| 48 | 5' south of No. 47 | Silty sand 5' above active channel. | - |
| 49 | NW 1/4 NW 1/4 S.27 T.11N., R.4W. | Sand from active channel of Canada de Pedro Padilla. | + |
| 50 | 20' west of No. 49 | Silty sand 4' above active channel. | - |

(1)Sediment age is designated by + if the mine was in operation at the time the sediment was deposited in its present position or by - if the sediment was deposited prior to beginning of mining. Sample No. 6, designated by * was probably deposited after mining began, since it is fill but is not considered to be representative of naturally-occurring sediments.

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MAGNETIC NORTH

T. 10 N.

R. 5 W.

SEC. 23 | SEC. 24

SEC. 26 | SEC. 25

1/4 CORNER

BENCH MARK
TOP PIPE CAP=
100

200 0 200 400
SCALE IN FEET

AREA IN ACRES

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

CONTOUR

96 94 92 90 88 86 84 82 80

CAPACITY

AREA

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

CAPACITY - HUNDRED OF ACRE FEET

TRACING

ORIGINAL LOCATED IN SOUTHERN PUEBLOS AGENCY OFFICE
ALBUQUERQUE, NEW MEXICO

DEPARTMENT OF THE INTERIOR
UNITED PUEBLOS AGENCY

S.D. ABERLE
GENERAL SUPERINTENDENT

R.H. RUPKEY, ENGINEER
IRRIGATION DIVISION

# LAGUNA PUEBLO

NEW MEXICO

PAGUATE CREEK STORAGE DAM

TOPOGRAPHY

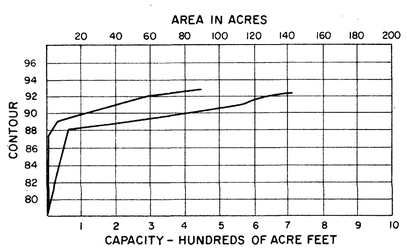
SCALE 1" = 200' FEB. 1, 1938

SURVEY P.L.C. DRAWN P.L.C.

PLATE I

350001703

200 0 200 400
SCALE IN FEET




TRACING

ORIGINAL LOCATED IN SOUTHERN PUEBLOS AGENCY OFFICE
ALBUQUERQUE, NEW MEXICO

DEPARTMENT OF THE INTERIOR
UNITED PUEBLOS AGENCY

ERIC T. HAGBERG
GENERAL SUPERINTENDENT

L.G. BOLDT
IRRIGATION DIVISION

# LAGUNA PUEBLO
NEW MEXICO

PAGUATE CREEK STORAGE DAM
TOPOGRAPHY
1949

SCALE 1" = 200' SEPT. 6, 1949
SURVEY BY JHC DRAWN JLM

PLATE 2

350001704

N 995,000 N 992,500 N 990,000 N 987,500 N 985,000 N 982,500 N 980,000 N 997,500

E 1,012,250 E 1,010,000 E 1,007,500 E 1,005,000 E 1,002,500

77.0

64 66 64 69 55 46 45 43 56 74

STA. 2
EL. 5768.71

STA. TR-2
EL. 5765.96

STA. TR-1
EL. 5769.31

STA. TR-3
EL. 5775.59

STA. 5
EL. 5749.82

STA. 4
EL. 5745.94

STA. 1
EL. 5761.73

5750 5750 5750 5800

PAGUATE RESERVOIR

# PLATE 3

## TOPOGRAPHIC MAP OF THE PAGUATE RESERVOIR AREA 1951

SCALE 1"=500

500' 0 500' 1000' 1500'

CONTOUR INTERVAL 10'

PHOTOGRAPHY DATE OCT. 6, 1951

350001705

NOTE: CONTROL PROVIDED BY DAMES & MOORE.

OLYMPUS AERIAL SURVEYS, INC.-SALT LAKE CITY, UTAH-0066

YEAR 1951

N 995,000 N 992,500 N 990,000 N 987,500 N 985,000 N 982,500 N 980,000 N 997,500

E 1,012,250 E 1,010,000 E 1,007,500 E 1,005,000 E 1,002,500

PLATE 4

TOPOGRAPHIC MAP
OF THE
# PAGUATE RESERVOIR AREA
1978

SCALE 1"=500'

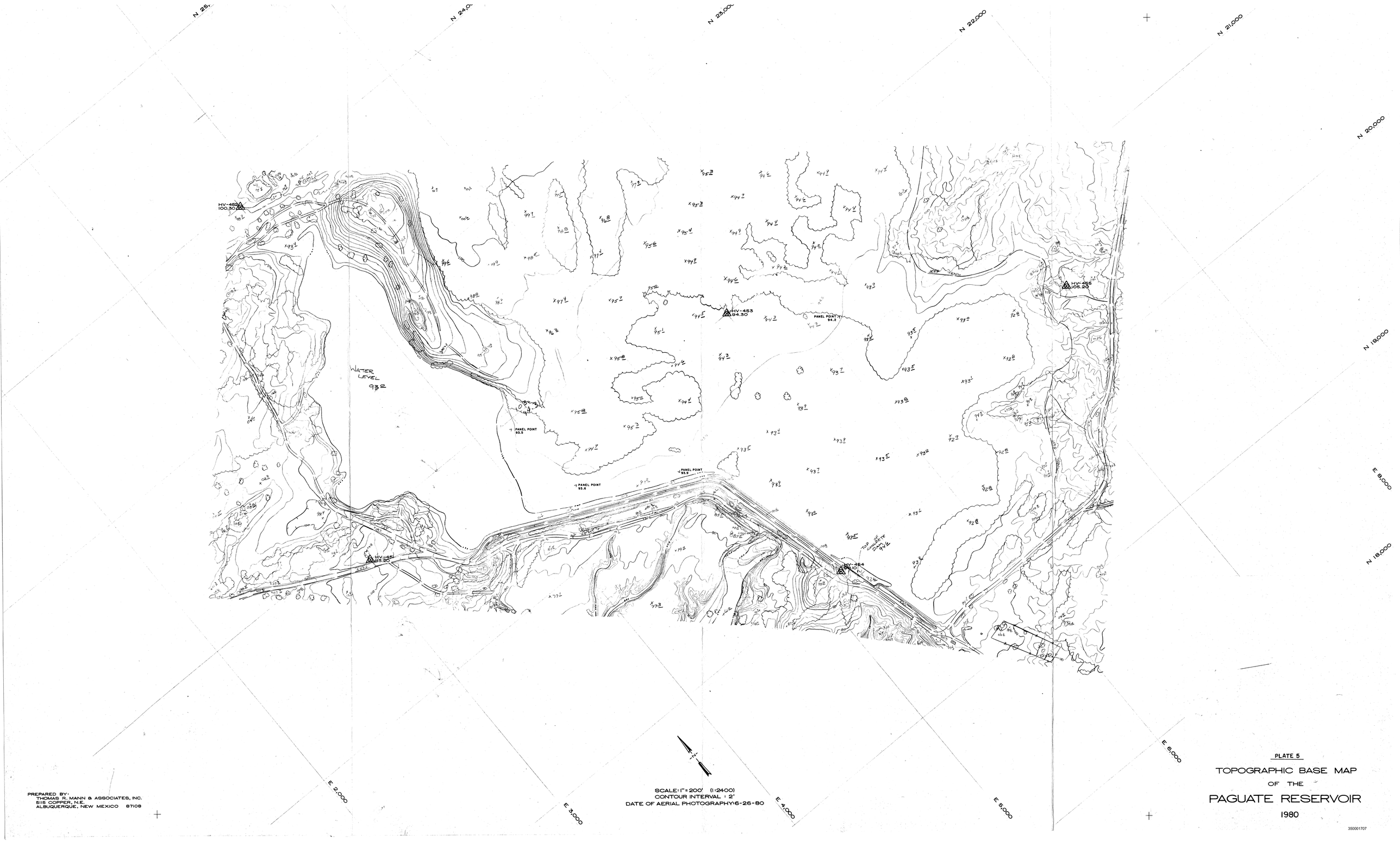
500' 0 500' 1000' 1500'

CONTOUR INTERVAL 10'
PHOTOGRAPHY DATE JUNE 13, 1978

350001706

NOTE: CONTROL PROVIDED BY DAMES & MOORE.
OLYMPUS AERIAL SURVEYS, INC.-SALT LAKE CITY, UTAH-0066

YEAR 1978

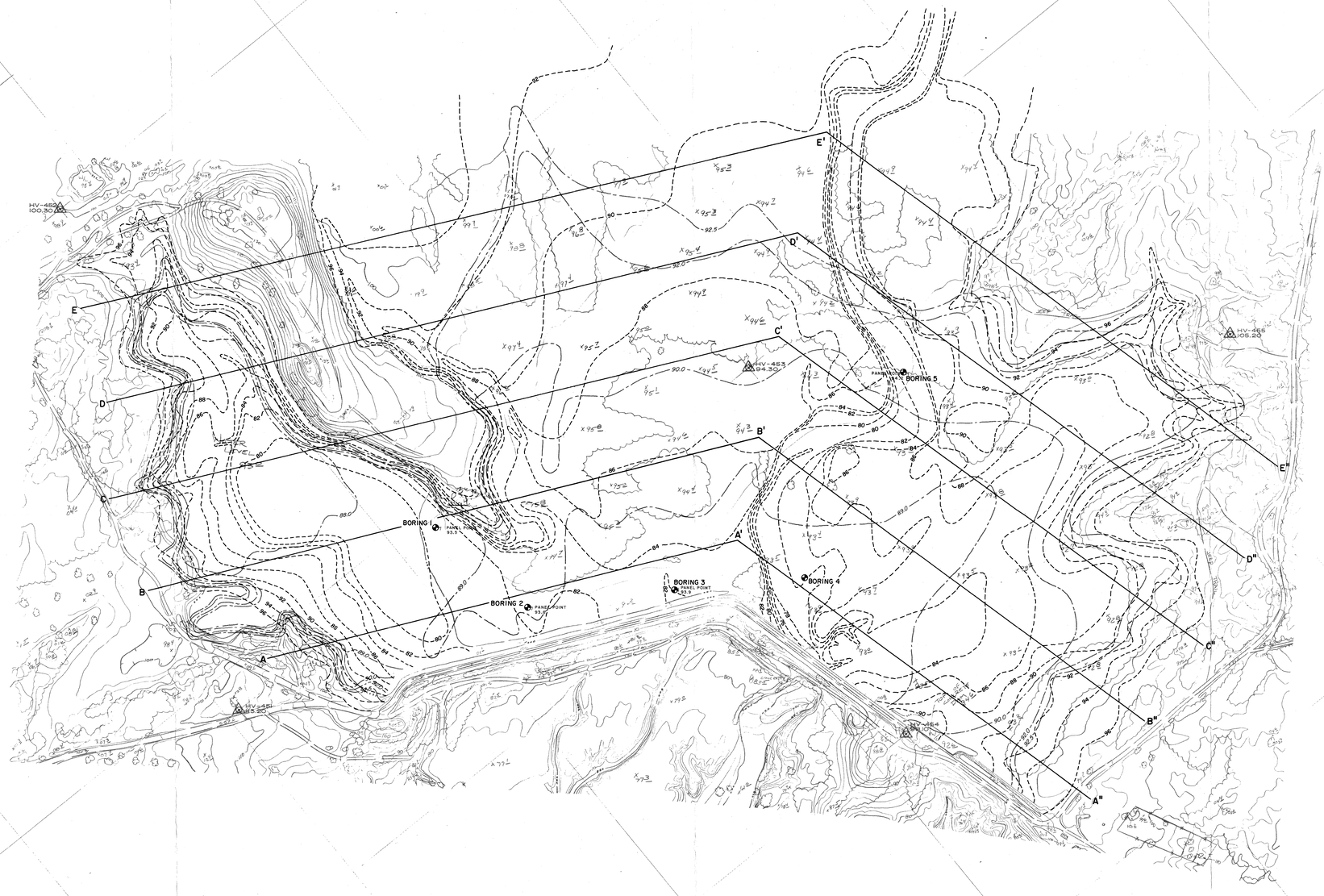



PREPARED BY:
THOMAS R. MANN & ASSOCIATES, INC.
5115 COPPER, N.E.
ALBUQUERQUE, NEW MEXICO 87108

PLATE 5

TOPOGRAPHIC BASE MAP
OF THE
PAGUATE RESERVOIR
1980

350001707




LEGEND

A — A' PROFILE LINE

1938 SURFACE CONTOUR

1949 SURFACE CONTOUR

1980 SURFACE CONTOUR

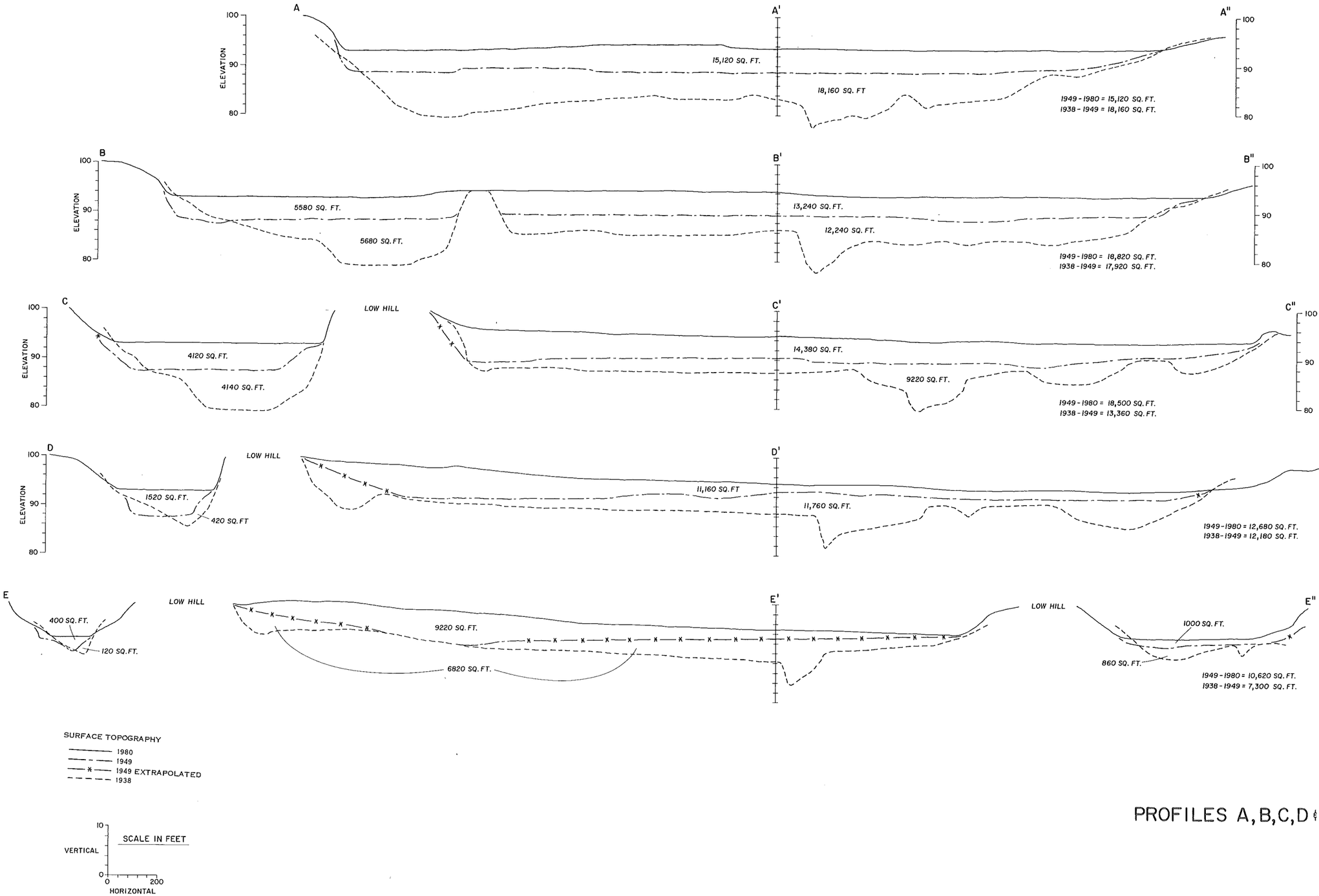
SCALE: 1" = 200' (1:2400)
CONTOUR INTERVAL = 2'
DATE OF AERIAL PHOTOGRAPHY: 6-26-80

PREPARED BY:
THOMAS R. MANN & ASSOCIATES, INC.
515 COPPER, N.E.
ALBUQUERQUE, NEW MEXICO 87108

PLATE 6

# COMPOSITE TOPOGRAPHIC MAP OF THE PAGUATE RESERVOIR 1938, 1949 AND 1980

350001708




# PROFILES A, B, C, D & E

350001709

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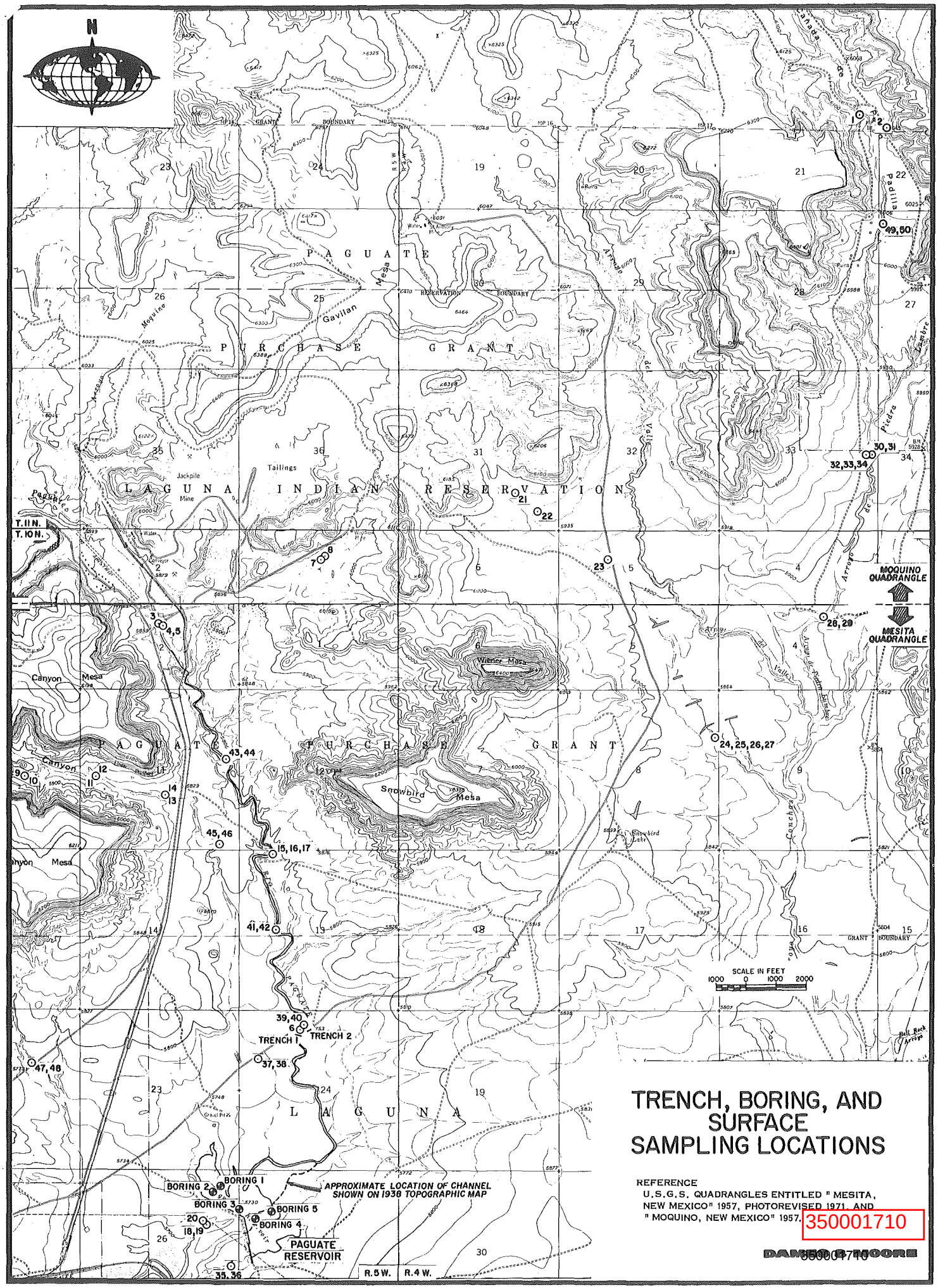
PLATE 7

JOB NUMBER _____ DRAWN BY _____ DATE _____

466.11 (10-79)




# TRENCH, BORING, AND SURFACE SAMPLING LOCATIONS

REFERENCE
U.S.G.S. QUADRANGLES ENTITLED " MESITA, NEW MEXICO" 1957, PHOTOREVISED 1971, AND " MOQUINO, NEW MEXICO" 1957.

350001710

350001710

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PLATE 8

# HYDROLOGY OF THE JACKPILE-PAGUATE MINE AREA, NEW MEXICO

October 9, 1981

Prepared for:

ANACONDA Copper Company
P. O. Box 638
Grants, New Mexico 87020

Project No. 1240-81

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350001711

Submitted by:

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350001711

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350001714

# 1.0 SUMMARY

1. Rio Paguate and Rio Moquino drain approximately 107 square miles above the southern boundary of the Jackpile-Paguate Mine. The USGS gaged Rio Paguate about 2 miles north of Paguate Village where the average flow for 1937-41 was about 760 gpm. A USGS gage is currently located on Rio Paguate 1.4 miles south of the confluence with Rio Moquino. The average flow from 1976-1980 has been about 580 gpm.

2. Several streamflow surveys have been conducted by HSI and USGS. The surveys conducted during periods of low evapotranspiration (October-March) show a net gain across the mine of 43-135 gpm. However, the HSI survey conducted in July of 1980, the time of year when evapotranspiration is near a maximum, showed a net loss across the mine of about 83 gpm.

3. Few standing water bodies occur in the vicinity of the mine because of low runoff and high evaporation rates.

4. The primary interaction between surface water and ground water occurs in the unconsolidated alluvium deposits along the stream channels. In the area of the confluence of Rio Moquino and Rio Paguate, the stream deposits act as a mixing zone between water on the surface and ground water discharging from the underlying Jackpile sandstone.

5. Water quality of the streams degrades progressively from their sources in the canyons above the mine to the boundaries of the mine. This degradation, as observed in chemical, radiological and electrical conductivity surveys taken by HSI, is related primarily to the geologic materials traversed, and secondarily to the influences of man.

   Degradation in water quality continues through the mine area, primarily due to concentration by evapotranspiration.

6. Rio Moquino is high in concentration of dissolved constituents in comparison to upper Rio Paguate. Below the confluence, the Rio Paguate water is relatively high in dissolved constituents, showing the influence of admixed Rio Moquino water.

7. The net effects of mining and reclamation on the hydrology of the Jackpile-Paguate mine area can only be inferred because of the general lack of specific pre-mining hydrologic data.

The most obvious effect of mining activities is the alteration of the stream courses. A second, perhaps less obvious effect, is a possible slight decrease in streamflow due to decrease in discharge of ground water from the Jackpile sandstone ground-water system. This is due to diversion of ground water by the mining operations.

Reclamation should not have much effect on streamflow, considering that most flow originates upstream and offsite and that mining does not result in disappearance of streamflow. Eventual recovery of the ground-water system in the Jackpile sandstone and backfill materials could result in a slight increase in streamflow from current levels due to increased discharge from the ground-water system to the streams.

Results of an extensive sampling-analysis program indicate that ground water in the Jackpile sandstone has not been degraded from chemical and radiological standpoints as a result of mining activities.

Laboratory equilibration experiments using backfill material and P-10 underground water showed that even under worst-case conditions, ground-water quality after reaction with backfill materials could be expected to fall within the limits already observed for ground water within the mine.

Results of stream surveys indicate that the chemical quality of Rio Paguate and Rio Moquino waters has not been degraded to a noticeable extent as a result of mining activities. Radiological quality of the surface waters may have been affected by mining activity, but the extent cannot be determined because pre-mining concentrations of radioactivity in the stream waters are not known.

## 2.0 INTRODUCTION

This report presents results of a detailed field and office investigation of the surface water hydrology and related aspects of ground-water hydrology of the Jackpile-Paguate mine and vicinity. The Jackpile-Paguate mine is operated by Anaconda Copper Company (Anaconda), and is located 7 miles northeast of the village of Laguna, Valencia County, New Mexico (Figure 1).

Hydro-Search, Inc. (HSI) was engaged by Anaconda to collect hydrologic data at the mine starting in March 1977. This initial work resulted in a report on the hydrogeologic relationships of the Rabbit Ear and P-10 holding ponds (HSI, 1979). HSI has since collected additional ground- and surface water data at and in the vicinity of the mine, including the construction of 37 hydrologic test wells in the summer and fall of 1980. The data from these wells were used as a basis for a report on the ground-water hydrology of the Jackpile-Paguate mine (HSI, 1981). In the future, the test wells will be used to monitor post-mining ground-water conditions. Hydrologic data had previously been collected intermittently by other groups and agencies, principally Anaconda.

Surface water surveys were conducted by HSI on Seboyetita Creek, Rio Moquino, and Rio Paguate. These surveys started at the origins of the streams on the flanks of Mount Taylor and extended to the southern mine boundary



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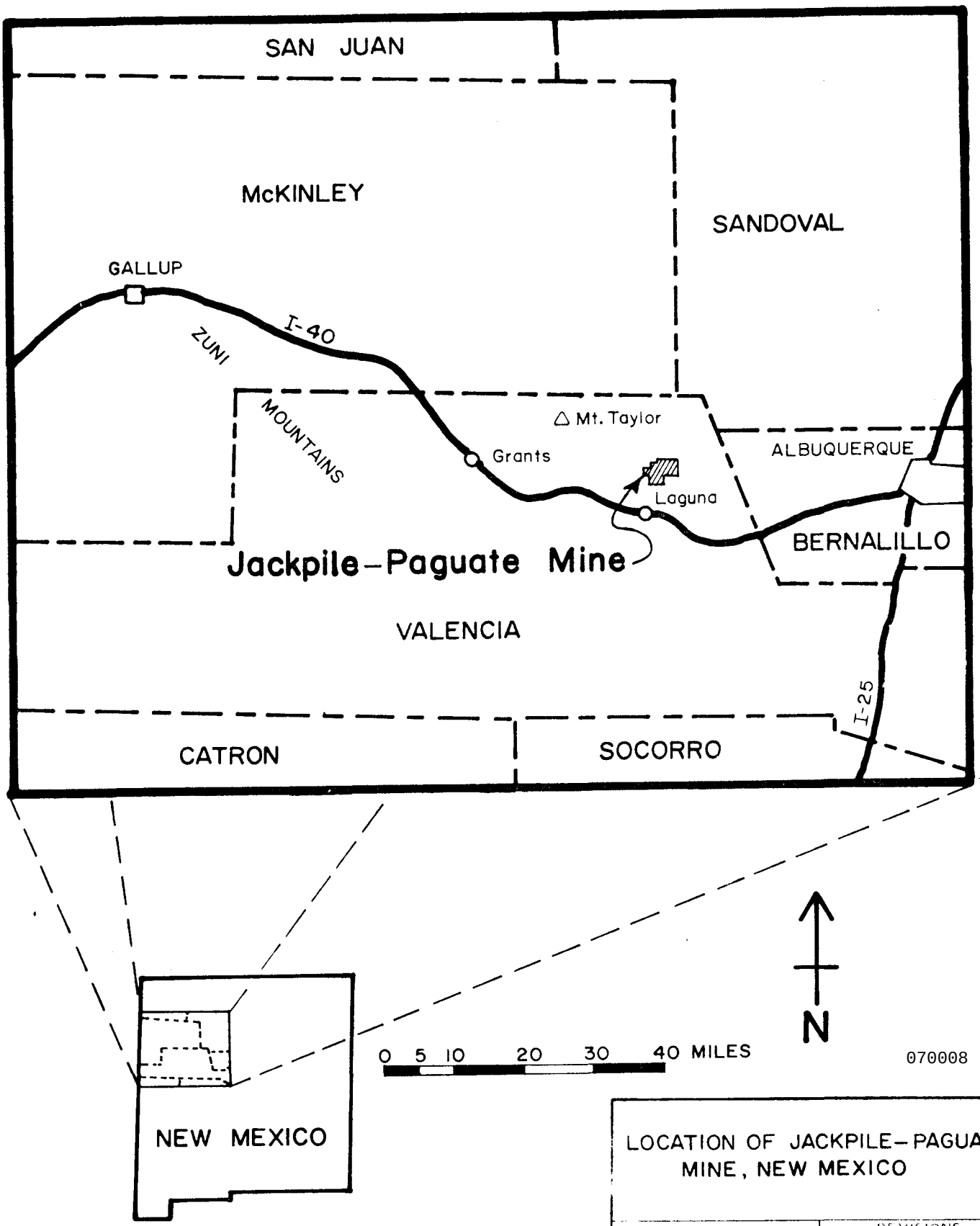


LOCATION OF JACKPILE-PAGUATE MINE, NEW MEXICO

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | 350001718 |

Hydro-Search, Inc.
CONSULTING HYDROLOGISTS-GEOLOGISTS
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FIGURE 1

beyond which Rio Paguate only occasionally flows. The surveys included field measurement of electrical conductivity of stream waters (Chapter 5.0), sampling for water chemistry determinations (Chapter 5.0), and determination of flow rates of the Paguate and Moquino within the mine property (Section 3.3). These data, along with existing data from Anaconda files and published geologic and hydrologic information, form the basis for this report. Sources of information are listed in Chapter 7.0.

Messrs. Philip P. Ross, senior hydrologist; Randall J. Bargelt, hydrogeologist; and Thomas K. Wheeler, senior hydrogeologist prepared this report. Dr. John V.A. Sharp, principal hydrologist, reviewed and submitted the report.

## 3.0 SURFACE WATER HYDROLOGY

Rio Paguate and Rio Moquino drain approximately 107 square miles above the southern boundary of the Jackpile-Paguate Mine. The streams drain the eastern flank of Mt. Taylor and are intermittent in their uppermost reaches. Downstream some reaches are intermittent while others flow year-round. The minor tributaries of these streams are ephemeral, contributing flow only at times of high runoff from rainfall or snowmelt.

Rio Moquino joins Rio Paguate at about the center of the mine area. Rio Paguate is then tributary to Rio San Jose which drains into Rio Puerco in west-central New Mexico. Rio Puerco, in turn, discharges into Rio Grande approximately 60 miles southeast of the mine.

Average annual precipitation at Laguna is 9.46 inches based on 48 years of U. S. Weather Service data. Approximately 50-60 percent of this precipitation is the result of summer thunderstorms during the period July through September. Rainfall increases northward from Laguna to about 14 inches at the heads of Rio Paguate and Rio Moquino and about 30 inches near the summit of Mount Taylor.

Standing surface water bodies are rare owing to high evaporation rates and the scarcity of precipitation. Artificial stock ponds and irrigation holding reservoirs make up the majority of the water bodies.

## 3.1 WATERSHED CHARACTERISTICS

### 3.1.1 Rio Moquino

Rio Moquino heads in Seboyeta Canyon as springs issuing from the upper part of the Point Lookout Sandstone and traverses about 3 miles of Cretaceous sandstones and shales (Plate II). Rio Moquino has cut deeply into the sedimentary rocks and alluvium and the channel is steep and narrow within the canyon.

Just upstream of the village of Moquino, the channel of Seboyetita Creek joins Rio Moquino. Seboyetita Creek heads as spring flow in Bibo Canyon and traverses the same sedimentary rock sequence as Rio Moquino. Most of the base flow is diverted for irrigation about 3.3 miles downstream of the origin and the small amount of flow left in the channel disappears about 1 mile above the confluence (Section 3.2).

An ephemeral tributary to Rio Moquino drains the area east of Seboyeta Peak and joins Rio Moquino one-half mile north of the mine boundary. At the time observations were made on August 5, 1980, no surface water from this drainage was flowing into the Moquino. The Sohio mine tailings pond is located in this drainage, however the pond had no visible outlet and there was no evidence of surface leakage.

The course of Rio Moquino within the mine was relocated by placing excavated

material in and along both sides of the original channel (Anaconda, 1980, Plate 4.2-1). As observed from the U.S. Geological Survey (USGS) Moquino topographic quadrangle and an air photo dated 1951 (Anaconda, 1980, Plate 3.1-1), the pre-mining stream channel followed a meandering course through the mine. The present course of Rio Moquino is relatively straight, having been moved from its original location into a natural tributary to the east.

### 3.1.2 Rio Paguate

Rio Paguate heads in Bear Canyon and issues from a series of springs and seeps at the contact between the Quaternary-Tertiary basalts and the underlying Cretaceous sedimentary rocks. Downstream from the origin another spring-fed stream enters from a canyon to the northeast. Rio Paguate flows through the sedimentary rock sequence for a distance of about 3 miles. As the Paguate exits Bear Canyon, it flows into a broad area of colluvium. The stream then flows into the alluvium where some of the flow is diverted for irrigation. Downstream of the irrigation diversion, the gradient decreases and the channel becomes relatively wide and shallow. Just west of the mine, irrigation runoff is returned to Rio Paguate, and the channel becomes deeply incised in the alluvium.

Rio Paguate has been relocated by plan over a length of about 6,000 feet in the western portion of the mine to permit mining of the Jackpile

sandstone beneath the natural channel. The original channel was blocked by backfill and the stream has been diverted into a new channel to the south. The channel is constructed of compacted backfill, compacted impervious clay, and riprap with a design flow capacity of 7,000 cubic feet per second (Herkenhoff, 1973). The downstream end of the channel does not return to the original Rio Paguate channel, but discharges into an ephemeral drainage to the south. This diversion caused the confluence with Rio Moquino to move approximately 300 feet downstream of its pre-mining location.

Rio Paguate widens below its confluence with Rio Moquino. In this area, the underlying consolidated rock (Jackpile sandstone, Brushy Basin member of the Morrison Formation) is near the surface and the channel is much less incised. As the Paguate leaves the mine, ephemeral tributaries enter from the east and northeast, and the alluvium becomes thicker and the stream valley wider.

### 3.2 STREAMFLOW

During the period 1937-1941, the USGS gaged Rio Paguate 2 miles northwest of Paguate Village (Plate II). The average flow rate for that period was about 760 gpm.

Currently, the USGS is operating a recording gage on Rio Paguate at the Atchison, Topeka and Santa Fe Railway bridge, 1.4 miles south of the

confluence with Rio Moquino. The monitoring of this gage began in late March of 1976, and the average flow rate has been about 580 gpm.

The average flow rates of the two stations are not strictly comparable. First, the periods of record are different, and precipitation conditions during the periods may have been different. Second, land use between the two sites has changed, including the uranium mining operations commencing in 1952 and possible changes in irrigation above the mine area.

Factors that affect the streamflow between the two stations include: diversion and return of irrigation water, natural discharge of ground water from the Jackpile sandstone (HSI, 1981, Section 4.2) to the stream, evapotranspiration losses along the channel, and inflow of Rio Moquino and ephemeral streams.

Some general trends in streamflow can be gleaned from the USGS data. The months of moderate flow (about 450 to 1350 gpm) are January to March. During this period the area is subjected to winter frontal-storm activity and evapotranspiration is low. March and April show periods of elevated flow owing to snowpack runoff. June and July have the lowest average flow (less than 200 gpm) owing to the high evapotranspiration and low precipitation rates during these months. May is generally a transition period between the winter and spring runoff and summer base flow. Late July, August and September have short-term high peak flows which are caused

by thundershower activity. However, base flow during this period is low. October, November, and December are months of low to moderate flow (200 to 500 gpm) and are characterized by generally low precipitation and evapotranspiration rates.

HSI examined the streams above the Jackpile-Paguate Mine in detail by walking out the channels during the low base flow period of August and September, 1980. The following discusses the results of this survey.

Rio Moquino

Flow began at the head of Seboyeta Canyon, increasing in the area of the springs to about 400-500 gpm (September 11, 1980) (Plate II). About 2 miles downstream, part of the flow was diverted for irrigation. At the time of the survey, the flow in the main channel just north of the village of Moquino was estimated to be 2-3 gpm. Flow increased through Moquino, possibly due to underflow from Seboyetita Creek or from dispersed irrigation return flow.

Rio Moquino was intermittent across the upper part of the mine. This was due to discharge from the stream to permeable bed materials and indirect discharge from the stream by phreatophytes. The flow became continuous above the confluence with Rio Paguate due to discharge to the stream from the bed materials.




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Seboyetita Creek

Springs and seeps at the head of Seboyetita Creek contribute water to the stream over a distance of approximately one-third of a mile. On August 23, 1980, the flow of the fully formed stream was estimated to be approximately 450 gpm and appeared to be constant until diverted for irrigation about 2.2 miles downstream from its origin. At this point, the flow in the main channel decreased and eventually ceased just downstream of sample location SC6 (Plate II).

Rio Paguate

Rio Paguate originates at the contact of Quaternary-Tertiary basalts and the underlying Cretaceous sedimentary rocks. Springs and seeps occur over a distance of about 0.7 mile along the drainage (Plate II). The total flow at the lower end of this seep area was estimated to be approximately 200 gpm on August 1, 1980. Within the seep area, some of the flow was diverted into three stock ponds in the channel. Below this point, discharge remained fairly constant until a spring-fed stream entered the Paguate from the northeast about 2.0 miles from its origin. The streamflow below the confluence was about 1,200 gpm and decreased gradually across the colluvium to about 800 gpm where it was diverted for irrigation. The flow left in the main channel after diversion was about 100 gpm. An irrigation return canal, 25 feet downstream from sample location RP11

west of Paguate Village (Plate II), increased the overall streamflow by approximately 80 gpm.

The flow of Rio Paguate decreased as it traversed the mine property to the vicinity of its confluence with Rio Moquino. In the area of the confluence, flow increased due to the discharge of ground water to the streams (Section 3.3). About one-quarter of a mile south of the mine, the flow ceased as a result of infiltration into the sediments of the stream bed. Aerial inspection of the channel on August 29, 1980 indicated that the channel was dry to Mesita Reservoir.

## 3.3 FLOW SURVEYS

HSI has conducted several flow surveys on Rio Moquino and Rio Paguate within the mine. Surveys were conducted October 29-November 1, 1977 (HSI, 1979), September 12-14, 1978 (HSI, 1979), and July 15-18, 1980. The surveys of 1977 and 1980 utilized 90° V-notch weirs to measure flow rates at specific points. The 1978 survey was a follow-up to the 1977 survey to identify gaining and losing stretches by visually estimating flows and to obtain additional water chemistry data. The 1977 and 1980 surveys are discussed below.

### October-November 1977 Survey

Two weirs were installed on Rio Paguate, one at the western boundary of the mine and one just below the road ford near the south gate. Another

weir was installed on Rio Moquino at the northern boundary of the mine. The average net gain in surface flow through the mine at the time of this survey was 43 gpm (HSI, 1979). During the 1977 survey, Rio Moquino flowed without interruption from the northern mine boundary to the confluence with Rio Paguate. The channel of upper Rio Paguate was dry in two places, both within 2,500 feet of the confluence.

July 15-18, 1980 Survey

This survey included eight stations (Plate III). Two stations were established on Rio Moquino (RM); a weir was constructed on bedrock at the northern mine boundary, RM104, and the second station, RM105, was located at culverts under the main haul road about 300 feet upstream from the confluence with Rio Paguate. The flow at RM105 was diverted through a pipe and was measured with a bucket and stopwatch.

Four streamflow measuring sites were constructed on Rio Paguate (RP). Three of the stations, RP104, RP105, and RP106, were built in culverts by damming the downstream end of the culvert and diverting flow into a discharge pipe. A bucket and stopwatch were used to measure the flow. The fourth station, RP107, consisted of a weir constructed in the alluvium.

Two stations, RP108 and RP109, were used to measure the flow downstream from the confluence. At RP108, a weir was constructed in the alluvium, and the stage was measured with a staff gage. RP109 was located on bed-

rock (sandstone of the Brushy Basin Member of the Morrison Formation) below the ford crossing near the south gate. The stream was dammed and flow was diverted into a discharge pipe. A bucket and stopwatch were used to measure the flow.

Five measurements were taken at approximately the same time each day for four consecutive days at each of the stations. A mean flow rate was calculated for each measurement time. From these averages, a mean daily flow rate was calculated for each location (Plate III). These calculations show an average gain in flow through the confluence area of 8.7 gpm, a result of ground-water discharge to the streams (HSI, 1979 and 1981). These calculations also show an apparent average loss in flow through the mine at the time of this survey of 82.7 gpm, or about 54 percent of the total incoming flows. The loss is attributed to evapotranspiration. This is a minimum value for the loss because the calculation does not take into account the input to stream flow of ground water which is discharged from the Jackpile sandstone.

Hydrographs were constructed to observe diurnal changes in flow and to compare changes in flow between measurement points (Plate III). The decrease in flow from morning to afternoon along both streams indicates an increasing rate of evapotranspiration.

Hydrographs A and D (Plate III) show the effects of a thundershower that

occurred at approximately 3:00 p.m. on July 18, centered around the confluence of the streams. The measurements at stations RM105, RP108, and RP109 indicate an increase in flow as the runoff moved down the streams. The readings taken between 5:00 p.m. and 6:30 p.m. show that the runoff from the thunderstorm had passed and the flow had returned to rates recorded earlier in the day.

During the July 1980 survey, Rio Paguate flowed uninterrupted along its course in the mine. Rio Moquino, however, was dry in three reaches across the mine owing to infiltration and evapotranspiration. The flow resumed directly from the stream bed. Seeps were not observed on either bank, suggesting that in the intermittent sections of the Moquino the flow is regained from underflow in the stream deposits.

Summary

Available information on net gain and loss in flows through the mine area is summarized below:

| Agency | Period | Flow Condition | Net Gain (+) or Loss (-) |
|---|---|---|---|
| HSI | 7/15-18/80 survey | very low (Paguate 100 yards below road ford = 69.3 gpm) | (-) 82.7 gpm (average) |
| HSI | 10/29-11/1/77 survey | low (Paguate at road ford = 250 gpm) | (+) 43 gpm (average) |
| USGS* | 3/28/75 | moderate (Paguate below mine = 400 gpm) | (+) 110 gpm |
| USGS* | 12/17/74 | moderate (Paguate below mine = 630 gpm) | (+) 50 gpm |
| USGS* | 11/22/74 | moderate (Paguate below mine = 650 gpm) | (+) 135 gpm |

* Source, USGS, Albuquerque, New Mexico (referred to in Dames and Moore, 1976, Table 4.2-1).

The values for net gain and loss include the effects of gain in stream flow due to discharge of ground water from the Jackpile sandstone and loss in stream flow due to evapotranspiration along the channels.

## 3.4 STANDING WATER BODIES

Few standing water bodies occur in the vicinity of the mine because of low runoff and high evaporation rates. Irrigation holding ponds are common, and most are north of the villages of Paguate, Moquino, Bibo, and Seboyeta (Plate II). The ponds are created by placing earthen berms across small ephemeral drainages. These ponds are fed by diversions from Rio

Paguate, Rio Moquino, and Seboyetita Creek (Table 1). Two of the irrigation ponds, known as the Paguate Lakes, are located northwest of Paguate village and are stocked with trout. Two sewage evaporation ponds are located to the southwest and northeast of Paguate village.

Small stock ponds are constructed on ephemeral drainages throughout the area around the mine. Berms of alluvium are pushed across these drainages to collect water during periods of runoff. These stock ponds are normally dry by late summer or early fall.

Holding ponds occur within the mine in excavated pits and contain water that is pumped from the underground workings or from seepage in the open pits. During the history of the mine, these ponds have varied in number, location, area, and depth. The water is either used for dust suppression for the roads within the mine or allowed to evaporate in place. Rabbit Ear and P-10 holding ponds have been reported on previously (HSI, 1979). These ponds no longer exist.

Other mines in the Laguna area have ponds used in conjunction with their operations. The Sohio mine has a tailings pond on an ephemeral tributary to Rio Moquino about 2.4 miles northeast of Moquino village (Plate II).

Mesita Reservoir, south of the mine, had no surface water flowing into

Table 1. Summary of Standing Water Bodies not in the Jackpile-Paguate Mine Area, Survey of August 1-5, 1980.

| Reference Number | Standing Water Body | Date | Source | Approximate Percent Full | Comments |
|---|---|---|---|---|---|
| SB-1 | Mesita Reservoir | 8/5 | Rio Paguate | 1 | Mostly marsh area; no inflow at this time; sheep grazing |
| SB-2 | Stock Pond | 8/1 | Well | Dry | |
| SB-3 | Paguate Lake North | 8/2 | Rio Paguate Irrigation | 50 | |
| SB-4 | Paguate Lake South | 8/2 | Rio Paguate Irrigation | 50 | |
| SB-5 | Paguate Sewage Pond | 8/1 | Sewer System | 75 | Evaporation ponds |
| SB-6 | Paguate Sewage Pond | 8/5 | Sewer System | 80 | Lush vegetation east of ponds |
| SB-7 | Stock Pond | 8/1 | Intermittent Creek | Dry | |
| SB-8 | Stock Pond | 8/2 | Rio Moquino | Dry | West end of dike is washed out |
| SB-9 | Irrigation Pond | 8/2 | Seboyetita Creek | 25 | Irrigation canal |
| SB-10 | Irrigation Pond | 8/2 | Rio Moquino | 25 | Irrigation canal |
| SB-11 | Stock Pond | 8/2 | Ditch from Rio Moquino Springs in Pond | 25 | Upwelling of springs in northwest area of pond |
| SB-12 | Stock Pond | 8/2 | Rio Moquino | Dry | |
| SB-13 | Stock Pond | 8/2 | Seboyetita Creek | Dry | |
| SB-14 | Stock Pond | 8/2 | Drainage NW of Pond | Dry | Newly renovated |
| SB-15 | Stock Pond | 8/2 | Drainage | Dry | Dike is breached |
| SB-16 | Stock Pond | 8/5 | Culvert trending NW-SE | Dry | |
| SB-17 | Tailings Pond | 8/5 | Wells | 60 | Sohio |




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it at the time of observation, August 5, 1980. The reservoir's capacity to store water has been significantly reduced by sedimentation, the majority of which occurred prior to mining activity (Anaconda, 1980, p.32). Approximately 90 percent of the reservoir is now marsh land and is used primarily for grazing by domestic animals. A small pool of water existed at the concrete dam at the south end of the reservoir on August 5, 1980.





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# 4.0 SURFACE WATER-GROUND WATER RELATIONSHIPS

## 4.1 INTERACTION BETWEEN SURFACE WATER AND GROUND WATER IN CONSOLIDATED ROCKS

The initial interaction between surface water and ground water occurs in the uppermost reaches of the streams above the spring source areas where the streams flow over volcanic rocks (Plate II). Surface flow in these upper reaches is intermittent, occurring during spring runoff of melting snow and during the periods of intense summer rainfall. Some of this surface water infiltrates into the volcanic rocks through fractures along the stream beds. The water is transmitted downward toward the underlying Cretaceous sedimentary rocks through fracture systems. Ground water moves laterally through fractures in the lower part of the basalts, through permeable materials which may occur at the interface with the sedimentary rocks, and through the uppermost permeable sedimentary rocks. This water is then released to the streams as springs at or near the contact of the volcanics and sedimentary rocks. These springs are the source of base flow for the perennial streams. The discharge of these springs probably varies seasonally, but measurements are not available to establish this variation.

Interaction also occurs as the streams traverse the Upper Cretaceous shales and sandstones in the canyons. During periods of spring runoff or intense rainfall runoff, water from the streams probably recharges




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the sandstones to a limited extent. During low-flow periods, some of this water would be discharged back to the streams and, thereby, would contribute to the base flow of the streams.

From the mouths of the canyons to the mine boundary, the Mancos Shale predominates and little direct transfer of water occurs between the streams and the Mancos. However, interchange may occur where the Three Sisters Sandstones and Dakota Sandstone are in contact with the streams.

Within the mine, water in the Jackpile sandstone interchanges with water in the streams. This interaction occurs where the Jackpile is in contact with the streams or is directly overlain by stream deposits. The principal discharge area for the Jackpile sandstone ground-water system is in the vicinity of the confluence of Rio Paguate and Rio Moquino where the Jackpile is closest to the surface (HSI, 1981).

The reader is referred to the HSI report of 1981 for a complete discussion of the ground-water hydrology of the Jackpile-Paguate Mine. The findings of this report are included herein as Appendix A.

## 4.2 INTERACTION BETWEEN SURFACE WATER AND GROUND WATER IN UNCONSOLIATED SEDIMENTS

Alluvium and colluvium comprise the unconsolidated sediments that are in contact with the surface water of the Rio Paguate watershed. The relatively higher porosity and permeability of the unconsolidated materials

permit a greater degree of communication than is possible with the consolidated rocks.

Along the stream channels, unconsolidated stream deposits act as a buffer zone between surface water and ground water in the underlying consolidated rocks. During periods of medium to high flows, stream water enters the alluvium and probably locally recharges the Jackpile sandstone. During periods of low flow, the streams receive water from the alluvium. In turn, the alluvium receives water from the underlying Jackpile sandstone.

Interaction between the streams and unconsolidated sediments also occurs when surface flows are diverted for irrigation upstream of the mine. The water is spread on the fields and that which is not used by plants or evaporated from the soil surface, percolates through the soil and eventually returns to the streams as seepage.

Leakage from man-made ponds and waste disposal systems may also enter the shallow ground-water body and contribute to stream flow.

In the summer months, phreatophytes, which are particularly abundant along the lower stream reaches in the mine area, act as catalysts in the interaction between surface water and ground water. During the heat of the day, the plants remove large quantities of water from the alluvium by transpiration. This induces infiltration into the alluvium and stream

flow rates decrease (Plate III). At night, transpiration decreases and flows in the streams increase. In summary, transpiration and evaporation from the free water surface and wet stream alluvium combine to produce a diurnal fluctuation in flow. These processes also have the effects of precipitating mineral salts and concentrating dissolved chemical constituents in the surface and subjacent ground waters.




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# 5.0 WATER QUALITY

The assessment of water quality is based on data collected by HSI. These data include: 1) an electrical conductivity survey of Rio Moquino, Seboyetita Creek, and Rio Paguate (Plate II, Figures 2-4); 2) a chemical and radiological survey of surface water (Plate IV, Tables 2 and 3) and ground water (Plate V, Tables 5 and 6) on and off the mine; 3) results of a laboratory dissolution investigation using distilled water and salt deposits collected along the Moquino and Paguate and materials derived from several stockpiles along the Paguate (Section 5.1.4); and 4) results of a laboratory equilibration investigation using waste dump and protore materials and P-10 underground water (Section 5.2.4).

This assessment is generally applicable to base flow conditions. The streams are at base flow for most of the year (Section 3.2), and this is the flow condition generally associated with peak concentrations of dissolved chemical constituents.

## 5.1 SURFACE WATER

The chemical quality of the streams generally degrades as they flow from their sources in the canyons to the confluence of Rio Moquino and Rio Paguate. This degradation is related primarily to the geologic materials traversed by the streams and secondarily to the influences of man. Plate II shows the sample locations and values obtained from the electrical

conductivity (EC) survey. Figures 2 through 4 show the relationship of EC to external influences as the streams progress downstream. Plate IV graphically depicts the chemistry of the streams at their sample points by showing the major cations and anions. The chemical and radiologic data upon which this assessment is based are listed in Tables 2 and 3.

5.1.1 Rio Moquino

Surveys of the Moquino were taken on August 2, 1980 (chemical-samples RM100-RM104, Table 2) and September 11, 1980 (EC-RM1-RM11, Plate II). Near its low-flow source, Rio Moquino water was a calcium bicarbonate type with a total dissolved solids concentration (TDS) of 259 milligrams per liter (mg/l) (RM100, Table 2; Plate IV) and an EC of 360 micromhos per centimeter at 25° C (μm) (RM1, Figure 2).

As Rio Moquino traversed the Upper Cretaceous sedimentary rocks of Seboyeta Canyon, the chemical composition of the water changed very little. However, just below RM3 (RM101 of the chemical survey), streamflow was diverted for irrigation and the small amount of flowing water left in the main channel downstream at RM4 showed an increase in EC to 850 μm (Figure 2). The chemical sample taken farther downstream at RM102 (RM5 of the EC survey) showed a change in water chemistry to a predominantly calcium sulfate type and a degradation in TDS to 999 mg/l (Table 2, Plate IV). EC at RM5 was 1150 μm (Figure 2, Plate II). The degradation between RM3

Table 2. Dissolved Constituents, Rio Paguate, Rio Moquino, and Seboyetita Creek, Jackpile-Paguate Mine Area, New Mexico, August 1, 2, 4, 1980.



| Constituent | Detection Limit | 8/2/80 Rio Moquino RM 100 | RM 101 | RM 102 | RM 103 | RM 104 |
|---|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 17.0 | 22.0 | 20.0 | 31.3 | 26.5 |
| pH, lab | | 8.0 | 8.5 | 7.9 | 8.3 | 8.3 |
| Total Dissolved Solids (evap/calc) | | 230/259 | 193/201 | 972/999 | 1040/1032 | 1630/1649 |
| Electrical Conductivity, lab | | 324 | 317 | 1320 | 1500 | 2540 |
| $HCO_3$ | 0.1 | 236 | 115 | 306 | 108 | 159 |
| $CO_3$ | 0.1 | ND | 25 | ND | 13 | 13 |
| Cl | 3.0 | 14 | 9.8 | 11 | 22 | 21 |
| $SO_4$ | 4.0 | ND | 5.0 | 500 | 626 | 1040 |
| F | 0.1 | 0.3 | 0.4 | 0.3 | 0.4 | 0.4 |
| $NO_3$ | 0.1 | ND | ND | 0.2 | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND |
| Na | 1.0 | 35 | 20 | 106 | 100 | 225 |
| K | 1.0 | 10 | 10 | 12 | 18 | 20 |
| Ca | 1.0 | 44 | 34 | 144 | 121 | 121 |
| Mg | 1.0 | 3.4 | 7.6 | 49 | 60 | 111 |
| $SiO_2$ | 1.0 | 37 | 32 | 25 | 18 | 19 |
| As | 0.01 | ND | ND | ND | ND | ND |
| Ba | 0.05 | 0.12 | 0.13 | 0.62 | 0.43 | 0.51 |
| Be | 0.01 | ND | ND | ND | ND | ND |
| Cd | 0.002 | ND | ND | 0.002 | ND | ND |
| Cr | 0.02 | ND | ND | ND | ND | ND |
| Cl | 0.01 | --- | --- | --- | --- | --- |
| Pb | 0.05 | ND | ND | ND | ND | ND |
| Hg | 0.0002 | ND | ND | ND | ND | ND |
| Se | 0.002 | 0.002 | ND | ND | ND | 0.002 |
| Ag | 0.005 | ND | ND | ND | ND | 0.006 |
| Cu | 0.005 | ND | ND | ND | 0.024 | ND |
| Fe | 0.01 | 0.01 | ND | 0.02 | 0.02 | 0.01 |
| Mn | 0.005 | 0.007 | ND | 0.011 | 0.011 | 0.009 |
| Phenols | 0.005 | --- | --- | --- | --- | --- |
| Zn | 0.01 | ND | ND | ND | ND | ND |
| Al | 0.1 | ND | ND | ND | ND | ND |
| B | 0.05 | ND | 0.17 | 0.24 | 0.13 | 0.23 |
| Co | 0.01 | ND | ND | ND | ND | ND |
| Mo | 0.05 | ND | ND | ND | ND | ND |
| Ni | 0.02 | ND | ND | 0.03 | 0.02 | 0.03 |
| V | 0.05 | ND | ND | ND | ND | ND |
| Radiologic | | | | | | |
| $^{226}Ra$ (pCi/l $\pm$ 2$\sigma$) | 0.03 | 0.13$\pm$0.03 | 0.05$\pm$0.03 | 0.04$\pm$0.03 | 0.04$\pm$0.03 | 0.19$\pm$0.03 |
| $^{228}Ra$ (pCi/l $\pm$ 2$\sigma$) | 1 to 2 | ND | ND | ND | ND | ND |
| U(mg/l $\pm$ 2$\sigma$) | 0.01 | ND | ND | ND | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2$\sigma$ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

See Plate IV for chemical quality diagrams.





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Table 2. Dissolved Constituents, Rio Paguate, Rio Moquino, and Seboyetita Creek, Jackpile-Paguate Mine Area, New Mexico, August 1, 2, 4, 1980 (Cont'd).



| Constituent | Detection Limit | 8/4/80 Seboyetita Creek SC 100 | SC 101 |
|---|---|---|---|
| Temperature, field (Celsius) | | 18.2 | 26.5 |
| pH, lab | | 8.0 | 8.3 |
| Total Dissolved Solids (evap/calc) | | 184/203 | 580/572 |
| Electrical Conductivity, lab | | 286 | 907 |
| $HCO_3$ | 0.1 | 160 | 159 |
| $CO_3$ | 0.1 | ND | 6.0 |
| Cl | 3.0 | 11 | 25 |
| $SO_4$ | 4.0 | 10 | 267 |
| F | 0.1 | 0.2 | 0.2 |
| $NO_3$ | 0.1 | ND | ND |
| $PO_4$ | 0.03 | ND | ND |
| Na | 1.0 | 10 | 28 |
| K | 1.0 | 13 | 11 |
| Ca | 1.0 | 23 | 102 |
| Mg | 1.0 | 15 | 26 |
| $SiO_2$ | 1.0 | 41 | 28 |
| As | 0.01 | ND | ND |
| Ba | 0.05 | 0.33 | 0.17 |
| Be | 0.01 | ND | ND |
| Cd | 0.002 | ND | ND |
| Cr | 0.02 | ND | ND |
| Cl | 0.01 | --- | --- |
| Pb | 0.05 | ND | ND |
| Hg | 0.0002 | ND | ND |
| Se | 0.002 | ND | ND |
| Ag | 0.005 | ND | ND |
| Cu | 0.005 | ND | 0.005 |
| Fe | 0.01 | 0.01 | 0.02 |
| Mn | 0.005 | 0.008 | 0.007 |
| Phenols | 0.005 | --- | --- |
| Zn | 0.01 | ND | ND |
| Al | 0.1 | ND | ND |
| B | 0.05 | 0.30 | 0.25 |
| Co | 0.01 | ND | ND |
| Mo | 0.05 | ND | ND |
| Ni | 0.02 | ND | ND |
| V | 0.05 | ND | ND |
| Radiologic | | | |
| $^{226}Ra$ (pCi/l $\pm$ 2$\sigma$) | 0.03 | 0.05$\pm$0.03 | 0.06$\pm$0.03 |
| $^{228}Ra$ (pCi/l $\pm$ 2$\sigma$) | 1 to 2 | ND | ND |
| U(mg/l $\pm$ 2$\sigma$) | 0.01 | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2$\sigma$ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

See Plate IV for chemical quality diagrams.

Table 2. Dissolved Constituents, Rio Paguate, Rio Moquino, and Seboyetita Creek, Jackpile-Paguate Mine Area, New Mexico, August 1, 2, 4, 1980 (Cont'd).



| Constituent | Detection Limit | 8/1/80 Rio Paguate RP 100 | RP 101 | RP 102 | RP 103 |
|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 17.5 | 19.0 | 22.0 | 25.3 |
| pH, lab | | 7.4 | 8.2 | 8.3 | 8.3 |
| Total Dissolved Solids (evap/calc) | | 162/177 | 183/191 | 288/295 | 440/469 |
| Electrical Conductivity, lab | | 238 | 265 | 432 | 680 |
| $HCO_3$ | 0.1 | 140 | 153 | 159 | 293 |
| $CO_3$ | 0.1 | ND | ND | 13 | 19 |
| Cl | 3.0 | 11 | 16 | 29 | 18 |
| $SO_4$ | 4.0 | ND | ND | 38 | 100 |
| F | 0.1 | 0.2 | 0.2 | 0.2 | 0.4 |
| $NO_3$ | 0.1 | ND | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND |
| Na | 1.0 | 15 | 21 | 20 | 30 |
| K | 1.0 | 10 | 10 | 11 | 11 |
| Ca | 1.0 | 22 | 20 | 36 | 89 |
| Mg | 1.0 | 5.4 | 11 | 21 | 26 |
| $SiO_2$ | 1.0 | 44 | 37 | 48 | 30 |
| As | 0.01 | ND | ND | ND | ND |
| Ba | 0.05 | 0.10 | 0.12 | 0.15 | 0.32 |
| Be | 0.01 | ND | ND | ND | ND |
| Cd | 0.002 | 0.002 | ND | ND | ND |
| Cr | 0.02 | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- |
| Pb | 0.05 | ND | ND | ND | 0.01 |
| Hg | 0.0002 | ND | ND | ND | ND |
| Se | 0.002 | 0.002 | 0.002 | ND | ND |
| Ag | 0.005 | ND | ND | ND | ND |
| Cu | 0.005 | 0.22 | 0.005 | 0.016 | ND |
| Fe | 0.01 | 0.10 | 0.02 | 0.02 | 0.01 |
| Mn | 0.005 | 0.045 | 0.008 | 0.006 | 0.015 |
| Phenols | 0.005 | --- | --- | --- | --- |
| Zn | 0.01 | ND | ND | ND | ND |
| Al | 0.1 | ND | ND | ND | ND |
| B | 0.05 | 0.10 | 0.28 | 0.30 | 1.5 |
| Co | 0.01 | ND | ND | ND | ND |
| Mo | 0.05 | ND | ND | ND | ND |
| Ni | 0.02 | ND | ND | ND | ND |
| V | 0.05 | ND | ND | ND | ND |
| Radiologic | | | | | |
| $^{226}Ra$ (pCi/l $\pm$ 2$\sigma$) | 0.03 | 0.16$\pm$0.03 | ND | 0.04$\pm$0.03 | 0.05$\pm$0.03 |
| $^{228}Ra$ (pCi/l $\pm$ 2$\sigma$) | 1 to 2 | ND | ND | ND | ND |
| U(mg/l $\pm$ 2$\sigma$) | 0.01 | ND | ND | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2$\sigma$ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

See Plate IV for chemical quality diagrams.

## EXPLANATION

**RM1-RM13** ⊙ EC DETERMINATION - Plate II.

**(RM100)-(RM105)** CHEMICAL SAMPLE - Tables 2 and 3, Plate IV.

## GEOLOGY

| | |
|---|---|
| Kpu | Upper part of Point Lookout Sandstone |
| Kmsa | Satan Tongue of Mancos Shale |
| Kph | Hosta Tongue of Point Lookout Sandstone |
| Kcg | Gibson Coal Member of Crevasse Canyon Formation |
| Kcd | Dalton Sandstone Member of Crevasse Canyon Formation |
| Kmm | Mulatto Tongue of Mancos Shale |
| Kcdi | Dilco Coal Member of Crevasse Canyon Formation |
| Kg | Gallup Sandstone |
| Km | Mancos Shale |
| $Kms_3$ | Third Sister Sandstone of Mancos Shale |
| $Kms_2$ | Second Sister Sandstone of Mancos Shale |
| $Kms_1$ | First Sister Sandstone of Mancos Shale |
| Kd | Dakota Sandstone |
| Jmj | Jackpile sandstone of Morrison Formation |
| Jmb | Brushy Basin Member of Morrison Formation |

| | |
|---|---|
| sh | shale |
| slst | siltstone |
| mdst | mudstone |
| ls | limestone |

Figure 2. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Rio Moquino, New Mexico, September 11, 1980.

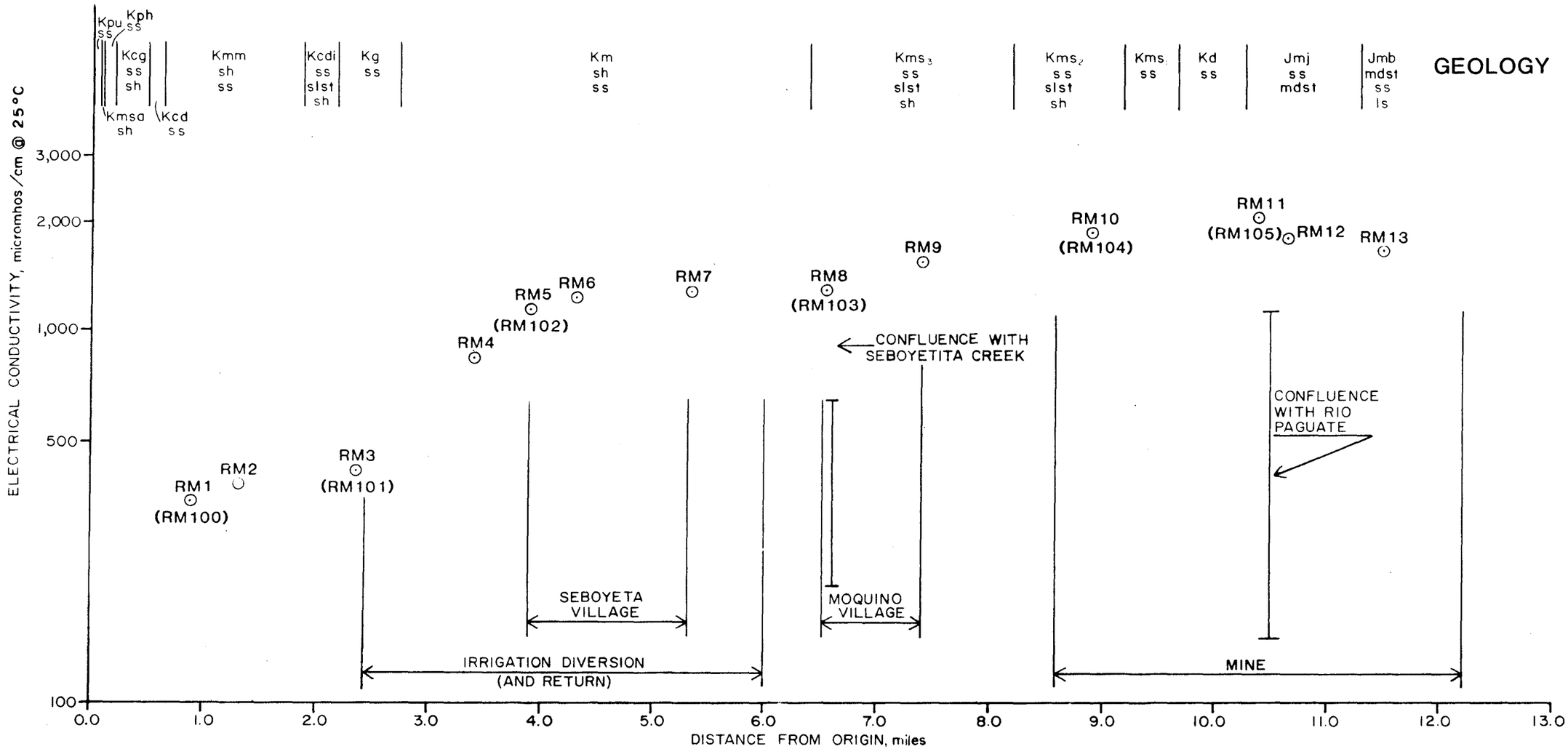


Figure 2. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Rio Moquino, New Mexico, September 11, 1980

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and RM5 may be the result of irrigation return flow, concentration by evaporation of the very low flows, or dissolution of chemical constituents from the Mancos Shale.

As Rio Moquino traversed the alluvium between RM5 and RM8 (RM103 of chemical survey), little degradation occurred in TDS and the chemical type remained calcium sulfate with a decrease in the proportion of bicarbonate. The confluence of Rio Moquino and Seboyetita Creek is just below RM8 and the increase in EC between RM8 and RM9 may be attributable to underflow from Seboyetita. However, the gradual degradation in EC between RM8 (RM103), 9, and 10 (RM104) may also be correlated to the stream's traverse across sediments derived from the Three Sisters Sandstones. The chemistry of Rio Moquino water also made an abrupt change in this reach. RM103 was a calcium sulfate water whereas RM104, just within the mine boundary, was a mixed cation sulfate type, showing an increase in sodium and magnesium.

The water chemistry of Rio Moquino within the mine has been surveyed on three occasions by HSI. The first two of these surveys are discussed in a previous report (HSI, 1979). The third survey was on July 18, 1980, the final day of the stream flow survey of July 15-18, 1980 (Section 3.3).

HSI found on July 18, 1980 that the Moquino increased in TDS from 1617 mg/l to 2451 mg/l between RM104 and RM105 (Table 3). The water type at

Table 3. Dissolved Constituents, Rio Paguate and Rio Moquino, Jackpile-Paguate Mine, New Mexico, July 18, 1980.



| Constituent | Detection Limit | 7/18/80 Rio Moquino RM 103 | RM 104 | RM 105 |
|---|---|---|---|---|
| Temperature, field (Celsius) | | 15.0 | 17.0 | 16.0 |
| pH, lab | | 8.3 | 7.8 | 8.3 |
| Total Dissolved Solids (evap/calc) | | 1170/1080 | 1600/1617 | 2590/2451 |
| Electrical Conductivity, lab | | 1520 | 2260 | 2950 |
| $HCO_3$ | 0.1 | 284 | 242 | 260 |
| $CO_3$ | 0.1 | ND | ND | 18 |
| Cl | 3.0 | 11 | 15 | 28 |
| $SO_4$ | 4.0 | 583 | 1000 | 1550 |
| F | 0.1 | 0.3 | 0.5 | 0.8 |
| $NO_3$ | 0.1 | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND |
| Na | 1.0 | 109 | 205 | 330 |
| K | 1.0 | 8.0 | 11 | 17 |
| Ca | 1.0 | 136 | 111 | 198 |
| Mg | 1.0 | 67 | 129 | 160 |
| $SiO_2$ | 1.0 | 25 | 26 | 20 |
| As | 0.01 | ND | ND | ND |
| Ba | 0.05 | 0.70 | 0.20 | 0.90 |
| Be | 0.01 | ND | ND | ND |
| Cd | 0.002 | 0.004 | ND | 0.006 |
| Cr | 0.02 | ND | ND | ND |
| CN | 0.01 | --- | --- | --- |
| Pb | 0.05 | ND | ND | ND |
| Hg | 0.0002 | 0.0011 | ND | 0.0007 |
| Se | 0.002 | ND | ND | ND |
| Ag | 0.005 | ND | ND | 0.020 |
| Cu | 0.005 | 0.015 | 0.025 | 0.015 |
| Fe | 0.01 | 0.05 | ND | 0.05 |
| Mn | 0.005 | 0.025 | 0.10 | 0.080 |
| Phenols | 0.005 | --- | --- | --- |
| Zn | 0.01 | ND | 0.02 | 0.01 |
| Al | 0.1 | ND | 0.1 | 0.1 |
| B | 0.05 | 0.12 | 0.12 | 0.20 |
| Co | 0.01 | ND | ND | ND |
| Mo | 0.05 | ND | ND | ND |
| Ni | 0.02 | ND | ND | 0.02 |
| V | 0.05 | ND | ND | ND |
| Radiologic | | | | |
| $^{226}Ra$ (pCi/l $\pm$ 2$\sigma$) | 0.03 | 0.07$\pm$0.03 | 0.05$\pm$0.03 | 0.93$\pm$0.04 |
| $^{228}Ra$ (pCi/l $\pm$ 2$\sigma$) | 1 to 2 | ND | ND | ND |
| U(mg/l $\pm$ 2$\sigma$) | 0.01 | ND | ND | 0.07±0.01 |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in umhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2$\sigma$ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

See Plate IV for chemical quality diagrams.

| Constituent | Detection Limit | 7/18/80 Rio Paguate RP 103 | RP 104 | RP 107 | RP 108 | RP 109 |
|---|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 14.0 | 17.5 | 17.5 | 17.0 | 18.0 |
| pH, lab | | 8.0 | 7.8 | 7.9 | 7.9 | 7.7 |
| Total Dissolved Solids (evap/calc) | | 614/613 | 510/549 | 581/605 | 1340/1228 | 1630/1586 |
| Electrical Conductivity, lab | | 924 | 810 | 853 | 2070 | 2360 |
| $HCO_3$ | 0.1 | 363 | 331 | 274 | 319 | 293 |
| $CO_3$ | 0.1 | ND | ND | ND | ND | ND |
| Cl | 3.0 | 11 | 8.0 | 10 | 15 | 20 |
| $SO_4$ | 4.0 | 189 | 180 | 250 | 665 | 925 |
| F | 0.1 | 0.3 | 0.3 | 0.3 | 0.5 | 0.6 |
| $NO_3$ | 0.1 | ND | ND | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND |
| Na | 1.0 | 44 | 45 | 60 | 135 | 205 |
| K | 1.0 | 3.3 | 3.3 | 3.3 | 6.0 | 8.5 |
| Ca | 1.0 | 115 | 65 | 58 | 125 | 135 |
| Mg | 1.0 | 30 | 46 | 53 | 93 | 121 |
| $SiO_2$ | 1.0 | 41 | 38 | 35 | 30 | 25 |
| As | 0.01 | ND | ND | ND | ND | ND |
| Ba | 0.05 | 0.65 | 0.90 | 0.75 | 0.50 | 0.55 |
| Be | 0.01 | ND | ND | ND | ND | ND |
| Cd | 0.002 | 0.002 | 0.004 | ND | 0.008 | ND |
| Cr | 0.02 | ND | ND | ND | ND | ND |
| Cu | 0.01 | --- | --- | --- | --- | --- |
| Pb | 0.05 | ND | ND | ND | ND | ND |
| Hg | 0.0002 | 0.0008 | ND | ND | 0.0005 | ND |
| Se | 0.002 | ND | ND | ND | ND | ND |
| Ag | 0.005 | 0.005 | ND | ND | ND | ND |
| Cu | 0.005 | 0.005 | ND | ND | 0.005 | ND |
| Fe | 0.01 | 0.04 | ND | ND | ND | ND |
| Mn | 0.005 | 0.030 | 0.005 | 0.025 | 0.17 | 0.10 |
| Phenols | 0.005 | --- | --- | --- | --- | --- |
| Zn | 0.01 | 0.01 | 0.01 | ND | 0.20 | ND |
| Al | 0.1 | ND | ND | ND | 0.2 | ND |
| B | 0.05 | 0.05 | 0.15 | 0.10 | 0.05 | 0.20 |
| Co | 0.01 | ND | ND | ND | 0.02 | ND |
| Mo | 0.05 | ND | ND | ND | ND | ND |
| Ni | 0.02 | ND | ND | ND | ND | ND |
| V | 0.05 | ND | 0.05 | ND | ND | ND |
| Radiologic | | | | | | |
| $^{226}Ra$ (pCi/l $\pm$ 2σ) | 0.03 | $0.04 \pm 0.03$ | $0.09 \pm 0.03$ | $1.5 \pm 0.09$ | $2.3 \pm 0.1$ | $5.9 \pm 0.3$ |
| $^{228}Ra$ (pCi/l $\pm$ 2σ) | 1 to 2 | ND | ND | ND | ND | ND |
| U(mg/l $\pm$ 2σ) | 0.01 | ND | ND | $0.02 \pm 0.01$ | $0.1 \pm 0.01$ | $0.17 \pm .01$ |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

See Plate IV for chemical quality diagrams.





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both stations was a mixed cation sulfate type continuing the well-established trend from far upstream of increase in TDS and in relative concentrations of magnesium, sodium, and sulfate. The proportions of ions were essentially the same at RM104 and RM105 (Plate IV), suggesting that the chemical degradation across the mine was due primarily to concentration by evaporation and transpiration.

An EC survey on July 13, 1980 showed a greater than expected degradation in the lowermost reach of the Moquino (Plate II). Survey notes indicate a light rain was falling when station C (EC, 2100 µm) was sampled at 2:45 p.m. By 3:00 p.m., light to moderate rain was falling at Station D (EC, 2100 µm) and it was still raining at station E (EC, 2800 µm) at 3:35 p.m. Station F was sampled at 3:50 p.m. and shows the greatest amount of degradation (EC, 4400 µm), about an hour after the first report of rain. This degradation was possibly a result of dissolution of previously precipitated salts as the stream stage rose (Section 5.1.4). This type of runoff event, as well as the resultant degradation of water chemistry, is of short duration.

The radiologic content of the water in Rio Moquino is fairly low throughout its course with no uranium detected and generally less than 0.1 picocurie per liter (pCi/l) of Ra-226 at all sampling stations except RM105 immedi-

ately above the confluence with Rio Paguate (Tables 2 and 3). Concentrations of Ra-228 at all Moquino sampling sites were below the detection limit of 1 to 2 pCi/l.

RM105 shows a uranium concentration of 0.07 mg/l and Ra-226 of 0.93 pCi/l (Table 3). However, without knowing the concentrations of radiological constituents prior to mining activities, it is difficult to say if this is more than the stream would have increased under natural conditions as it flowed over the Jackpile sandstone at and immediately above RM105.

### 5.1.2 Seboyetita Creek

Surveys of Seboyetita Creek were taken on August 4, 1980 (chemical-samples SC100 and SC101, Table 2)) and August 23, 1980 (EC-SC1-SC6, Plate II). During base flow periods, Seboyetita Creek originates as spring flow in the upper part of the Point Lookout Sandstone. The water in this reach was a calcium magnesium bicarbonate type with TDS content of 203 mg/l (SC100, Table 2; Plate IV) and an EC of 260 µm (SC3, Figure 3).

The water picked up very little dissolved constituents down Bibo Canyon as indicated by the consistent readings of EC between SC1 and SC3 (Plate II, Figure 3). At SC4 there was a slight increase in EC corresponding to the stream's traverse over the Mancos Shale. Just below SC4, water from Seboyetita Creek was diverted for irrigation. The rise in EC between SC4 and SC5 could be the result of irrigation return flow which had picked

## EXPLANATION

SC1-SC6
⊙
EC DETERMINATION - Plate II.

(SC100)&(SC101)
CHEMICAL SAMPLE - Table 2, Plate IV.

## GEOLOGY

| | |
|---|---|
| Kpu | Upper part of Point Lookout Sandstone |
| Kmsa | Satan Tongue of Mancos Shale |
| Kph | Hosta Tongue of Point Lookout Sandstone |
| Kcg | Gibson Coal Member of Crevasse Canyon Formation |
| Kcd | Dalton Sandstone Member of Crevasse Canyon Formation |
| Kmm | Mulatto Tongue of Mancos Shale |
| Kcdi | Dilco Coal Member of Crevasse Canyon Formation |
| Kg | Gallup Sandstone |
| Km | Mancos Shale |

| | |
|---|---|
| ss | sandstone |
| sh | shale |
| slst | siltstone |

Figure 3. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Seboyetita Creek, New Mexico, August 23, 1980.

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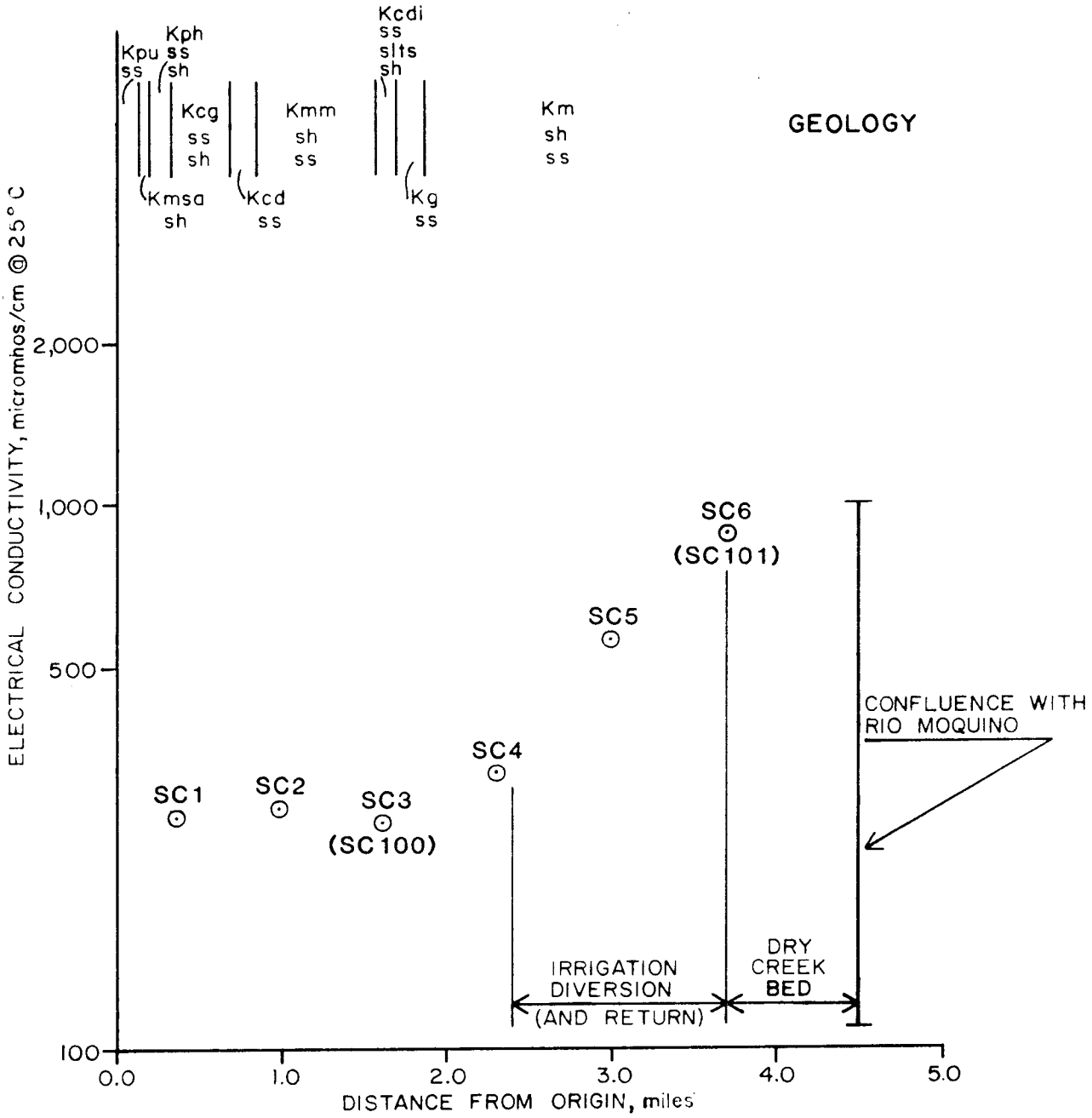


Figure 3. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Seboyetita Creek, New Mexico, August 23, 1980.

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up dissolved constituents as it moved through the fields. Below SC5, very little flow occurred in the stream and it was nearly stagnant in places, allowing concentration of the dissolved constituents by evaporation. This can be seen by the increase in EC at SC6. Chemical sample SC101 was taken at location SC6 and the analysis (Table 2, Plate IV) indicates a calcium sulfate water. This water type may be the result of irrigation return flow or may be correlated to the stream's traverse through gypsiferous Mancos-derived sediments.

At the time of our surveys, surface flow in Seboyetita Creek stopped just below SC6, and the stream was dry to its confluence with Rio Moquino.

### 5.1.3 Rio Paguate

Surveys of the Paguate were taken on August 1, 1980 (chemical samples RP100-RP103, Table 2) and September 5-6, 1980 (EC-RP1-RP17, Plate II). At its low flow origin, Rio Paguate water was a calcium bicarbonate type much like Seboyetita Creek and Rio Moquino (RP100, Table 2; Plate IV). It was, however, lower in TDS than the other two, probably owing to its origin as spring flow at the contact of Tertiary basalts and underlying Cretaceous sedimentary rocks, rather than flowing directly from the sedimentary rocks. The Paguate water did not degrade significantly or change chemical composition between RP1 (RP100) and RP7 (RP101) (Figure 4, Table 2, Plate IV). Below RP7, the Paguate flows across colluvium, most of which is of volcanic origin. The colluvium is intermixed with Mancos

## EXPLANATION

**RP1-RP17**
⊙
**(RP100)-(RP104)**
**(RP107)-(RP109)**

EC DETERMINATION - Plate II.

CHEMICAL SAMPLES - Tables 2 and 3.

## GEOLOGY

| | |
|---|---|
| Qc | Colluvium |
| $Qtb_3$ | Basalt Flow |
| $Qtb_2$ | Basalt Flow |
| Kcd | Dalton Sandstone Member of Crevasse Canyon Formation |
| Kcdi | Dilco Coal Member of Crevasse Canyon Formation |
| Kg | Gallup Sandstone |
| Km | Mancos Shale |
| $Kms_3$ | Third Sister Sandstone of Mancos Shale |
| $Kms_2$ | Second Sister Sandstone of Mancos Shale |
| $Kms_1$ | First Sister Sandstone of Mancos Shale |
| Kd | Dakota Sandstone |
| Jmj | Jackpile sandstone of Morrison Formation |
| Jmb | Brushy Basin Member of Morrison Formation |

| | |
|---|---|
| ss | sandstone |
| sh | shale |
| slst | siltstone |
| mdst | mudstone |
| ls | limestone |

Figure 4. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Rio Paguate, New Mexico, September 5-6, 1980.

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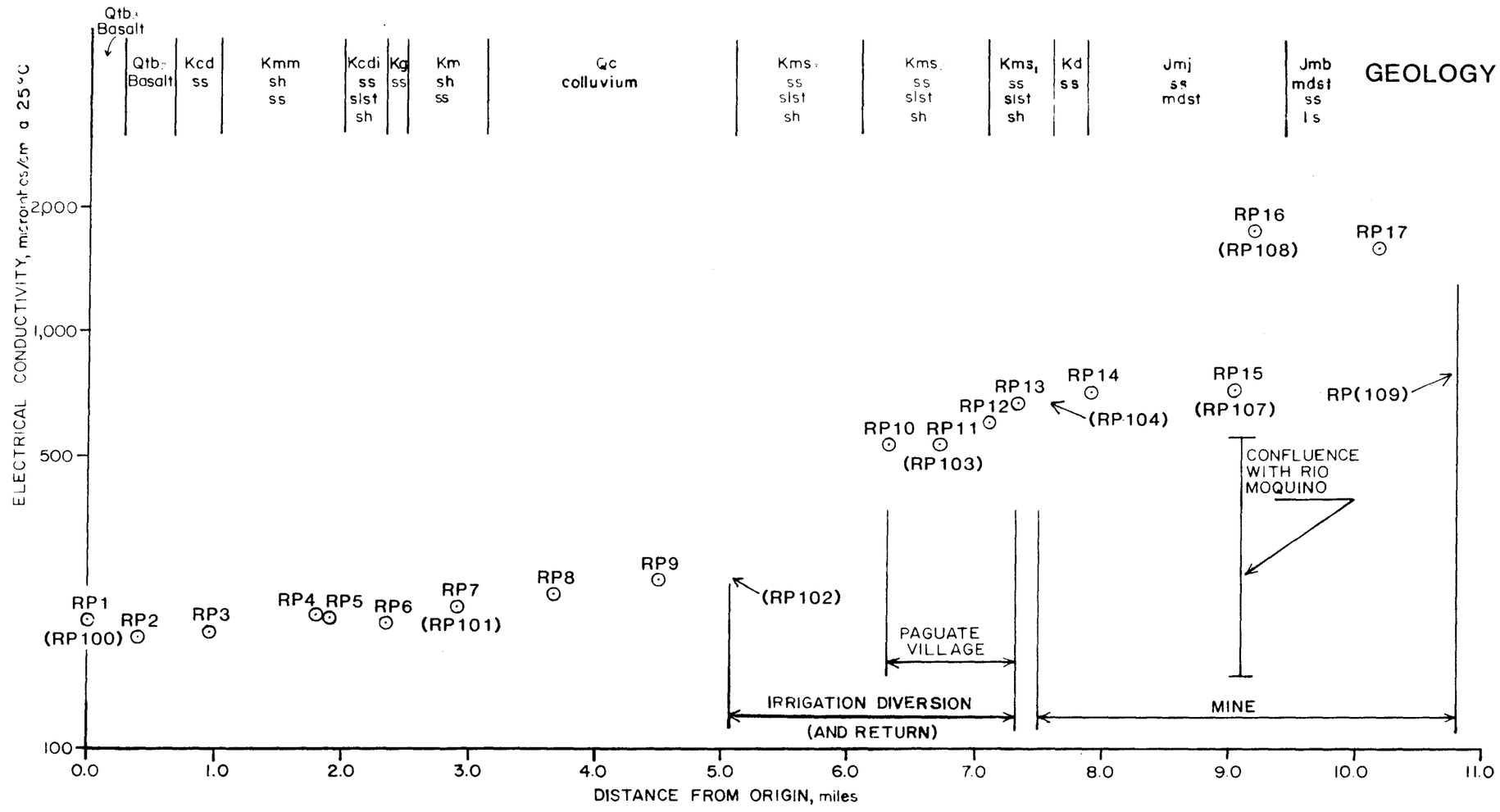


Figure 4. Relation of Electrical Conductivity to Geologic and Man-Made Influences on Rio Paguate, New Mexico, September 5-6, 1980.

Shale, which may account for the slight degradation in EC from RP7 to RP9 (Figure 4). Below RP9, water was diverted for irrigation, leaving only a small flow in the main channel. Chemical sample RP102, taken just above the diversion and below RP9, showed an increase in TDS of about 100 mg/l over RP101 (Table 2). The EC value at RP10, approximately two miles downstream from RP9, was 540 µm, which is more than double the value at RP9 (Plate II). This increase was probably due to evaporation of the extremely low flow left in the main channel below the diversion, but it may also have been related to seepage from irrigated fields.

The Paguate degraded further as it passed by Paguate village, receiving inflow from irrigation returns and flowing through man-made debris dumped into the channel at several locations. The chemistry at RP103, just above the irrigation return, indicates a calcium bicarbonate type water. The EC at RP13 just above the mine boundary was 675 µm, probably degraded by irrigation return.

A water chemistry survey of Rio Paguate within the mine was taken by HSI on July 18, 1980. The water at station RP104 (Table 3), just inside the mine boundary, was a magnesium calcium bicarbonate type with higher proportions of magnesium and sulfate than were found at RP103 (Plate IV). The chemical degradation above the confluence within the mine, between RP104 and RP107, was minimal. RP107 increased in proportions of magnesium and sulfate and was slightly higher in TDS relative to RP104 (Plate IV,

Table 3). This continued the trend from upstream of increase in dissolved constituents and in concentrations of magnesium and sulfate.

During periods of extremely low flow, as in the summer of 1978, the Paguate becomes intermittent within one-half mile of the confluence (HSI, 1979, p.39-40), and the water quality at RM107 can become severely degraded. This degradation may be due to relatively poor quality water from Rio Moquino moving southward in the subsurface in alluvium and then returning to the surface as flow in Rio Paguate immediately above the confluence. Water samples taken at RP107 (Rio Paguate) and RM105 (Rio Moquino) in the summer of 1978 were nearly identical in chemical composition (mixed cation sulfate type) with TDS concentrations of 2,554 and 2,540 mg/l, respectively (HSI, 1979, p.36).

Below the confluence of the Moquino and Paguate (RP108), the water quality of Rio Paguate is usually worse than the Paguate above the confluence (RP107) and usually better than the Moquino above the confluence (RM105). This situation is due to mixing of the two usually different waters. RP108 and RP109 are generally dilute copies of the mixed cation sulfate type of water typical of Rio Moquino. The stronger influence of the Moquino water is due to the greater chemical flux of the Moquino relative to the Paguate.

Rio Paguate had relatively low concentrations of radiological constituents

from its source to RP104 (Tables 2 and 3). Ra-226 concentrations for the most part were less than 0.1 pCi/l. Uranium and Ra-228 concentrations were below the detection limits of 0.01 mg/l and 1 to 2 pCi/l, respectively. At RP107, the concentration of Ra-226 increased sharply and uranium was just above the detection limit at 0.02 mg/l (Table 3). The radiologic analyses for RP108 and RP109 show increasing concentrations of uranium and Ra-226. Concentration of Ra-228 was below detection limit at all sample points.

### 5.1.4 Laboratory Dissolution Investigation

Water quality in the vicinity of the confluence is degraded to a slight degree along both Rio Paguate and Rio Moquino. HSI conducted laboratory experiments to determine if the degradation is attributable to either dissolution of salt crusts or dissolution of minerals present in uranium-bearing materials in and along the stream beds.

Streambed Salts

Whitish to grayish salts of natural origin occur as crusts on rocks and bank materials. During periods of constant and declining stream stage, water in the stream deposits is brought to the surface by capillary action where salts are precipitated by evaporation. Remobilization by dissolution of the salts occurs during periods of rising stream stage.

Three salt samples, one each from Rio Paguate (#1) and Rio Moquino (#2) above the confluence and one from Rio Paguate (#3) below the confluence, were equilibrated with 4,000 ml of distilled water for approximately 65 hours on a reciprocating shaker. The supernatant water was clarified by filtration through a 0.45 micron filter and analyzed.

Results indicate that the salts are magnesium sodium (#1, 3) and magnesium aluminum (#2) sulfates (Table 4). These salts are highly soluble, with the fraction of solids dissolved during the experiments ranging from 0.36 to 0.63 (Table 4).

Because of the relatively minor amount of salts present in the streambed and their relatively high solubility, probably the only time that dissolution of salts has a perceptible effect on quality of stream water is during the early stages of a rapid increase in stream flow following an extended period of stable flow. The Moquino survey of July 18, 1980 showed such a brief increase in EC associated with a rainfall event (p.15, Plate III).

Uranium-Mineralized Rock Material

Samples of uranium-mineralized rock material were collected from small alluvial fans at the southern base of ore stockpiles 1C and 2D. The samples were combined and equilibrated with 7200 ml of distilled water on a reciprocating shaker for approximately 65 hours. The supernatant water was then filtered through a 0.45 micron filter and analyzed.

Table 4. Results of Laboratory Dissolution Experiments of Stream Salt Crusts and Ore Stockpile Materials, Jackpile-Paguate Mine, New Mexico.

| | Salt Sample #1 Rio Paguate above confluence with Rio Moquino 9-13-78 | Salt Sample #2 Rio Moquino above confluence with Rio Paguate 9-13-78 | Salt Sample #3 Rio Paguate below confluence with Rio Moquino 9-13-78 | Material Sample #4 Material washed from ore stockpiles 1C & 2D 9-13-78 |
|---|---|---|---|---|
| Equilibration: | | | | |
| dry solid, g | 16.6 (salt) | 132. (salt) | 35. (salt) | 2,466. (material) |
| distilled water, ml. | 4,000 | 4,000 | 4,000 | 7,200 |
| dissolved solid, g | 8.3 | 47.27 | 22.20 | 6.31 |
| fraction solid dissolved | 0.50 | 0.36 | 0.63 | 0.0026 |
| Supernatant Water: | | | | |
| pH | 9.55 | 3.18 | 9.30 | 4.38 |
| TDS (calc.), mg/l | 2,068 | 11,817* | 5,551 | 876** |
| Elec. Cond., µmhos/cm @ 25°C | 2,800 | 8,550 | 6,250 | 1,220 |
| | mg/l | mg/l | mg/l | mg/l |
| $HCO_3^-$ | 44.3 | --- | 43.0 | --- |
| $CO_3^=$ | --- | --- | --- | --- |
| $Cl^-$ | 20 | 25 | 72 | 2 |
| $SO_4^=$ | 1,500 | 10,300 | 4,000 | 650 |
| $Na^+$ | 228 | 257 | 925 | 11.2 |
| $K^+$ | 7 | 0.6 | 16.4 | 7.2 |
| $Ca^{++}$ | 12.8 | 24.8 | 31 | 111 |
| $Mg^{++}$ | 218 | 1,210 | 485 | 77 |
| Uranium, mg/l | 1.89±0.09 | 0.52±0.03 | 0.86±0.04 | 5.9±0.30 |
| Ra-226, pCi/l | 3.4 ±0.2 | 0.67±0.07 | 3.5 ±0.2 | 93. ±5. |

Note: *TDS includes $Al^{+3}$ = 760 mg/l, $Mn^{++}$ = 41 mg/l, and $SiO_2$ = 3.5 mg/l.
**TDS includes $Al^{+3}$ = 6.5 mg/l, $Mn^{++}$ = 2.45 mg/l, and $SiO_2$ = 9 mg/l.
Other equilibrations showed negligible $Al^{+3}$ and $Mn^{++}$, and $SiO_2$ was not determined.
Equilibrations and chemical analyses by Water Chemistry Laboratory, Desert Research Institute, Reno, NV.
Radiological analyses by LFE Environmental Laboratories, Richmond, CA.



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The analysis shows that the supernatant water is a magnesium calcium sulfate type with a TDS of 876 mg/l (Table 4). The fraction of rock material dissolved during the experiment was 0.0026.

The ratio of mineralized material to water and the period of exposure to the water were probably higher and longer in the dissolution experiment than would occur under field conditions. This bias in experimental characteristics would tend to maximize the laboratory dissolution of both chemical and radiological species. Thus, the concentrations of radiological and chemical species would tend to be maxima, and the actual mobilization under field conditions would tend to be less.

The above evidence indicates that mobilization of chemical species from mineralized rock material, either in the stream beds or as a result of water running off of piles of broken mineralized rock, is not responsible for the observed increase in chemical loading of the streams across the mine.

## Conclusions

It is reasonable to conclude from these experiments and the field evidence that streambed salts could contribute to a brief, low-level degradation of chemical and radiological quality of water during periods of rising stream stage. These salts are deposited as a result of normal stream-related processes and do not appear to be related directly to the mining

operation.

The experimental evidence further suggests that contact of water and uranium-mineralized rock material does not contribute to chemical degradation of the water. However, the increases in uranium and Ra-226 concentrations (Table 4, #4) suggest that the observed increases in concentrations of these radiological constituents in the field may be attributed, at least in part, to dissolution from uranium-bearing materials in the stream sediments. How much of this effect would be attributable to the Anaconda mining operation and how much would be attributable to Jackpile sandstone materials which naturally occur in the stream sediments is not clear.

## 5.2 GROUND WATER

HSI has collected extensive ground-water quality data at the Jackpile-Paguate mine. These data include analyses of chemical and radiological constituents of water samples from eleven 2-inch test wells (HSI, 1979, pp.11-14), sixteen 5-inch M-series wells (Table 5), and four off site wells (Table 6). Locations for the samples of Tables 5 and 6 are shown in Plate V.

HSI also conducted laboratory equilibration experiments to determine the effect of mixing various representative reclaimed mine materials with representative native Jackpile sandstone water collected from the under-

Table 5. Dissolved Constituents, M-Series Wells, Jackpile-Paguate Mine Area, New Mexico.



| Constituent | Detection Limit | 7-18-80 M-1 | 11-3-80 M-1P | 7-27-80 M-2 | 10-9-80 M-2P | 7-25-80 M-3 | 10-30-80 M-3P |
|---|---|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 18.0 | 18.0 | --- | 15.75 | --- | 16.5 |
| pH, lab | | 8.1 | 8.1 | 8.0 | 7.9 | 8.3 | 8.2 |
| Total Dissolved Solids (evap/calc) | | 894/833 | 880/880 | 1030/964 | 643/628 | 718/683 | 530/694 |
| Electrical Conductivity, lab | | 1330 | 1290 | 1730 | 980 | 1070 | 755 |
| Producing zone | | Jmj | Jmj | Jmj | Jmj | Jmj | Jmj |
| $HCO_3$ | 0.1 | 446 | 440 | 363 | 403 | 343 | 355 |
| $CO_3$ | 0.1 | ND | ND | ND | ND | 19 | ND |
| Cl | 3.0 | 12 | 8.2 | 15 | 5.5 | 12 | 4.8 |
| $SO_4$ | 4.0 | 280 | 330 | 425 | 176 | 220 | 125 |
| F | 0.1 | 1.2 | 1.0 | 1.0 | 0.9 | 0.8 | 0.6 |
| $NO_3$ | 0.1 | ND | ND | 0.2 | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND | 0.04 |
| Na | 1.0 | 280 | 305 | 300 | 215 | 230 | 190 |
| K | 1.0 | 4.0 | 7.3 | 3.0 | 2.7 | 3.0 | 3.0 |
| Ca | 1.0 | 15 | 4.9 | 12 | 13 | 6.0 | 1.6 |
| Mg | 1.0 | 4.5 | 4.8 | 15 | 4.6 | 8.0 | 1.0 |
| $SiO_2$ | 1.0 | 16 | 14 | 12 | 12 | 15 | 13 |
| As | 0.01 | ND | ND | ND | ND | 0.01 | ND |
| Ba | 0.05 | 0.55 | 0.06 | 0.05 | 0.18 | 0.20 | ND |
| Be | 0.01 | ND | --- | ND | ND | ND | --- |
| Cd | 0.002 | 0.006 | ND | 0.002 | ND | ND | ND |
| Cr | 0.02 | ND | ND | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- | --- | --- |
| Pb | 0.05 | ND | ND | 0.01 | 0.01 | ND | ND |
| Hg | 0.0002 | ND | ND | 0.0020 | ND | ND | ND |
| Se | 0.002 | ND | ND | ND | ND | ND | ND |
| Ag | 0.005 | ND | ND | ND | 0.006 | ND | ND |
| Cu | 0.005 | 0.050 | ND | 0.005 | 0.010 | ND | ND |
| Fe | 0.01 | ND | 0.06 | ND | 0.07 | ND | 0.06 |
| Mn | 0.005 | 0.030 | 0.085 | 0.041 | 0.090 | 0.065 | 0.021 |
| Phenols | 0.005 | --- | --- | --- | --- | --- | --- |
| Zn | 0.01 | ND | 0.04 | 0.53 | 0.14 | 0.024 | ND |
| Al | 0.1 | ND | ND | ND | ND | ND | ND |
| B | 0.05 | 0.06 | 0.34 | 0.70 | 0.28 | 0.08 | 0.28 |
| Co | 0.01 | 0.01 | ND | 0.02 | 0.02 | ND | ND |
| Mo | 0.05 | ND | ND | 0.05 | 0.05 | ND | ND |
| Ni | 0.02 | ND | ND | ND | 0.03 | ND | ND |
| V | 0.05 | ND | ND | ND | ND | ND | ND |
| Radiologic | | | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 5.1±0.3 | 22±1 | 0.31±0.05 | 0.61±0.05 | 0.05±0.03 | ND |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | ND | ND | ND | ND | ND | ND |
| U(mg/l ± 2σ) | 0.01 | ND | ND | ND | ND | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in μmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

P denotes sample taken by pumping. Other samples were taken by air lifting.

See Plate V for chemical quality diagrams.

Producing zone: Jmj-Jackpile sandstone, Qal-alluvium.



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Table 5. Dissolved Constituents, M-Series Wells, Jackpile-Paguate Mine, New Mexico (Cont'd).



| Constituent | Detection Limit | 7-31-80 M-4 | 8-3-80 M-4A | 8-2-80 M-4B | 7-17-80 M-5 | 7-19-80 M-6 |
|---|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 16.3 | --- | --- | --- | 16.5 |
| pH, lab | | 7.3 | 7.6 | 7.5 | 8.3 | 8.3 |
| Total Dissolved Solids (evap/calc) | | 2130/2114 | 1040/997 | 1730/1794 | 1020/1048 | 892/842 |
| Electrical Conductivity, lab | | 3200 | 1500 | 2600 | 1570 | 1410 |
| Producing zone | | Jmj(?) | Jmj | Qal | Jmj | Jmj |
| $HCO_3$ | 0.1 | 446 | 457 | 452 | 381 | 414 |
| $CO_3$ | 0.1 | ND | ND | ND | 18 | 19 |
| Cl | 3.0 | 33 | 22 | 27 | 18 | 12 |
| $SO_4$ | 4.0 | 1230 | 400 | 938 | 437 | 280 |
| F | 0.1 | 0.7 | 0.7 | 0.8 | 1.1 | 1.3 |
| $NO_3$ | 0.1 | ND | ND | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND |
| Na | 1.0 | 208 | 160 | 294 | 340 | 295 |
| K | 1.0 | 23 | 13 | 22 | 8.0 | 3.3 |
| Ca | 1.0 | 216 | 113 | 233 | 18 | 6.0 |
| Mg | 1.0 | 163 | 45 | 36 | 5.6 | 6.1 |
| $SiO_2$ | 1.0 | 20 | 17 | 20 | 14 | 15 |
| As | 0.01 | ND | ND | ND | ND | ND |
| Ba | 0.05 | 0.74 | 0.52 | 0.08 | 0.35 | 0.15 |
| Be | 0.01 | ND | ND | ND | ND | ND |
| Cd | 0.002 | 0.003 | 0.002 | 0.003 | 0.16 | 0.004 |
| Cr | 0.02 | ND | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- | --- |
| Pb | 0.05 | 0.03 | 0.01 | 0.03 | 0.13 | ND |
| Hg | 0.0002 | ND | ND | ND | 0.0006 | 0.0005 |
| Se | 0.002 | 0.003 | 0.002 | 0.004 | ND | ND |
| Ag | 0.005 | ND | ND | ND | 0.040 | ND |
| Cu | 0.005 | 0.012 | ND | 0.008 | 0.010 | ND |
| Fe | 0.01 | 0.11 | 0.44 | 0.11 | 0.02 | ND |
| Mn | 0.005 | 0.093 | 0.064 | 0.068 | 0.085 | 0.035 |
| Phenols | 0.005 | --- | --- | --- | --- | --- |
| Zn | 0.01 | 0.02 | 0.06 | 0.06 | 0.30 | 0.32 |
| Al | 0.1 | ND | ND | ND | ND | ND |
| B | 0.05 | 0.20 | 0.12 | 0.51 | 0.61 | 0.38 |
| Co | 0.01 | ND | ND | ND | ND | 0.02 |
| Mo | 0.05 | ND | ND | ND | ND | ND |
| Ni | 0.02 | 0.05 | 0.03 | 0.05 | ND | ND |
| V | 0.05 | ND | ND | ND | ND | ND |
| Radiologic | | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 2.1±0.1 | 3.5±0.2 | 0.09±0.03 | 0.33±0.04 | 0.28±0.03 |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | ND | ND | ND | ND | ND |
| U(mg/l ± 2σ) | 0.01 | 0.78±0.04 | 0.02±0.01 | 0.87±0.04 | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in μmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

P denotes sample taken by pumping. Other samples were taken by air lifting.

See Plate V for chemical quality diagrams.

Producing zone: Jmj-Jackpile sandstone, Qal-alluvium.



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Table 5. Dissolved Constituents, M-Series Wells, Jackpile-Paguate Mine, New Mexico (Cont'd).



| Constituent | Detection Limit | 7-22-80 M-8 | 7-29-80 M-10 | 10-4-80 M-10P | 10-16-80 M-14P | 8-18-80 M-16 | 10-7-80 M-16P |
|---|---|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 17.0 | 16.6 | 18.4 | 18.0 | 18.5 | 19.0 |
| pH, lab | | 8.0 | 7.7 | 7.9 | 7.6 | 7.2 | 7.8 |
| Total Dissolved Solids (evap/calc) | | 1130/1052 | 1380/1270 | 1160/1171 | 1700/1767 | 534/512 | 1360/1403 |
| Electrical Conductivity, lab | | 1730 | 2030 | 1820 | 2500 | 780 | 2130 |
| Producing zone | | Jmj | Jmj | Jmj | Jmj | Jmj | Jmj |
| $HCO_3$ | 0.1 | 427 | 350 | 438 | 468 | 401 | 456 |
| $CO_3$ | 0.1 | ND | ND | ND | ND | ND | ND |
| Cl | 3.0 | 18 | 12 | 16 | 25 | 17 | 14 |
| $SO_4$ | 4.0 | 450 | 660 | 510 | 920 | 83 | 672 |
| F | 0.1 | 1.3 | 0.9 | 1.2 | 0.6 | 0.9 | 0.9 |
| $NO_3$ | 0.1 | ND | ND | ND | ND | 0.6 | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND | ND |
| Na | 1.0 | 305 | 320 | 390 | 418 | 180 | 390 |
| K | 1.0 | 3.3 | 3.0 | 3.7 | 8.5 | 10 | 6.5 |
| Ca | 1.0 | 36 | 54 | 16 | 97 | 8.2 | 54 |
| Mg | 1.0 | 14 | 34 | 4.9 | 52 | 3.7 | 25 |
| $SiO_2$ | 1.0 | 13 | 13 | 12 | 12 | 11 | 14 |
| As | 0.01 | ND | ND | ND | ND | ND | ND |
| Ba | 0.05 | 0.45 | 0.11 | 0.18 | 0.73 | 0.10 | 0.45 |
| Be | 0.01 | ND | ND | ND | ND | ND | ND |
| Cd | 0.002 | 0.004 | 0.003 | ND | 0.002 | 0.002 | ND |
| Cr | 0.02 | ND | ND | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- | --- | --- |
| Pb | 0.05 | ND | 0.02 | 0.02 | 0.03 | 0.03 | 0.02 |
| Hg | 0.0002 | 0.0002 | 0.0019 | 0.0002 | ND | ND | ND |
| Se | 0.002 | ND | ND | ND | ND | ND | ND |
| Ag | 0.005 | ND | ND | ND | ND | ND | 0.011 |
| Cu | 0.005 | 0.030 | ND | ND | 0.007 | 0.005 | 0.006 |
| Fe | 0.01 | ND | ND | 0.10 | 0.64 | ND | 0.41 |
| Mn | 0.005 | 0.11 | 0.18 | 0.044 | 0.39 | 0.033 | 0.19 |
| Phenols | 0.005 | --- | --- | --- | --- | --- | --- |
| Zn | 0.01 | 0.34 | 0.31 | 0.80 | 1.5 | 0.07 | 0.27 |
| Al | 0.1 | 1.2 | ND | ND | ND | ND | ND |
| B | 0.05 | 0.09 | 0.25 | 0.41 | 0.42 | 0.30 | 0.41 |
| Co | 0.01 | ND | 0.04 | 0.06 | 0.07 | ND | 0.06 |
| Mo | 0.05 | ND | ND | ND | ND | ND | ND |
| Ni | 0.02 | ND | 0.02 | 0.05 | 0.08 | ND | 0.05 |
| V | 0.05 | ND | ND | ND | ND | ND | ND |
| Radiologic | | | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 0.53±0.03 | 5.0±0.02 | 0.06±0.03 | 0.12±0.03 | 0.07±0.04 | 0.04±0.03 |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | ND | ND | ND | ND | ND | ND |
| U(mg/l ± 2σ) | 0.01 | 0.02±0.01 | 0.06±0.01 | 0.03±0.01 | ND | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

P denotes sample taken by pumping. Other samples were taken by air lifting.

See Plate V for chemical quality diagrams.

Producing zone: Jmj-Jackpile sandstone, Qal-alluvium.



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Table 5. Dissolved Constituents, M-Series Wells, Jackpile-Paguate Mine, New Mexico (Cont'd).



| Constituent | Detection Limit | 10-1-80 M-21P | 7-24-80 M-22 | 8-6-80 M-23 | 2-8-81 M-24P |
|---|---|---|---|---|---|
| Temperature, field (Celsius) | | 21.3 | --- | --- | --- |
| pH, lab | | 8.3 | 7.8 | 8.1 | 7.6 |
| Total Dissolved Solids (evap/calc) | | 368/389 | 981/962 | 1090/1107 | 3640/4031 |
| Electrical Conductivity, lab | | 673 | 1590 | 1700 | 5050 |
| Producing zone | | Jmj | Jmj | Jmj | Backfill |
| $HCO_3$ | 0.1 | 345 | 414 | 438 | 770 |
| $CO_3$ | 0.1 | 11 | ND | ND | ND |
| Cl | 3.0 | ND | 14 | 29 | 50 |
| $SO_4$ | 4.0 | 40 | 380 | 448 | 2010 |
| F | 0.1 | 1.0 | 1.3 | 1.3 | 0.7 |
| $NO_3$ | 0.1 | ND | ND | ND | ND |
| $PO_4$ | 0.03 | 0.03 | ND | ND | ND |
| Na | 1.0 | 150 | 305 | 380 | 915 |
| K | 1.0 | 2.0 | 3.7 | 8.0 | 23 |
| Ca | 1.0 | 3.3 | 26 | 9.8 | 155 |
| Mg | 1.0 | 1.0 | 12 | 4.6 | 95 |
| $SiO_2$ | 1.0 | 11 | 15 | 9.9 | 12 |
| As | 0.01 | ND | 0.01 | ND | ND |
| Ba | 0.05 | 0.07 | 0.25 | 0.05 | 0.21 |
| Be | 0.01 | ND | ND | ND | --- |
| Cd | 0.002 | ND | 0.002 | 0.003 | ND |
| Cr | 0.02 | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- |
| Pb | 0.05 | 0.01 | ND | ND | ND |
| Hg | 0.0002 | 0.0004 | 0.0015 | ND | --- |
| Se | 0.002 | ND | 0.002 | 0.002 | ND |
| Ag | 0.005 | ND | ND | ND | 0.005 |
| Cu | 0.005 | 0.007 | 0.005 | ND | ND |
| Fe | 0.01 | 0.13 | ND | ND | 0.28 |
| Mn | 0.005 | 0.017 | 0.21 | 0.024 | 0.074 |
| Phenols | 0.005 | --- | --- | --- | --- |
| Zn | 0.01 | 0.02 | 0.64 | 0.49 | 0.25 |
| Al | 0.1 | ND | 0.2 | ND | ND |
| B | 0.05 | 0.25 | 0.25 | 0.49 | 0.96 |
| Co | 0.01 | 0.02 | ND | ND | ND |
| Mo | 0.05 | ND | ND | ND | ND |
| Ni | 0.02 | ND | ND | 0.02 | ND |
| V | 0.05 | ND | ND | ND | ND |
| Radiologic | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 1.68±0.08 | 0.52±0.03 | 0.99±0.05 | 1.22±0.08 |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | 3±1 | ND | ND | 2±1 |
| U(mg/l ± 2σ) | 0.01 | 0.02±0.01 | 0.03±0.01 | 0.36±0.02 | 0.03±0.01 |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in umhos/cm @ 25°C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analysis by LFE Environmental Analysis Laboratories, Richmond, California.

P denotes sample taken by pumping. Other samples were taken by air lifting.

See Plate V for chemical quality diagrams.

Producing zone: Jmj-Jackpile sandstone, Qal-alluvium.

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Table 6. Dissolved Constituents, Off-Site Wells, Jackpile-Paguate Mine Area, New Mexico.

| Constituent | Detection Limit | 7-30-80 Paguate Village PV | 8-6-80 Seboyeta Village SV | 8-6-80 Moquino Village MV | 8-6-80 Bibo Village BV |
|---|---|---|---|---|---|
| Temperature, field (Celsius) | | --- | 25.0 | 24.0 | 25.0 |
| pH, lab | | 7.6 | 7.7 | 8.2 | 8.0 |
| Total Dissolved Solids (evap/calc) | | 408/474 | 304/312 | 428/425 | 575/566 |
| Electrical Conductivity, lab | | 600 | 475 | 745 | 929 |
| Producing zone | | Jmj | Jmj | Jmj | Jmj |
| $HCO_3$ | 0.1 | 267 | 236 | 350 | 343 |
| $CO_3$ | 0.1 | ND | ND | ND | ND |
| Cl | 3.0 | ND | 15 | 9.1 | 22 |
| $SO_4$ | 4.0 | 170 | 45 | 64 | 149 |
| F | 0.1 | ND | 0.4 | 0.6 | 0.6 |
| $NO_3$ | 0.1 | ND | ND | ND | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND |
| Na | 1.0 | 18 | 80 | 137 | 175 |
| K | 1.0 | 3.3 | 9.0 | 7.0 | 9.0 |
| Ca | 1.0 | 62 | 11 | 16 | 13 |
| Mg | 1.0 | 47 | 13 | 5.9 | 9.5 |
| $SiO_2$ | 1.0 | 42 | 22 | 13 | 19 |
| As | 0.01 | ND | ND | ND | ND |
| Ba | 0.05 | 0.13 | 0.10 | 0.10 | 0.06 |
| Be | 0.01 | ND | ND | ND | ND |
| Cd | 0.002 | ND | 0.002 | ND | ND |
| Cr | 0.02 | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- |
| Pb | 0.05 | ND | ND | ND | 0.02 |
| Hg | 0.0002 | 0.0003 | ND | ND | ND |
| Se | 0.002 | ND | ND | ND | 0.002 |
| Ag | 0.005 | ND | ND | ND | ND |
| Cu | 0.005 | ND | ND | 0.007 | ND |
| Fe | 0.01 | ND | 0.02 | ND | 0.01 |
| Mn | 0.005 | 0.008 | 0.007 | ND | 0.005 |
| Phenols | 0.005 | --- | --- | --- | --- |
| Zn | 0.01 | 0.01 | 0.02 | 0.05 | 0.17 |
| Al | 0.1 | ND | ND | ND | ND |
| B | 0.05 | 0.30 | 0.15 | 0.14 | 0.12 |
| Co | 0.01 | 0.01 | ND | ND | ND |
| Mo | 0.05 | ND | 0.05 | ND | ND |
| Ni | 0.02 | ND | 0.02 | ND | ND |
| V | 0.05 | ND | ND | ND | ND |
| Radiologic | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 0.24±0.04 | 0.42±0.03 | 0.27±0.03 | 0.39±0.03 |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | ND | ND | ND | ND |
| U(mg/l ± 2σ) | 0.01 | 0.78±0.04 | ND | ND | ND |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in μmhos/cm @ 25° C.

ND, less than detection limit. Detection limit for radiologic constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analyses by LFE Environmental Analysis Laboratories, Richmond, California.

Producing zone: Jmj = Jackpile sandstone.



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ground portion of the Jackpile-Paguate mine (Section 5.2.4). Data (Table 7) assisted in projection of ground-water quality in backfill materials under reclamation conditions.

### 5.2.1 Jackpile Sandstone

The Jackpile sandstone is predominantly composed of quartz grains with some feldspar fragments and a calcite or kaolinite cement.

The typical ground water contained in the Jackpile sandstone is a sodium sulfate bicarbonate type, and, less frequently, a sodium bicarbonate sulfate type (Plate V). TDS concentrations for thirteen Jackpile sandstone wells in the mine area range from 389 to 1767 mg/l and average 995 mg/l (Table 5).

No apparent pattern appears to exist in the distribution of TDS in the mine area except that waters from wells near Rio Moquino are relatively concentrated in dissolved constituents (Plate V). The water of Well M-4 near the confluence is a mixed cation sulfate type of high TDS (Table 5) that is nearly identical to Rio Moquino water sampled nearby (Table 3, RM105). This suggests that the M-4 water originates as recharge from Rio Moquino and is not representative of the Jackpile sandstone.

Water in the Paguate Village well (Table 6) does not resemble other Jackpile sandstone waters in the vicinity of the mine either in ionic type or concentration of TDS. This water may reflect admixture of Rio Paguate



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water. Waters from Jackpile sandstone wells in Seboyeta, Moquino, and Bibo Villages are lower in TDS than the average for the mine area (Table 6).

The average uranium and radium-226 concentrations for water from the thirteen Jackpile sandstone wells within the mine area are 0.04 mg/l and 2.36 pCi/l, respectively (Table 5). Minor chemical constituents are at low concentrations.

### 5.2.2 Alluvium

Several of the wells installed by HSI are perforated in the alluvium. These wells, M-4B and old test wells 1 and 10 (HSI, 1979), produce water that is enriched in calcium and magnesium in comparison to the typical Jackpile sandstone water. These waters are generally higher in TDS than the typical Jackpile sandstone waters, averaging 1332 mg/l (Table 5; HSI, 1979, Table 1). The water from these wells is a mixture of Jackpile sandstone water from below and surface water from Rio Moquino and Rio Paguate. Depending on the time of year and flow conditions in the Jackpile sandstone and the contributing streams, the proportionate contribution of surface water and ground water can change significantly, causing the chemistry of the mixed alluvial ground water to vary.



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### 5.2.3 Backfill Material

Chemistry of ground water in backfill material is virtually unknown. Only one well, M24, is completed in saturated backfill (Table 5). Another well, M17, was drilled on backfill over what had been a pond prior to backfilling. However, no ground water was found during drilling of this well. The water had either been displaced by the backfilling or absorbed by the backfill material.

Well M24 was drilled over what previously was the western P-10 pond. The ground water encountered is essentially stagnant in that it is not flowing through the backfill or receiving recharge from the Jackpile sandstone. On February 8 and 9, 1981, M24 was pumped for 24 hours and a sample was taken for chemical and radiological analysis. The chemistry shows a sodium sulfate type of water (Table 5) very similar in character to the water from the P-10 pond before backfilling (HSI, 1979, Table 1), but much higher in TDS (4031 mg/l versus 1219 mg/l). The high TDS content from M24 is probably a result of concentration by evaporation of the P-10 pond water prior to the backfilling. The last sample taken from the P-10 pond was in December 1977, however, the pond was not backfilled until about 1 1/2 years later. During this period water was not discharged to the pond, thus allowing ample time to concentrate the dissolved constituents. Rabbit Ear pond experienced much the same type of concentration by evaporation, going from 2067 mg/l TDS in May of 1975 to 4888 mg/l TDS


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in December of 1977 (HSI, 1979, Tables 1 and 3).

The water quality of M24 is not indicative of the water quality that can be expected in backfill material when post-mining equilibrium conditions are reached.

### 5.2.4 Laboratory Equilibration Investigation

In order to evaluate the possible chemistry of water in the backfill, HSI performed laboratory experiments designed to simulate post-mining equilibrium conditions. The experiment consisted of mixing four representative backfill materials with representative indigenous Jackpile ground water and analyzing the chemically equilibrated water.

Backfill materials used in the experiment were non-ore bearing Jackpile sandstone (Jackpile sandstone), non-economic ore bearing Jackpile sandstone (protore), and a tan sandstone (Dakota sandstone) and a carbonaceous shale (Dakota shale) of the Dakota Sandstone. Samples were collected from the southern portion of the Paguate mine.

Ground water used in the experiment was obtained from roof seepage in an advancing drift in the extreme southern portion of the P-10 underground mine south of the South Paguate Pit. The ground water was analyzed for chemical and radiological constituents (Table 7).

All backfill samples were ground to pass through a 10-mesh screen (0.065-



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Table 7. Dissolved Constituents, P-10 Underground Water and Simulated Reclaimed Waters, Jackpile-Paguate Mine, New Mexico.

| Constituent | Detection Limit | P-10 Underground | Jackpile Sandstone | Protore | Dakota Sandstone | Dakota Shale |
|---|---|---|---|---|---|---|
| pH, lab | | 8.5 | 7.6 | 8.3 | 8.3 | 8.3 |
| Total Dissolved Solids (evap/calc) | | /557 | 816/880 | 1110/1051 | 1020/1021 | 1280/1256 |
| Electrical Conductivity, lab | | 950 | 1340 | 1520 | 1580 | 1920 |
| $HCO_3$ | 0.1 | 347 | 421 | 391 | 296 | 296 |
| $CO_3$ | 0.1 | 18 | ND | 12 | 12 | 24 |
| Cl | 3.0 | 11 | 16 | 18 | 20 | 19 |
| $SO_4$ | 4.0 | 130 | 280 | 443 | 480 | 625 |
| F | 0.1 | 1.0 | 0.5 | 1.8 | 4.0 | 2.7 |
| $NO_3$ | 0.1 | 0.2 | 16 | 3.5 | 0.4 | ND |
| $PO_4$ | 0.03 | ND | ND | ND | ND | ND |
| Na | 1.0 | 200 | 270 | 280 | 210 | 390 |
| K | 1.0 | 2.7 | 4.0 | 7.0 | 1.0 | 8.0 |
| Ca | 1.0 | 6.6 | 16 | 46 | 98 | 25 |
| Mg | 1.0 | 2.7 | 4.9 | 24 | 22 | 7.3 |
| $SiO_2$ | 1.0 | 12 | 7.7 | 10 | 13 | 7.9 |
| As | 0.01 | ND | 0.02 | 0.02 | ND | ND |
| Ba | 0.05 | 0.15 | 0.20 | 0.30 | 0.45 | 0.20 |
| Be | 0.01 | --- | --- | --- | --- | --- |
| Cd | 0.005 | 0.005 | ND | ND | ND | ND |
| Cr | 0.01 | ND | ND | ND | ND | ND |
| CN | 0.01 | --- | --- | --- | --- | --- |
| Pb | 0.01 | 0.03 | ND | 0.010 | 0.010 | ND |
| Hg | 0.0002 | 0.0006 | ND | ND | ND | ND |
| Se | 0.0002 | ND | 0.014 | 0.005 | 0.003 | ND |
| Ag | 0.005 | 0.005 | ND | ND | ND | ND |
| Cu | 0.005 | 0.015 | 0.020 | 0.010 | 0.010 | 0.005 |
| Fe | 0.01 | 0.10 | 0.09 | 0.06 | 0.06 | 0.03 |
| Mn | 0.02 | 0.03 | ND | ND | ND | ND |
| Phenols | 0.005 | --- | --- | --- | --- | --- |
| Zn | 0.01 | 0.16 | ND | ND | ND | ND |
| Al | 0.1 | 0.10 | ND | ND | ND | ND |
| B | 0.05 | 0.50 | 0.36 | 0.38 | 0.62 | 0.60 |
| Co | 0.01 | 0.03 | ND | ND | 0.01 | ND |
| Mo | 0.05 | 0.05 | 2.5 | 0.25 | 0.10 | 0.50 |
| Ni | 0.01 | 0.02 | ND | 0.01 | 0.02 | ND |
| V | 0.05 | ND | ND | ND | ND | ND |
| Radiologic | | | | | | |
| $^{226}Ra$ (pCi/l ± 2σ) | 0.03 | 26±1.0 | 0.12±0.03 | 52±3.0 | 0.38±0.04 | 1.11±0.08 |
| $^{228}Ra$ (pCi/l ± 2σ) | 1 to 2 | ND | ND | ND | ND | ND |
| U(mg/l ± 2σ) | 0.01 | 0.22±0.01 | ND | 22±1 | 0.21±0.01 | 0.03±0.01 |

Note: All chemical analyses are in mg/l except pH which is in units and electrical conductivity which is in µmhos/cm @ 25° C.

ND, less than detection limit. Detection limit for radiological constituents is 2σ counting statistics.

Chemical analysis by The Industrial Laboratories Company, Denver, Colorado.

Radiologic analyses by LFE Environmental Analysis Laboratories, Richmond, California.



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inch openings). The Jackpile ground water was then mixed with each of the four backfill samples in a 1:1 weight ratio. The mixtures were stirred and pH and electrical conductivity were monitored. This process was repeated until the pH and conductivity of the solutions stabilized, indicating an equilibrium had been reached. The supernatant waters were then extracted and analyzed for chemical and radiological constituents.

The experiment was designed to simulate a worst case condition. The materials were ground to a much finer degree than would typically be found in the backfilled pits, allowing much more surface area for reaction with the ground water. Only one equilibration was used - presumably second and later equilibrations simulating the through-flow of ground water would have shown a lesser degree of change in water chemistry. Offsetting this effect, water was mixed on a 1:1 weight ratio, far exceeding actual backfill conditions and, thus, providing a high degree of dilution of constituents dissolved from the simulated backfill materials.

The P-10 underground water used for the experiment was a sodium bicarbonate sulfate type (Table 7), similar to several samples of Jackpile sandstone ground water found in the western part of the mine area. The simulated reclaimed Jackpile sandstone water is chemically similar to the P-10 underground water with an increase in the proportion of sulfate and an overall increase in TDS. Nitrates were also high in this water, probably owing



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to the use of nitrate-based explosives in the mining operations.

The simulated reclaimed protore water is a sodium sulfate bicarbonate type similar in chemistry and concentration to water from well M1 (Table 5) which penetrates an ore-bearing zone within the Jackpile sandstone. The simulated reclaimed Dakota sandstone water is a sodium calcium sulfate bicarbonate type chemically similar and of similar concentration to water from old test well 10 (HSI, 1979, Table 1). The simulated reclaimed Dakota shale water is a sodium sulfate type very similar, although much less concentrated, to the water from M24 (Table 5).

Except for the protore sample, concentrations of uranium and radium-226 in the simulated reclaimed waters are lower than in the raw P-10 underground water. The increase in concentration of radiological constituents for the protore water is to be expected.

The simulated reclaimed waters are higher in TDS than the P-10 underground water. Their TDS concentrations, however, all fall within the range observed for Jackpile sandstone water within the mine area. All of the samples could also be correlated chemically to chemical types of ground water found within the mine. These experiments, then, would indicate that even under the worst case conditions, degradation of ground water by reaction with the backfill materials could be expected to fall within the limits already observed for ground water within the mine area.



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### 5.2.5 Ground Water South of Jackpile-Paguate Mine

The chemical quality of ground water south of the Jackpile-Paguate mine was not assessed in this investigation, primarily because sample points were not made available to HSI. However, chemistry data for wells in this area available from the USGS and BIA are included in Appendix B for future reference and comparison. None of the wells in question appear to be completed in the Jackpile sandstone.



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## 6.0 EFFECTS OF MINING AND RECLAMATION

The effects of mining and reclamation on the hydrology of the Jackpile-Paguate mine can be evaluated with precision only if the pre-mining hydrologic conditions are known. Some information relating to pre-mining hydrology does exist in the form of aerial photographs taken before mining and USGS topographic maps that show early mining conditions. We also know, qualitatively at least, that prior to mining, the area had a background surface radioactivity higher than the surrounding terrain (Anaconda, 1980, Plate 3.2-1). Some of the radioactive anomalies were in the streambeds and, in fact, the initial mining included removal of petrified, uranium-bearing tree trunks from the Rio Moquino channel (R. D. Lynn, Anaconda, personal communication, 1980). However, the lack of specific pre-mining hydrologic data, such as surface water flow measurements or water chemistry analyses, precludes any quantitative evaluation of the effects of mining and reclamation on the surface water hydrology and water chemistry of the area. Thus, the following section is necessarily based on inferences of what the pre-mining conditions were and our best judgement of the subsequent effects.

A previous report (HSI, 1981) discusses the ground-water hydrology of the mine area and the effects of mining and reclamation on occurrence and movement of ground water.



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## 6.1 SURFACE WATER HYDROLOGY

As a result of mining activities, the courses across the mine of both Rio Moquino and Rio Paguate have been altered. The course of Rio Moquino has been changed by the placement of excavated materials in the original channel and re-routing of the stream into a parallel drainage to the east. The effect of these alterations is to straighten a formerly meandering channel. This more direct route decreases the distance the stream has to travel, thus increasing the gradient and the average flow velocity of the stream in this local area.

Rio Paguate has been re-routed in several places. In the area of RP105 (Plate III), the channel was moved to the south to accommodate mining in the North Paguate pit (Herkenhoff, 1973). The new channel was constructed on backfill material and instead of returning to the main channel below the diversion, the channel was diverted into a parallel drainage south of the former channel. The main effect of re-routing of the Paguate is that near the confluence with Rio Moquino, the new channel has to make a sharp northerly turn around an alluvial block to intersect Rio Moquino. Over a period of years, it is likely that high flows down the Rio Paguate may breach the existing block and move the confluence farther downstream.

Reclamation activities should not have much effect on streamflow in Rio Paguate. There may be a very slight increase in flow when groundwater levels in the Jackpile sandstone and backfill materials recover

and ground water begins discharging to the stream deposits near the reconstructed portion of the channel (HSI, 1981). Along Rio Moquino, reclamation plans call for the repositioning of some of the dumps.

## 6.2 WATER QUALITY

### 6.2.1 Surface Water

Degradation of chemistry of surface water due to mining does not appear to be substantial. Rio Paguate at base flow degrades only slightly in major chemical constituents across the mine to its confluence with Rio Moquino. This degradation is probably due to concentration by the natural processes of evaporation and transpiration as the stream passes through an area of abundant phreatophytes.

Rio Paguate also shows an increase in concentration of radiologic constituents across the mine. Some of the degradation may be natural, as the first discovery of uranium was near Rio Paguate. Some of the radiologic constituents may come from runoff or leaching of stockpiles of ore and protore adjacent to the stream channel. It is unlikely that ground water discharged from the Jackpile sandstone directly degrades the stream in radiologic constituents because water samples taken from the Jackpile sandstone generally have lower concentrations of uranium and radium-226 than occur in the surface water.



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Rio Moquino degrades somewhat in major chemical constituents through the mine. Some of this increase in concentrations may be due to the materials introduced into the stream when the course was altered by encroachment of dumps. However, the water entering the mine upstream is of the same chemical type as the water above the confluence with Rio Paguate and the increase in concentration of chemical constituents is probably as much or more a result of evapotranspiration effects as the low flows become intermittant across the mine than it is of mining activities.

Our laboratory dissolution investigations suggest that occasional mobilization of radiologic constituents from mineralized rock material by surface runoff is insufficient to account for the increases in radioactivity observed in the streams. Also, as stated previously, surface radioactivity anomalies existed along stream channels in the area prior to mining operations. The increase in radiologic constituents attributable to mining cannot be determined with precision.

The water chemistry surveys for the streams above the mine show a continuing degradation in chemical and radiologic constituents downstream. The degradation through the mine is a continuation of these trends.

### 6.2.2 Ground Water

Ground water in the Jackpile sandstone has probably not been degraded by mining. The mining activities do not utilize water or any other solution



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that would mix with the existing ground water. Also, ground water levels have been drawn down to a point where little chance exists for interaction with surface operations. HSI (1979) has shown that there was no interaction between the Rabbit Ear and P-10 surface holding ponds and the Jackpile ground-water body.

Our laboratory equilibration investigations showed that even in a worst case situation, the degradation of ground water that may be attributable to backfill materials should result in water no worse than what is currently found in water from wells at other places in the mine area. The amount and type of degradation at any point in the backfill will be dependent upon the type of redeposited material and the position of the redeposited material in relation to the level of ground water and the direction of flow.



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# 7.0 SOURCES OF INFORMATION

## Publications


Anaconda Copper Company, New Mexico Operations, 1980, Reclamation Plan Jackpile-Paguate Mine: report to the U.S. Geological Survey, Conservation Division, September 1980.

Dames and Moore, 1976, Mining and Reclamation Plan, The Anaconda Company's Jackpile-Paguate Uranium Mine, Valencia County, New Mexico; report to The Anaconda Company, December, 1976.

Herkenhoff and Associates, Inc., 1973, Engineers Report; Diversion Channel at Jackpile Mine: report to The Anaconda Copper Company, June 1973.

Hydro-Search, Inc., 1979, Hydrogeologic Relationships, Rabbit Ear and P-10 Holding Ponds, Jackpile-Paguate Mine, Valencia County, New Mexico: report to Anaconda Copper Company, 48 pp., June 15, 1979.

Hydro-Search, Inc., 1981, Ground Water Hydrology of the Jackpile-Paguate Mine, New Mexico: report to Anaconda Copper Company, 41 pp., February 26, 1981.

Moench, R.H., 1963a, Geologic Map of the Seboyeta Quadrangle, New Mexico, U.S. Geological Survey Map GQ-207.

Moench, R.H., 1963b, Geologic Map of the Laguna Quadrangle, New Mexico, U.S. Geological Survey Map GQ-208.

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Schlee, J.S. and R.H. Moench, 1963b, Geologic Map of the Mesita Quadrangle, New Mexico, U.S. Geological Survey Map, GQ-210.


## Files


Anaconda Copper Company, Jackpile-Paguate Mine and Bluewater Mill.

Bureau of Indian Affairs, Ground-Water Quality Data for the Laguna Indian Reservation, New Mexico.

U.S. Geological Survey, Ground-Water Quality Data for Valencia County, New Mexico.


## Personal Communications


Lynn, R.D., 1980, personal communication, Anaconda Copper Company, General Manager, New Mexico Operations.

# APPENDIX A

## FINDINGS OF REPORT OF FEBRUARY 26, 1981
## REGARDING GROUND-WATER HYDROLOGY
## OF THE JACKPILE-PAGUATE MINE



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## 1.0 FINDINGS

1. The Jackpile sandstone of the Morrison Formation ranges in thickness from zero to 230 feet and dips to the north-northwest at about one degree through the Jackpile-Paguate Mine area.

2. The Jackpile contains ground water. The original water levels have been lowered by the mining activities as a result of seepage at pit walls and underground workings. The Jackpile is isolated hydraulically from other water-containing units by shales and mudstones, above and below.

   Pumping of hydrologic test wells shows that the Jackpile yields in the range of less than one gpm to about ten gpm. The Jackpile is a poor aquifer of extremely limited potential for use.

3. Pumping of seven representative pairs of test and observation wells shows the following average hydraulic properties for the observation wells:

   | | |
   |---|---|
   | transmissivity | 16.8 $ft^2$/day |
   | hydraulic conductivity | 0.22 ft/day |
   | storage coefficient | $2.1 \times 10^{-4}$ |

4. Recharge to the Jackpile occurs primarily southwest of the mine, along the upper Rio Paguate, and to a lesser extent along the Rio Moquino and Arroyo Pedro Padilla. Discharge from the Jackpile occurs to the Rio Paguate in the vicinity of its confluence with the Rio Moquino and to a minor extent to the upper portion of Oak Canyon.

   Under pre-mining and reclamation conditions a total of about 30 gpm moves through the Jackpile ground-water system in the mine area. Nearly all of this moves through the South Paguate portion of the mine.

5. Mined materials redeposited in the open pits are two to three orders of magnitude more permeable than the undisturbed Jackpile sandstone. As a result, ground water from the southwest will move through the relatively permeable backfill material of the South Paguate pit and will discharge on the north to backfill and alluvial materials beneath the Rio Paguate.

   Time for reestablishment of the South Paguate portion of the flow system is a minimum of 52 years.

6. Backfill in the North Paguate and Jackpile pits will become water-saturated to partial depth, but the volume of ground water passing through this portion of the system will be relatively small.



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# APPENDIX B

## GROUND-WATER QUALITY DATA

## SOUTH AND WEST OF JACKPILE-PAGUATE MINE

## NEW MEXICO



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## GROUND-WATER QUALITY DATA SOUTH AND WEST OF JACKPILE-PAGUATE MINE

The water from wells and springs west and south of the mine is from a variety of geologic units, including the Chinle Formation, Entrada Sandstone, Morrison Formation, Dakota Sandstone, Mancos Shale, volcanic rocks, and alluvium. The TDS concentrations range from 143 to 18,900 mg/l and average about 1,585 mg/l. A computerized listing of the available water chemistry data is given in Table A. Under the heading "Sample Number, Agency", the collecting agency and analyzing agencies are given. The abbreviations for collecting agencies are; ACL-Acoma Canoncito Laguna Hospital, GS-U.S. Geological Survey. The abbreviations for analyzing agency are; N-New Mexico State Department of Health.

Water from the Chinle Formation is high in sodium, chloride, and sulfates. Water from the alluvium is primarily a sodium sulfate type. The springs in the area are predominantly calcium or calcium magnesium bicarbonate types.

The range of TDS in ground water south of the Jackpile-Paguate mine is much greater than the range of TDS in the water from the Jackpile sandstone. The average TDS is also much higher, 1,585 mg/l versus 995 mg/l.

Radiologic analyses are available for only three wells south of the mine. These analyses show concentrations of RA-226 of 0.09 to 0.19 pCi/l and uranium concentrations of 0.007 to 0.1 mg/l.



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The data in this appendix are from provisional files of the U.S. Geological Survey in Albuquerque and from files of the Acoma Canoncito Laguna (ACL) hospital in Acomita (BIA). Data are as complete as we could obtain, however, locations of most of the wells and springs from the ACL hospital files are vague. Numerous attempts were made to obtain more accurate locations, but our calls were unanswered. Approximate locations of samples and TDS concentrations are shown in Plate A.

A request for well information was also made of the Governor of Laguna. He presented the request to the tribal council, who voted not to release any data to us. Requests for access to wells for the purposes of measuring water levels and sampling waters for analysis were ignored.



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Table B.

Ground-Water Quality Data

South and West of Jackpile-Paguate Mine

New Mexico



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ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS  REPORT DATE 05/05/81

| SAMPLE POINT | | LG09 PAGUATE WELL | | | LG09 PAGUATE WELL | | | LG10 PAGUATE LORENZO WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION DATA | | | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | LG100 - ACL-N | | | LG102 - ACL-B | | | LG101 - ACL-N | | |
| COLLECTION DATE, TIME | | 07/19/56 1200 | | | 01/20/75 1200 | | | 07/25/62 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | 28.00 | | | | | | | | |
| PH (F=FIELD, L=LAB) | | 7.60L | | | 7.50L | | | 7.60L | | |
| TDS (SUM OF GROSS, MG/L) | | 412.60 | | | 425.68 | | | 326.10 | | |
| TDS (BY EVAP., MG/L) | | 350.00 | | | 380.00 | | | 294.00 | | |
| TDS (BY CALC., MG/L) | | 317.04 | | | 313.08 | | | 239.69 | | |
| TDS (SUM-SIO2, MG/L) | | 412.60 | | | 425.68 | | | 326.10 | | |
| SP.COND. (UMHOS/CM@25C) | | | | | 530.00L | | | 430.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 188.00 | 3.081 | .534 | 221.52 | 3.631 | .631 | 170.00 | 2.786 | .656 |
| CO3-- | | 0.00 | 0.000 | 0.000 | 7.20 | .240 | .042 | 0.00 | 0.000 | 0.000 |
| CL- | | 11.00 | .310 | .054 | 8.87 | .250 | .043 | 5.00 | .141 | .033 |
| SO4-- | | 113.00 | 2.353 | .408 | 77.33 | 1.610 | .280 | 62.00 | 1.291 | .304 |
| F- | | .40 | .021 | .004 | .30 | .016 | .003 | .20 | .011 | .002 |
| NO3- | | .20 | .003 | .001 | .25 | .004 | .001 | 1.20 | .019 | .005 |
| PO4--- | | | | | .11 | .003 | .001 | | | |
| TOTAL ANIONS | | 312.60 | 5.769 | | 315.58 | 5.754 | | 238.40 | 4.248 | |
| NA+ | | 0.00 | 0.000 | 0.000 | 24.60 | 1.070 | .183 | 18.00 | .783 | .168 |
| K+ | | | | | 3.13 | .080 | .014 | 4.70 | .120 | .026 |
| CA++ | | 74.00 | 3.693 | .633 | 64.13 | 3.200 | .547 | 49.00 | 2.445 | .524 |
| MG++ | | 26.00 | 2.139 | .367 | 18.24 | 1.500 | .256 | 16.00 | 1.316 | .282 |
| TOTAL CATIONS | | 100.00 | 5.831 | | 110.10 | 5.851 | | 87.70 | 4.664 | |
| SIO2 | (MG/L) | | | | | | | | | |
| TOTAL EPM | | | 11.600 | | | 11.605 | | | 8.913 | |
| ANIONS / CATIONS | | | .989 | | | .984 | | | .911 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | 0.0000 | | | | | | .9200 | |
| MN | (MG/L) | | | | | | | | 0.0000 | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.727 | | | 2.133 | | | 1.858 | |
| NA / K | | | | | | 13.371 | | | 6.515 | |
| CA+MG / NA+K | | | | | | 4.087 | | | 4.164 | |
| HCO3+CO3 / CL+SO4 | | | 1.157 | | | 2.081 | | | 1.946 | |
| SO4 / CL | | | 7.582 | | | 6.434 | | | 9.152 | |



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SUMMARY OF WATER CHEMISTRY ANALYSIS  REPORT DATE 05/05/81

| | LG11 PAGUATE PUBLIC WELL | | | LG12 PAGUATE NEW WATER SYSTEM | | | LG13 PAGUATE 70FT WELL | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT LOCATION DATA | LG103 - ACL-N | | | LG104 - ACL-N | | | LG105 - ACL-N | | |
| SAMPLE NUMBER, AGENCY | | | | | | | | | |
| COLLECTION DATE, TIME | 07/05/63 1200 | | | 04/14/66 1200 | | | 01/14/73 1200 | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | |
| PH (F=FIELD, L=LAB) | 8.20L | | | 9.00L | | | 7.60L | | |
| TDS (SUM OF GROSS, MG/L) | 368.40 | | | 518.00 | | | 478.55 | | |
| TDS (BY EVAP., MG/L) | 325.00 | | | 348.00 | | | 416.00 | | |
| TDS (BY CALC., MG/L) | 257.59 | | | 403.12 | | | 354.17 | | |
| TDS (SUM-SIO2, MG/L) | 368.40 | | | 518.00 | | | 478.55 | | |
| SP.COND. (UMHOS/CM@25C) | 450.00L | | | 490.00L | | | 630.00L | | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | 218.00 | 3.573 | .778 | 226.00 | 3.704 | .784 | 244.70 | 4.011 | .633 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 6.00 | .169 | .037 | 6.00 | .169 | .036 | 10.60 | .299 | .047 |
| SO4-- | 40.00 | .833 | .181 | 33.00 | .687 | .145 | 95.10 | 1.980 | .313 |
| F- | .30 | .016 | .003 | .40 | .021 | .004 | .42 | .022 | .003 |
| NO3- | 0.00 | 0.000 | 0.000 | 8.90 | .144 | .030 | 1.24 | .020 | .003 |
| PO4--- | | | | | | | .03 | .001 | .000 |
| TOTAL ANIONS | 264.30 | 4.591 | | 274.30 | 4.725 | | 352.09 | 6.333 | |
| NA+ | 20.00 | .870 | .155 | 161.00 | 7.004 | .600 | 29.40 | 1.279 | .193 |
| K+ | 5.10 | .130 | .023 | 5.70 | .146 | .012 | 6.26 | .160 | .024 |
| CA++ | 58.00 | 2.894 | .515 | 56.00 | 2.794 | .239 | 70.10 | 3.498 | .527 |
| MG++ | 21.00 | 1.727 | .307 | 21.00 | 1.727 | .148 | 20.70 | 1.703 | .256 |
| TOTAL CATIONS | 104.10 | 5.622 | | 243.70 | 11.671 | | 126.46 | 6.640 | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 10.213 | | | 16.396 | | | 12.972 | |
| ANIONS / CATIONS | | .817 | | | .405 | | | .954 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | 1.1400 | | | .0600 | | | | |
| MN (MG/L) | | 0.0000 | | | 0.0000 | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | 1.675 | | | 1.618 | | | 2.054 | |
| NA / K | | 6.671 | | | 44.052 | | | 7.990 | |
| CA+MG / NA+K | | 4.620 | | | .632 | | | 3.614 | |
| HCO3+CO3 / CL+SO4 | | 3.566 | | | .526 | | | 1.760 | |
| SO4 / CL | | 4.922 | | | 4.059 | | | 6.621 | |



350001789

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG14 PAGUATE WELL #1 | | | LG15 CASA BLANCA PHS CLINIC | | | LG16 PASAJE SUPPLY YARD | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | LG106 - ACL-N | | | LG107 - ACL-N | | | LG108 - ACL-N | | |
| LOCATION DATA | | | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | | | | | | | | | |
| COLLECTION DATE, TIME | | 06/19/78 1200 | | | 06/16/66 1200 | | | 08/11/59 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | 27.00 | | |
| PH (F=FIELD, L=LAB) | | 7.94L | | | | | | 7.70L | | |
| TDS (SUM OF GROSS, MG/L) | | 425.21 | | | | | | 1948.40 | | |
| TDS (BY EVAP., MG/L) | | 340.00 | | | | | | 3414.00 | | |
| TDS (BY CALC., MG/L) | | 310.13 | | | | | | 1769.48 | | |
| TDS (SUM-SIO2, MG/L) | | 425.21 | | | | | | 1948.40 | | |
| SP.COND. (UMHOS/C@25C) | | 540.00L | | | 1700.00L | | | | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 226.40 | 3.711 | .642 | | | | 352.00 | 5.769 | .179 |
| CO3-- | | 10.00 | .333 | .059 | | | | 4.00 | .133 | .004 |
| CL- | | 8.60 | .243 | .042 | | | | 241.00 | 7.927 | .246 |
| SO4-- | | 70.80 | 1.474 | .255 | | | | 886.00 | 14.322 | .569 |
| F- | | .34 | .018 | .003 | | | | 1.40 | .074 | .002 |
| NO3- | | .19 | .003 | .001 | | | | | | |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 316.33 | 5.782 | | | | | 1519.40 | 32.225 | |
| NA+ | | 25.30 | 1.101 | .190 | | | | | | |
| K+ | | 4.68 | .120 | .021 | | | | | | |
| CA++ | | 59.10 | 2.949 | .509 | | | | 200.00 | 9.380 | .345 |
| MG++ | | 19.80 | 1.629 | .281 | | | | 230.00 | 18.920 | .655 |
| TOTAL CATIONS | | 108.88 | 5.798 | | | | | 430.00 | 29.900 | |
| SIO2 | (MG/L) | | | | | | | | | |
| TOTAL EPM | | | 11.580 | | | | | | 61.125 | |
| ANIONS / CATIONS | | | .997 | | | | | | 1.119 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | < | .2000 | | | | | | | |
| MN | (MG/L) | < | .0500 | | | | | | | |
| PHENOLS | (MG/L) | | | | 0.0000 | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.911 | | | | | | .527 | |
| NA / K | | | 9.197 | | | | | | | |
| CA+MG / NA+K | | | 3.752 | | | | | | .225 | |
| HCO3+CO3 / CL+SO4 | | | 2.356 | | | | | | 2.311 | |
| SO4 / CL | | | 6.076 | | | | | | | |



350001790

SUMMARY OF WATER CHEMISTRY ANALYSIS REPORT DATE 05/05/81

| | LG17 CASA BLANCA END OF LINE ON W | | | LG18 PARAJE CONCHO WELL | | | LG19 MESITA 100 YDS E OF WINDMILL | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | |
| LOCATION DATA | LG109 - ACL-N | | | LG110 - ACL-N | | | LG111 - ACL-N | | |
| SAMPLE NUMBER, AGENCY | | | | | | | | | |
| COLLECTION DATE, TIME | 12/28/61 1200 | | | 06/17/63 1200 | | | 07/12/56 1200 | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | 28.00 | | |
| PH (F=FIELD, L=LAB) | | 8.30L | | | 8.20L | | 7.40L | | |
| TDS (SUM OF GROSS, MG/L) | | 1243.80 | | | 2027.02 | | 727.40 | | |
| TDS (BY EVAP., MG/L) | | 1240.00 | | | 1905.00 | | 760.00 | | |
| TDS (BY CALC., MG/L) | | 1124.35 | | | 1827.77 | | 666.24 | | |
| TDS (SUM-SIO2, MG/L) | | 1243.80 | | | 2027.02 | | 727.40 | | |
| SP.COND. (UMHOS/CM@25C) | | 1660.00L | | | 2500.00L | | | | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | 235.00 | 3.852 | .221 | 392.00 | 6.425 | .228 | 140.00 | 2.295 | .219 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 37.00 | 1.044 | .060 | 67.00 | 1.890 | .067 | 55.00 | 1.552 | .148 |
| SO4-- | 598.00 | 12.450 | .713 | 945.00 | 19.675 | .697 | 311.00 | 6.475 | .617 |
| F- | 1.60 | .084 | .005 | 4.40 | .232 | .008 | .90 | .047 | .005 |
| NO3- | 1.80 | .029 | .002 | .62 | .010 | .000 | 7.50 | .121 | .012 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 873.40 | 17.459 | | 1409.02 | 28.231 | | 514.40 | 10.490 | |
| NA+ | 233.00 | 10.136 | .544 | 454.00 | 19.749 | .680 | 115.00 | 5.003 | .484 |
| K+ | 2.40 | .061 | .003 | 18.00 | .460 | .016 | | | |
| CA++ | 82.00 | 4.092 | .219 | 98.00 | 4.890 | .168 | 84.00 | 4.192 | .405 |
| MG++ | 53.00 | 4.360 | .234 | 48.00 | 3.948 | .136 | 14.00 | 1.152 | .111 |
| TOTAL CATIONS | 370.40 | 18.648 | | 618.00 | 29.048 | | 213.00 | 10.346 | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 36.107 | | | 57.279 | | | 20.835 | |
| ANIONS / CATIONS | | .936 | | | .972 | | | 1.014 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | .5600 | | | 1.3400 | | | | |
| MN (MG/L) | | 0.0000 | | | 0.0000 | | | 0.0000 | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | .939 | | | 1.239 | | | 3.640 | |
| NA / K | | 165.159 | | | 42.904 | | | | |
| CA+MG / NA+K | | .829 | | | .437 | | | | |
| HCO3+CO3 / CL+SO4 | | .285 | | | .298 | | | .286 | |
| SO4 / CL | | 11.928 | | | 10.410 | | | 4.173 | |



350001791

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | LG20 MESITA NEW WELL | | | LG21 MESITA MITO WELL HOUSE | | | LG22 FLW LAGUNA EAST END OF LINE | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | |
| LOCATION DATA | | | | | | | | | |
| SAMPLE NUMBER, AGENCY | LG112 - ACL-N | | | LG114 - ACL-N | | | LG115 - ACL-N | | |
| COLLECTION DATE, TIME | 05/03/63 1200 | | | 08/01/66 1200 | | | 12/29/61 1200 | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | |
| PH (F=FIELD, L=LAB) | 8.90L | | | 7.80L | | | 8.40L | | |
| TDS (SUM OF GROSS, MG/L) | 1363.70 | | | 2623.30 | | | 1245.30 | | |
| TDS (BY EVAP., MG/L) | 1375.00 | | | | | | 1230.00 | | |
| TDS (BY CALC., MG/L) | 1270.69 | | | 2449.67 | | | 1141.61 | | |
| TDS (SUM-SIO2, MG/L) | 1363.70 | | | 2623.00 | | | 1245.30 | | |
| SP.COND. (UMHOS/CM@25C) | 1870.00L | | | 3800.00L | | | 1685.00L | | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | 183.00 | 2.999 | .148 | 341.00 | 5.589 | .143 | 204.00 | 3.344 | .189 |
| CO3-- | 40.00 | 1.333 | .066 | 0.00 | 0.000 | 0.000 | 9.00 | .300 | .017 |
| CL- | 106.00 | 2.990 | .148 | 600.00 | 16.926 | .432 | 44.00 | 1.241 | .070 |
| SO4-- | 596.00 | 12.409 | .613 | 800.00 | 16.656 | .425 | 610.00 | 12.700 | .718 |
| F- | 2.00 | .105 | .005 | | | | 1.50 | .084 | .005 |
| NO3- | 25.00 | .403 | .020 | | | | 1.60 | .026 | .001 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 952.00 | 20.240 | | 1741.00 | 39.171 | | 870.20 | 17.695 | |
| NA+ | 306.00 | 13.311 | .684 | 800.00 | 34.800 | .884 | 242.00 | 10.527 | .560 |
| K+ | 4.70 | .120 | .006 | | | | 5.10 | .130 | .007 |
| CA++ | 74.00 | 3.693 | .179 | 68.00 | 3.393 | .086 | 74.00 | 3.693 | .196 |
| MG++ | 31.00 | 2.550 | .131 | 14.00 | 1.152 | .029 | 54.00 | 4.442 | .236 |
| TOTAL CATIONS | 411.70 | 19.474 | | 882.00 | 39.345 | | 375.10 | 18.792 | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 39.714 | | | 78.516 | | | 36.487 | |
| ANIONS / CATIONS | | 1.039 | | | .996 | | | .942 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | .1600 | | | 4.0000 | | | .0600 | |
| MN (MG/L) | | .2000 | | | .4000 | | | 0.0000 | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | 1.370 | | | 2.946 | | | .831 | |
| NA / K | | 110.760 | | | | | | 3.724 | |
| CA+MG / NA+K | | .450 | | | | | | .767 | |
| HCO3+CO3 / CL+SO4 | | .281 | | | .166 | | | .261 | |
| SO4 / CL | | 4.159 | | | .984 | | | 10.232 | |



350001792

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG23 OLD LAGUNA SPRNG NR HLTH CT | LG24 NEW LAGUNA PHS CLINIC | LG24 NEW LAGUNA PHS CLINIC |
|---|---|---|---|---|
| SAMPLE POINT LOCATION DATA | | | | |
| SAMPLE NUMBER, AGENCY | | LG116 - ACL-N | LG117 - ACL-N | LG118 - ACL-N |
| COLLECTION DATE, TIME | | 07/11/63 1200 | 04/14/66 1200 | 05/27/77 1200 |
| WATER LEVEL | | | | |
| TEMPERATURE (C) | | | | 7.70L |
| PH (F=FIELD, L=LAB) | | 8.00L | 9.40L | 393.79 |
| TDS (SUM OF GROSS, MG/L) | | 1867.80 | 1269.80 | 902.00 |
| TDS (BY EVAP., MG/L) | | 1945.00 | 1259.00 | 393.79 |
| TDS (BY CALC., MG/L) | | 1784.44 | 1120.87 | 393.79 |
| TDS (SUM-SIO2, MG/L) | | 1867.80 | 1269.80 | |
| SP.CND. (UMHOS/CM@25C) | | 2200.00L | 1640.00L | |
| | | MG/L EPM ION. RAT. | MG/L EPM ION. RAT. | MG/L EPM ION. RAT. |
| HCO3- | | 164.00 2.688 .097 | 293.00 4.802 .262 | |
| CO3-- | | 0.00 0.000 0.000 | 16.00 .533 .029 | |
| CL- | | 108.00 3.047 .110 | 74.00 2.088 .114 | 48.00 1.354 .157 |
| SO4-- | | 1044.00 21.736 .784 | 518.00 10.785 .599 | 344.00 7.162 .833 |
| F- | | 1.30 .068 .002 | 1.30 .068 .004 | 1.45 .076 .009 |
| NO3- | | 11.00 .177 .006 | 1.80 .029 .002 | .34 .005 .001 |
| PO4--- | | | | |
| TOTAL ANIONS | | 1328.30 27.717 | 904.10 18.305 | 393.79 8.599 |
| NA+ | | 168.00 7.308 .261 | 186.00 8.091 .431 | |
| K+ | | 5.50 .141 .005 | 9.70 .248 .013 | |
| CA++ | | 294.00 14.671 .523 | 110.00 5.489 .293 | |
| MG++ | | 72.00 5.923 .211 | 60.00 4.936 .263 | |
| TOTAL CATIONS | | 539.50 28.042 | 365.70 18.764 | |
| SIO2 | (MG/L) | | | |
| TOTAL EPM | | 55.759 | 37.069 | 8.599 |
| ANIONS / CATIONS | | .988 | .976 | |
| AS | (MG/L) | | | .0025 |
| BA | (MG/L) | | | |
| CD | (MG/L) | | | .0120 |
| CR | (MG/L) | | | |
| CN | (MG/L) | | | .0025 |
| PB | (MG/L) | | | |
| HG | (MG/L) | | | .0470 |
| SE | (MG/L) | | | .0950 |
| AG | (MG/L) | | | < .0020 |
| CU | (MG/L) | | | |
| FE | (MG/L) | 0.0000 | .0100 | |
| MN | (MG/L) | 0.0000 | 0.0000 | |
| PHENOLS | (MG/L) | | | |
| ZN | (MG/L) | | | |
| AL | (MG/L) | | | |
| B | (MG/L) | | | |
| CO | (MG/L) | | | |
| MO | (MG/L) | | | |
| NI | (MG/L) | | | |
| V | (MG/L) | | | |
| GROSS ALPHA | (PCI/L) | | | |
| URANIUM | (MG/L) | | | |
| RA-226 | (PCI/L) | | | |
| RA-228 | (PCI/L) | | | |
| RA-226 + -228 | (PCI/L) | | | |
| PB-210 | (PCI/L) | | | |
| TH-230 | (PCI/L) | | | |
| TH-232 | (PCI/L) | | | |
| CA / MG | | 2.477 | 1.112 | |
| NA / K | | 51.964 | 32.621 | |
| CA+MG / NA+K | | 2.765 | 1.250 | |
| HCO3+CO3 / CL+SO4 | | .108 | .414 | |
| SO4 / CL | | 7.134 | 5.166 | 5.299 |



350001793

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | LG25 NEW LAGUNA #1 WELL 98FT | LG26 PRIMINAL VILLAGE | |
|---|---|---|---|
| SAMPLE POINT | | | |
| LOCATION DATA | | | |
| SAMPLE NUMBER, AGENCY | LG119 - ACL-N | LG120 - ACL-N | |
| COLLECTION DATE, TIME | 01/18/73 1200 | 07/19/56 1200 | |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | 28.00 | |
| PH (F=FIELD, L=LAB) | 8.00L | 8.10L | |
| TDS (SUM OF GROSS, MG/L) | 1284.47 | 1139.30 | |
| TDS (BY EVAP., MG/L) | 1181.00 | 1064.00 | |
| TDS (BY CALC., MG/L) | 1120.39 | 990.88 | |
| TDS (SUM-SIO2, MG/L) | 1284.47 | 1139.30 | |
| SP.COND. (UMHOS/CM@25C) | 1450.00L | | |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 322.80 | 5.291 | .291 | 292.00 | 4.786 | .300 | | | |
| CO3-- | 18.60 | .620 | .034 | 28.00 | .933 | .058 | | | |
| CL- | 61.40 | 1.732 | .095 | 27.00 | .762 | .048 | | | |
| SO4-- | 500.50 | 10.420 | .572 | 453.00 | 9.431 | .591 | | | |
| F- | 1.81 | .095 | .005 | .90 | .047 | .003 | | | |
| NO3- | 3.10 | .050 | .003 | .40 | .006 | .000 | | | |
| PO4--- | .03 | .001 | .000 | | | | | | |
| TOTAL ANIONS | 908.24 | 18.209 | | 801.30 | 15.966 | | | | |
| NA+ | 243.20 | 10.579 | .559 | 283.00 | 12.311 | .799 | | | |
| K+ | 3.13 | .080 | .004 | | | | | | |
| CA++ | 75.20 | 3.752 | .198 | 44.00 | 2.196 | .142 | | | |
| MG++ | 54.70 | 4.500 | .238 | 11.00 | .905 | .059 | | | |
| TOTAL CATIONS | 376.23 | 18.911 | | 338.00 | 15.411 | | | | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 37.121 | | | 31.377 | | | | |
| ANIONS / CATIONS | | .963 | | | 1.036 | | | | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | .0300 | | | 0.0000 | | | | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | 0.1100 | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | .834 | | | 2.426 | | | | |
| NA / K | | 132.184 | | | | | | | |
| CA+MG / NA+K | | .774 | | | | | | | |
| HCO3+CO3 / CL+SO4 | | .486 | | | .561 | | | | |
| SO4 / CL | | 6.016 | | | 10.383 | | | | |



350001794

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/31

| | | LG27 ENCINAL CANYON SPRING | LG27 ENCINAL CANYON SPRING | LG28 ENCINAL COMM SYST NR SPRING |
|---|---|---|---|---|
| SAMPLE POINT | | | | |
| LOCATION DATA | | | | |
| SAMPLE NUMBER, AGENCY | | LG121 - ACL-N | LG122 - ACL-N | LG123 - ACL-N |
| COLLECTION DATE, TIME | | 01/27/67 1200 | 01/18/73 1200 | 06/19/78 1200 |
| WATER LEVEL | | | | |
| TEMPERATURE (C) | | | | |
| PH (F=FIELD, L=LAB) | | 8.00L | 8.00L | 8.10L |
| TDS (SUM OF GROSS, MG/L) | | 150.78 | 143.64 | 129.31 |
| TDS (BY EVAP., MG/L) | | 165.00 | 158.00 | 143.00 |
| TDS (BY CALC., MG/L) | | 96.39 | 94.33 | 90.73 |
| TDS (SUM-SIO2, MG/L) | | 150.78 | 143.64 | 129.31 |
| SP.COND. (UMHOS/CM@25C) | | 195.00L | 190.00L | 187.00L |
| | | MG/L EPM ION. RAT. | MG/L EPM ION. RAT. | MG/L EPM ION. RAT. |
| HCO3- | | 107.00 1.754 .915 | 97.00 1.590 .889 | 75.90 1.244 .756 |
| CO3-- | | 0.00 0.000 0.000 | | .90 .027 .016 |
| CL- | | 4.50 .127 .066 | 3.50 .099 .055 | 3.80 .107 .065 |
| SO4-- | | 1.00 .021 .011 | 2.90 .060 .034 | 12.00 .250 .152 |
| F- | | .25 .013 .007 | .33 .017 .010 | .24 .013 .008 |
| NO3- | | .13 .002 .001 | 1.24 .020 .011 | .26 .004 .003 |
| PO4--- | | | .05 .002 .001 | |
| TOTAL ANIONS | | 112.88 1.917 | 105.02 1.798 | 93.00 1.645 |
| NA+ | | 10.00 .435 .217 | 11.50 .500 .265 | 9.20 .400 .218 |
| K+ | | 3.10 .079 .040 | 3.52 .090 .048 | 3.51 .090 .049 |
| CA++ | | 17.00 .848 .423 | 20.00 .998 .530 | 18.40 .918 .500 |
| MG++ | | 7.80 .642 .320 | 3.60 .296 .157 | 5.20 .428 .233 |
| TOTAL CATIONS | | 37.90 2.004 | 38.62 1.894 | 36.31 1.836 |
| SIO2 | (MG/L) | | | |
| TOTAL EPM | | 3.921 | 3.672 | 3.480 |
| ANIONS / CATIONS | | .956 | .949 | .896 |
| AS | (MG/L) | | | < .0050 |
| BA | (MG/L) | | | < .1000 |
| CD | (MG/L) | | | < .0010 |
| CR | (MG/L) | | | < .0050 |
| CN | (MG/L) | | | |
| PB | (MG/L) | | | < .0050 |
| HG | (MG/L) | | | < .0050 |
| SE | (MG/L) | | | < .0050 |
| AG | (MG/L) | | | < .0010 |
| CU | (MG/L) | | | |
| FE | (MG/L) | .1200 | | < .2500 |
| MN | (MG/L) | 0.0000 | | < .0500 |
| PHENOLS | (MG/L) | | | |
| ZN | (MG/L) | | | |
| AL | (MG/L) | | | |
| B | (MG/L) | | | |
| CO | (MG/L) | | | |
| MO | (MG/L) | | | |
| NI | (MG/L) | | | |
| V | (MG/L) | | | |
| GROSS ALPHA | (PCI/L) | | | |
| URANIUM | (MG/L) | | | |
| RA-226 | (PCI/L) | | | |
| RA-228 | (PCI/L) | | | |
| RA-226 + -228 | (PCI/L) | | | |
| PB-210 | (PCI/L) | | | |
| TH-230 | (PCI/L) | | | |
| TH-232 | (PCI/L) | | | |
| CA / MG | | .322 | 3.370 | 2.146 |
| NA / K | | 5.488 | 5.558 | 4.459 |
| CA+MG / NA+K | | 2.897 | 2.132 | 2.747 |
| HCO3+CO3 / CL+SO4 | | 11.868 | 9.392 | 8.559 |
| SO4 / CL | | .164 | .512 | 2.331 |



350001795

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG29 ENCINAL COMM SYST NR WINDMLL | | | LG30 ENCINAL COMM SYST 1.25MI S | | | LG31 WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | 09.04.16.324 | | |
| LOCATION DATA | | | | | | | | LG001 - GS- | | |
| SAMPLE NUMBER, AGENCY | | LG124 - ACL-N | | | LG125 - ACL-N | | | | | |
| COLLECTION DATE, TIME | | 12/28/61 1200 | | | 12/28/61 1200 | | | 05/11/59 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | | |
| PH (F=FIELD, L=LAB) | | 8.30L | | | 8.30L | | | | | |
| TDS (SUM OF GROSS, MG/L) | | 1166.80 | | | 1181.30 | | | 320.00 | | |
| TDS (BY EVAP., MG/L) | | 1125.00 | | | 1140.00 | | | | | |
| TDS (BY CALC., MG/L) | | 1001.09 | | | 1014.07 | | | 321.00 | | |
| TDS (SUM-SIO2, MG/L) | | 1166.80 | | | 1141.30 | | | 320.00 | | |
| SP.COND. (UMHOS/CM@25C) | | 1580.00L | | | 1580.00L | | | 3870.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 326.00 | 5.343 | .347 | 329.00 | 5.392 | .345 | | | |
| CO3-- | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | | | |
| CL- | | 22.00 | .621 | .040 | 23.00 | .649 | .042 | 320.00 | 9.027 | 1.000 |
| SO4-- | | 449.00 | 9.348 | .607 | 456.00 | 9.494 | .608 | | | |
| F- | | 1.10 | .058 | .004 | 1.10 | .058 | .004 | | | |
| NO3- | | 1.40 | .023 | .001 | 1.90 | .031 | .002 | | | |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 799.50 | 15.392 | | 811.00 | 15.624 | | 320.00 | 9.027 | |
| NA+ | | 328.00 | 14.268 | .864 | 334.00 | 14.529 | .876 | | | |
| K+ | | 4.30 | .110 | .007 | 4.30 | .110 | .007 | | | |
| CA++ | | 23.00 | 1.148 | .070 | 21.00 | 1.048 | .063 | | | |
| MG++ | | 12.00 | .987 | .060 | 11.00 | .905 | .055 | | | |
| TOTAL CATIONS | | 367.30 | 16.513 | | 370.30 | 16.592 | | | | |
| SIO2 | (MG/L) | | | | | | | | | |
| TOTAL EPM | | | 31.905 | | | 32.215 | | | 9.027 | |
| ANIONS / CATIONS | | | .932 | | | .942 | | | | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .2400 | | | .6800 | | | | |
| MN | (MG/L) | | 0.0000 | | | 0.0000 | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.163 | | | 1.158 | | | | |
| NA / K | | | 129.767 | | | 132.141 | | | | |
| CA+MG / NA+K | | | .148 | | | .133 | | | | |
| HCO3+CO3 / CL+SO4 | | | .536 | | | .532 | | | | |
| SO4 / CL | | | 15.063 | | | 14.632 | | | | |



350001796

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS  REPORT DATE 05/05/81

| SAMPLE POINT | LG32 WELL | LG33 MESITA DAY SCHOOL KITCHEN | LG34 MESITA PUMP HSE RITO VILLAGE |
|---|---|---|---|
| LOCATION DATA | 09.04.18.300 | 09.04.18.313 | 09.04.19.211 |
| SAMPLE NUMBER, AGENCY | LG002 - GS | LG003 - ACL-N | LG014 - ACL-N |
| COLLECTION DATE, TIME | 01/16/59 1200 | 08/23/62 1200 | 11/22/61 1200 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | 8.10L | 8.40L |
| PH (F=FIELD, L=LAB) | | 1615.70 | 1391.70 |
| TDS (SUM OF GROSS, MG/L) | 78.00 | 1450.00 | 1190.00 |
| TDS (BY EVAP., MG/L) | | 1339.69 | 1162.97 |
| TDS (BY CALC., MG/L) | 78.00 | 1615.70 | 1391.70 |
| TDS (SUM-SIO2, MG/L) | 79.00 | 2110.00L | 1850.00L |
| SP.COND. (UMHOS/CM@25C) | 2630.00L | | |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | | | | 543.00 | 8.900 | .426 | 450.00 | 7.376 | .397 |
| CO3-- | | | | 0.00 | 0.000 | 0.000 | 38.00 | 1.267 | .068 |
| CL- | 78.00 | 2.200 | 1.000 | 46.00 | 1.298 | .062 | 32.00 | .903 | .049 |
| SO4-- | | | | 500.00 | 10.577 | .506 | 430.00 | 8.953 | .482 |
| F- | | | | 2.60 | .137 | .007 | 1.10 | .058 | .003 |
| NO3- | | | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 78.00 | 2.200 | | 1099.60 | 20.911 | | 951.10 | 19.555 | |
| NA+ | | | | 490.00 | 21.315 | .937 | 419.00 | 18.227 | .944 |
| K+ | | | | 3.90 | .100 | .004 | 4.70 | .120 | .006 |
| CA++ | | | | 15.00 | .749 | .033 | 13.00 | .649 | .034 |
| MG++ | | | | 7.20 | .592 | .026 | 3.90 | .321 | .017 |
| TOTAL CATIONS | | | | 516.10 | 22.755 | | 440.60 | 19.316 | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 2.200 | | | 43.666 | | | 37.871 | |
| ANIONS / CATIONS | | | | | .919 | | | .961 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | .6000 | | | .8800 | |
| FE (MG/L) | | | | | .0500 | | | 0.0000 | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | | | | 1.264 | | | 2.022 | |
| NA / K | | | | | 213.742 | | | 151.661 | |
| CA+MG / NA+K | | | | | .063 | | | .053 | |
| HCO3+CO3 / CL+SO4 | | | | | .750 | | | .877 | |
| SO4 / CL | | | | | 9.150 | | | 8.917 | |



350001797

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | LG35 SPRING | | | | | | | | |
| LOCATION DATA | | C9.05.04.133 | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | LG005 - GS- | | | | | | | | |
| COLLECTION DATE, TIME | | 03/25/65 1200 | | | | | | | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | | |
| PH (F=FIELD, L=LAB) | | 7.60F | | | | | | | | |
| TDS (SUM OF GROSS, MG/L) | | 1675.10 | | | | | | | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 1568.36 | | | | | | | | |
| TDS (SUM-SIO2, MG/L) | | 1648.10 | | | | | | | | |
| SP.COND. (UMHOS/CM@25C) | | 2280.00L | | | | | | | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 210.00 | 3.442 | .123 | | | | | | |
| CO3-- | | 0.00 | 0.000 | 0.000 | | | | | | |
| CL- | | 112.00 | 3.160 | .113 | | | | | | |
| SO4-- | | 1020.00 | 21.236 | .761 | | | | | | |
| F- | | 1.10 | .058 | .002 | | | | | | |
| NO3- | | | | | | | | | | |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 1343.10 | 27.896 | | | | | | | |
| NA+ | | | | | | | | | | |
| K+ | | | | | | | | | | |
| CA++ | | 229.00 | 11.427 | .646 | | | | | | |
| MG++ | | 76.00 | 6.252 | .354 | | | | | | |
| TOTAL CATIONS | | 305.00 | 17.679 | | | | | | | |
| SIO2 | (MG/L) | | 27.00 | | | | | | | |
| TOTAL EPM | | | 45.575 | | | | | | | |
| ANIONS / CATIONS | | | 1.578 | | | | | | | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .0070 | | | | | | | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.828 | | | | | | | |
| NA / K | | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | | .141 | | | | | | | |
| SO4 / CL | | | 6.721 | | | | | | | |



350001798

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| SAMPLE POINT | LG36 WELL | LG36 WELL | LG36 WELL |
|---|---|---|---|
| LOCATION DATA | 09.05.12.442A | 09.05.12.442A | 09.05.12.442A |
| SAMPLE NUMBER, AGENCY | LG006 - GS- | LG007 - GS- | LG008 - GS- |
| COLLECTION DATE, TIME | 05/13/63 1200 | 05/15/63 1200 | 09/19/63 2200 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | | 7.30F |
| PH (F=FIELD, L=LAB) | 7.50F | 7.70F | 18359.00 |
| TDS (SUM OF GROSS, MG/L) | 3330.00 | 3382.00 | |
| TDS (BY EVAP., MG/L) | | | 17698.21 |
| TDS (BY CALC., MG/L) | 3121.60 | 3174.61 | 18345.00 |
| TDS (SUM-SIO2, MG/L) | 3330.00 | 3382.00 | 23200.00CL |
| SP.COND. (UMHOS/CM@25C) | 5450.00L | 5580.00L | |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 410.00 | 6.720 | .095 | 408.00 | 6.687 | .093 | 1300.00 | 21.307 | .375 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 420.00 | 11.848 | .168 | 414.00 | 11.679 | .163 | 5300.00 | 163.618 | .574 |
| SO4-- | 2500.00 | 52.050 | .737 | 2560.00 | 53.299 | .744 | 4900.00 | 99.935 | .351 |
| F- | | | | | | | 3.00 | .158 | .001 |
| NO3- | | | | | | | | | |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 3330.00 | 70.618 | | 3382.00 | 71.665 | | 11903.00 | 285.019 | |
| NA+ | | | | | | | 5600.00 | 243.600 | .827 |
| K+ | | | | | | | 32.00 | .818 | .003 |
| CA++ | | | | | | | 510.00 | 25.449 | .086 |
| MG++ | | | | | | | 300.00 | 24.679 | .084 |
| TOTAL CATIONS | | | | | | | 6442.00 | 294.545 | |
| SIO2 (MG/L) | | | | | | | | 14.00 | |
| TOTAL EPM ANIONS / CATIONS | | 70.618 | | | 71.665 | | | 579.564 | |
| | | | | | | | | .968 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | | | | | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | 2.6000 | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | | | | | | | 1.031 | |
| NA / K | | | | | | | | 297.712 | |
| CA+MG / NA+K | | | | | | | | .205 | |
| HCO3+CO3 / CL+SO4 | | .105 | | | .103 | | | .041 | |
| SO4 / CL | | 4.393 | | | 4.564 | | | .611 | |



350001799

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | LG36 WELL 09.05.12.442A LG009 - GS- 09/20/63 1425 | | | LG36 WELL 09.05.12.442A LG010 - GS- 09/21/63 1615 | | | LG36 WELL 09.05.12.442A LG011 - GS- 09/23/63 1507 | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT LOCATION DATA SAMPLE NUMBER, AGENCY COLLECTION DATE, TIME | | | | | | | | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | 26.00 | | | 18.00 | | | 21.00 | |
| PH (F=FIELD, L=LAB) | | 7.00F | | | 7.10F | | | 6.70F | |
| TDS (SUM OF GROSS, MG/L) | | 12200.00 | | | 12200.00 | | | 2410.00 | |
| TDS (BY EVAP., MG/L) | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 11437.55 | | | 11335.89 | | | 1596.72 | |
| TDS (SUM-SIO2, MG/L) | | 12200.00 | | | 12200.00 | | | 2410.00 | |
| SP.COND. (UMHOS/CM@25C) | | 23300.00L | | | 23300.00L | | | 22700.00L | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | 1500.00 | 24.585 | .084 | 1700.00 | 27.863 | .096 | 1600.00 | 26.224 | 1.000 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 5900.00 | 166.439 | .572 | 5800.00 | 163.618 | .565 | | | |
| SO4-- | 4400.00 | 99.936 | .343 | 4700.00 | 97.954 | .339 | | | |
| F- | | | | | | | | | |
| NO3- | | | | | | | | | |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 12200.00 | 290.960 | | 12200.00 | 289.335 | | 1600.00 | 26.224 | |
| NA+ | | | | | | | | | |
| K+ | | | | | | | 450.00 | 22.455 | .431 |
| CA++ | | | | | | | 360.00 | 29.614 | .569 |
| MG++ | | | | | | | | | |
| TOTAL CATIONS | | | | | | | 810.00 | 52.069 | |
| SIO2 (MG/L) | | | | | | | | | |
| TOTAL EPM | | 290.960 | | | 289.335 | | | 78.293 | |
| ANIONS / CATIONS | | | | | | | | .504 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | | | | | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | | | | | | | .754 | |
| NA / K | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | .092 | | | .107 | | | | |
| SO4 / CL | | .600 | | | .598 | | | | |



3500018OO

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| SAMPLE POINT | LG36 WELL | LG36 WELL | LG36 WELL |
|---|---|---|---|
| LOCATION DATA | 09.05.12.442A | 09.05.12.442A | 09.05.12.442A |
| SAMPLE NUMBER, AGENCY | LG012 - GS- | LG014 - GS- | LG015 - GS- |
| COLLECTION DATE, TIME | 10/01/63 1200 | 10/07/63 1100 | 10/25/63 1615 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | 19.00 | 34.00 | |
| PH (F=FIELD, L=LAB) | 6.70F | 6.90F | |
| TDS (SUM OF GROSS, MG/L) | 7910.00 | 19151.60 | 930.00 |
| TDS (BY EVAP., MG/L) | | 19500.00 @ 180 C | |
| TDS (BY CALC., MG/L) | 6939.15 | 18460.31 | 930.00 |
| TDS (SUM-SIO2, MG/L) | 7910.00 | 19136.60 | 930.00 |
| SP.COND. (UMHOS/CM@25C) | 23200.00L | 25200.00L | |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 1910.00 | 31.305 | .156 | 1356.00 | 22.290 | .073 | | | |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | | | |
| CL- | 6000.00 | 169.260 | .844 | 6900.00 | 194.649 | .635 | | | |
| SO4-- | | | | 4300.00 | 89.526 | .292 | | | |
| F- | | | | 1.60 | .084 | .000 | | | |
| NO3- | | | | | | | | | |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 7910.00 | 200.565 | | 12561.60 | 306.550 | | | | |
| NA+ | | | | 5600.00 | 243.600 | .797 | | | |
| K+ | | | | 55.00 | 1.406 | .005 | | | |
| CA++ | | | | 460.00 | 22.954 | .075 | 470.00 | 23.453 | .383 |
| MG++ | | | | 460.00 | 37.840 | .124 | 460.00 | 37.840 | .617 |
| TOTAL CATIONS | | | | 6575.00 | 305.800 | | 930.00 | 61.293 | |
| SIO2 (MG/L) | | | | | 15.00 | | | | |
| TOTAL EPM | | 200.565 | | | 612.350 | | | 61.293 | |
| ANIONS / CATIONS | | | | | 1.002 | | | 0.000 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | .0910 | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | .0810 | | | | |
| FE (MG/L) | | | | | 3.4000 | | | 2.6000 | |
| MN (MG/L) | | | | | .0100 | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | 4.8000 | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URAN.UM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | | | | .607 | | | .620 | |
| NA / K | | | | | 173.214 | | | | |
| CA+MG / NA+K | | | | | .248 | | | | |
| HCO3+CO3 / CL+SO4 | | | | | .078 | | | | |
| SO4 / CL | | | | | .460 | | | | |



350001801

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | LG36 WELL | | | LG36 WELL | | | LG36 WELL | | | |
| LOCATION DATA | | 09.05.12.442A | | | 09.05.12.442A | | | 09.05.12.442A | | | |
| SAMPLE NUMBER, AGENCY | | LG016 - GS- | | | LG017 - GS- | | | LG018 - GS- | | | |
| COLLECTION DATE, TIME | | 10/26/63 1400 | | | 10/26/63 1500 | | | 11/10/64 1000 | | | |
| WATER LEVEL | | | | | | | | | | | |
| TEMPERATURE (C) | | 29.50 | | | 28.50 | | | 31.50 | | | |
| PH (F=FIELD, L=LAB) | | 7.30F | | | 6.40F | | | 6.70F | | | |
| TDS (SUM OF GROSS, MG/L) | | 19380.80 | | | 11200.00 | | | 14595.97 | | | |
| TDS (BY EVAP., MG/L) | | 19100.00 @ 180 C | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 18709.84 | | | 11200.00 | | | 13696.23 | | | |
| TDS (SUM-SIO2, MG/L) | | 19365.80 | | | 11200.00 | | | 14581.97 | | | |
| SP.COND. (UNHOS/CM@25C) | | 25900.00L | | | 25400.00L | | | 19000.00L | | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | |
| HCO3- | | 1320.00 | 21.635 | .070 | | | | 1770.00 | 29.013 | .130 | |
| CO3-- | | 0.00 | 0.000 | 0.000 | | | | 0.00 | 0.000 | 0.000 | |
| CL- | | 7100.00 | 200.291 | .647 | 7000.00 | 197.470 | .693 | 3700.00 | 104.377 | .469 | |
| SO4-- | | 4200.00 | 87.444 | .283 | 4200.00 | 87.444 | .307 | 4300.00 | 89.626 | .401 | |
| F- | | 1.80 | .095 | .000 | | | | 2.90 | .153 | .001 | |
| NO3- | | | | | | | | .07 | .001 | .000 | |
| PO4--- | | | | | | | | | | | |
| TOTAL ANIONS | | 12621.80 | 309.465 | | 11200.00 | 284.914 | | 9772.97 | 223.057 | | |
| NA+ | | 6000.00 | 261.000 | .838 | | | | 4100.00 | 178.350 | .800 | |
| K+ | | 54.00 | 1.381 | .004 | | | | 59.00 | 1.509 | .007 | |
| CA++ | | 240.00 | 11.976 | .038 | | | | 320.00 | 15.968 | .072 | |
| MG++ | | 450.00 | 37.017 | .119 | | | | 330.00 | 27.146 | .122 | |
| TOTAL CATIONS | | 6744.00 | 311.374 | | | | | 4809.00 | 222.972 | | |
| SIO2 | (MG/L) | | 15.00 | | | | | | 14.00 | | |
| TOTAL EPM | | | 620.838 | | | 284.914 | | | 446.040 | | |
| ANIONS / CATIONS | | | .994 | | | | | | 1.900 | | |
| AS | (MG/L) | | 0.0000 | | | | | | | | |
| BA | (MG/L) | | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | | |
| SE | (MG/L) | | .0410 | | | | | | | | |
| AG | (MG/L) | | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | | |
| FE | (MG/L) | | .0200 | | | | | | | | |
| MN | (MG/L) | | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | | |
| AL | (MG/L) | | .2200 | | | | | | | | |
| B | (MG/L) | | | | | | | | 3.5000 | | |
| CO | (MG/L) | | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | | |
| V | (MG/L) | | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | | |
| CA / MG | | | .324 | | | | | | .598 | | |
| NA / K | | | 180.024 | | | | | | 119.220 | | |
| CA+MG / NA+K | | | .187 | | | | | | .241 | | |
| HCO3+CO3 / CL+SO4 | | | .075 | | | | | | .150 | | |
| SO4 / CL | | | .437 | | | .443 | | | .559 | | |



350001802

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/91

| SAMPLE POINT | LG36 WELL | | | LG37 WELL | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| LOCATION DATA | 09.05.12.442A | | | 09.05.12.442B | | | | | |
| SAMPLE NUMBER, AGENCY | LG019 - GS- | | | LG020 - GS- | | | | | |
| COLLECTION DATE, TIME | 11/10/64 1001 | | | 06/12/75 0850 | | | | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | | | 26.00 | | | | | |
| PH (F=FIELD, L=LAB) | 6.80F | | | | | | | | |
| TDS (SUM OF GROSS, MG/L) | 6117.61 | | | 4931.00 | | | | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | |
| TDS (BY CALC., MG/L) | 5233.17 | | | 4931.00 | | | | | |
| TDS (SUM-SIO2, MG/L) | 6103.61 | | | 4931.00 | | | | | |
| SP.COND. (UMHOS/CM@25C) | 18100.00L | | | 13000.00L | | | | | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | 1740.00 | 28.519 | .214 | | | | | | |
| CO3-- | 0.00 | 0.000 | 0.000 | | | | | | |
| CL- | 3700.00 | 104.377 | .784 | 2000.00 | 56.420 | 1.000 | | | |
| SO4-- | | | | | | | | | |
| F- | 3.50 | .184 | .001 | | | | | | |
| NO3- | .11 | .002 | .000 | | | | | | |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 5443.61 | 133.082 | | 2000.00 | 56.420 | | | | |
| NA+ | | | | 2900.00 | 126.150 | .994 | | | |
| K+ | | | | 31.00 | .793 | .006 | | | |
| CA++ | 320.00 | 15.968 | .363 | | | | | | |
| MG++ | 340.00 | 27.968 | .637 | | | | | | |
| TOTAL CATIONS | 660.00 | 43.936 | | 2931.00 | 126.943 | | | | |
| SIO2 (MG/L) | | 14.00 | | | | | | | |
| TOTAL EPM | | 177.018 | | | 183.363 | | | | |
| ANIONS / CATIONS | | 3.029 | | | .444 | | | | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | | | | | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | 4.6000 | | | 3.4000 | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | .571 | | | | | | | |
| NA / K | | | | | 153.146 | | | | |
| CA+MG / NA+K | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | | | | | | | | |
| SO4 / CL | | | | | | | | | |



350001803

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG38 MESITA MUNICIPAL WELL 09.05.13.233 LG021 - GS- 05/02/63 1200 | | | LG38 MESITA MUNICIPAL WELL 09.05.13.233 LG022 - GS- 03/19/65 1200 | | | LG38 MESITA MUNICIPAL WELL 09.05.13.233 LG023 - ACL-G 01/18/73 1200 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | | |
| LOCATION DATA | | | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | | | | | | | | | |
| COLLECTION DATE, TIME | | | | | | | | | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | | |
| PH (F=FIELD, L=LAB) | | 7.50F | | | 7.80F | | | 8.00L | | |
| TDS (SUM OF GROSS, MG/L) | | 1062.50 | | | 1009.50 | | | 1089.96 | | |
| TDS (BY EVAP., MG/L) | | | | | 1210.00 @ 180 C | | | | | |
| TDS (BY CALC., MG/L) | | 925.26 | | | 897.67 | | | 999.16 | | |
| TDS (SUM-SIO2, MG/L) | | 1042.50 | | | 984.50 | | | 1089.96 | | |
| SP.COND. (UMHOS/CM@25C) | | 1850.00L | | | 1660.00L | | | 1440.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 270.00 | 4.425 | .230 | 220.00 | 3.606 | .207 | 198.30 | 3.250 | .211 |
| CO3-- | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | | | |
| CL- | | 110.00 | 3.103 | .161 | 86.00 | 2.426 | .139 | 79.10 | 2.231 | .145 |
| SO4-- | | 550.00 | 11.451 | .596 | 540.00 | 11.243 | .646 | 455.30 | 9.479 | .616 |
| F- | | 1.90 | .100 | .005 | 1.20 | .063 | .004 | 1.45 | .076 | .005 |
| NO3- | | 8.60 | .139 | .007 | 4.30 | .069 | .004 | 21.70 | .350 | .023 |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 940.50 | 19.218 | | 851.50 | 17.407 | | 755.85 | 15.387 | |
| NA+ | | | | | | | | 221.60 | 9.640 | .618 |
| K+ | | | | | | | | 12.51 | .320 | .020 |
| CA++ | | 74.00 | 3.693 | .616 | 95.00 | 4.741 | .603 | 72.10 | 3.598 | .227 |
| MG++ | | 28.00 | 2.303 | .384 | 38.00 | 3.126 | .397 | 27.90 | 2.295 | .145 |
| TOTAL CATIONS | | 102.00 | 5.996 | | 133.00 | 7.866 | | 334.11 | 15.852 | |
| SIO2 | (MG/L) | | 20.00 | | | 25.00 | | | | |
| TOTAL EPM | | | 25.214 | | | 25.274 | | | 31.240 | |
| ANIONS / CATIONS | | | 3.205 | | | 2.213 | | | .971 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .0900 | | | .1500 | | | .0300 | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.603 | | | 1.517 | | | 1.569 | |
| NA / K | | | | | | | | | 30.135 | |
| CA+MG / NA+K | | | | | | | | | .592 | |
| HCO3+CO3 / CL+SO4 | | | .304 | | | .264 | | | .279 | |
| SO4 / CL | | | 3.690 | | | 4.674 | | | 4.249 | |



350001804

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| SAMPLE POINT | | LG39 WELL | | | LG40 WELL | | | LG41 WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION DATA | | 09.05.14.200 | | | 09.05.19.234 | | | 09.05.19.412 | | |
| SAMPLE NUMBER, AGENCY | | LG024 - GS- | | | LG025 - GS- | | | LG026 - GS- | | |
| COLLECTION DATE, TIME | | 04/02/63 1200 | | | 08/23/66 1200 | | | 08/23/66 200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | | | |
| PH (F=FIELD, L=LAB) | | | | | 8.10F | | | 8.10F | | |
| TDS (SUM OF GROSS, MG/L) | | 760.00 | | | 319.00 | | | 246.20 | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 760.00 | | | 186.84 | | | 139.46 | | |
| TDS (SUM-SIO2, MG/L) | | 760.00 | | | 309.00 | | | 236.30 | | |
| SP.COND. (UMHOS/CM@25C) | | 2340.00L | | | 511.00L | | | 372.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | | | | 260.00 | 4.261 | .795 | 210.00 | 3.442 | .856 |
| CO3-- | | | | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | | 290.00 | 8.181 | .455 | 11.00 | .310 | .058 | 4.30 | .121 | .030 |
| SO4-- | | 470.00 | 9.785 | .545 | 38.00 | .791 | .148 | 22.00 | .458 | .114 |
| F- | | | | | | | | | | |
| NO3- | | | | | | | | | | |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 760.00 | 17.966 | | 309.00 | 5.363 | | 236.30 | 4.021 | |
| NA+ | | | | | | | | | | |
| K+ | | | | | | | | | | |
| CA++ | | | | | | | | | | |
| MG++ | | | | | | | | | | |
| TOTAL CATIONS | | | | | | | | | | |
| SIO2 | (MG/L) | | | | | 10.00 | | | 9.90 | |
| TOTAL EPM | | | 17.966 | | | 5.363 | | | 4.021 | |
| ANIONS / CATIONS | | | | | | | | | | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | | | | | | | | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | | | | | | | | |
| NA / K | | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | | | | | 3.869 | | | 5.941 | |
| SO4 / CL | | | 1.196 | | | 2.550 | | | 3.776 | |



350001805

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG42 WELL | | | LG43 WELL | | | LG44 WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | | |
| LOCATION DATA | | 09.06.02.1234 | | | 09.06.04.433 | | | 09.06.05.2221 | | |
| SAMPLE NUMBER, AGENCY | | LG027 - GS- | | | LG028 - GS- | | | LG023 - GS- | | |
| COLLECTION DATE, TIME | | 01/27/77 0840 | | | 06/12/75 1020 | | | 01/25/77 0815 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | 15.00 | | | | | |
| PH (F=FIELD, L=LAB) | | 7.60F | | | | | | 7.80F | | |
| TDS (SUM OF GROSS, MG/L) | | 2271.50 | | | 956.80 | | | 1981.80 | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 2059.03 | | | 356.80 | | | 1766.28 | | |
| TDS (SUM-SIO2, MG/L) | | 2246.50 | | | 956.80 | | | 1949.80 | | |
| SP.COND. (UMHOS/CM@25C) | | 2900.00L | | | 4200.00L | | | 2460.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 418.00 | 6.851 | .206 | | | | 424.00 | 6.949 | .246 |
| CO3-- | | 0.00 | 0.000 | 0.000 | | | | 0.00 | 0.000 | 0.000 |
| CL- | | 220.00 | 6.206 | .186 | 80.00 | 2.257 | 1.000 | 170.00 | 4.796 | .170 |
| SO4-- | | 970.00 | 20.195 | .606 | | | | 790.00 | 16.448 | .582 |
| F- | | 1.10 | .058 | .002 | | | | 1.50 | .079 | .003 |
| NO3- | | | | | | | | | | |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 1609.10 | 33.311 | | 80.00 | 2.257 | | 1385.50 | 28.272 | |
| NA+ | | 410.00 | 17.835 | .558 | 870.00 | 37.845 | .995 | 406.00 | 17.400 | .625 |
| K+ | | 6.40 | .164 | .005 | 6.80 | .174 | .005 | 8.30 | .212 | .008 |
| CA++ | | 130.00 | 6.487 | .203 | | | | 81.00 | 4.042 | .145 |
| MG++ | | 91.00 | 7.486 | .234 | | | | 75.00 | 6.170 | .222 |
| TOTAL CATIONS | | 637.40 | 31.971 | | 876.80 | 38.019 | | 564.30 | 27.824 | |
| SIO2 | (MG/L) | | 25.00 | | | | | | 32.06 | |
| TOTAL EPM | | | 65.282 | | | 40.276 | | | 56.095 | |
| ANIONS / CATIONS | | | 1.042 | | | .059 | | | 1.016 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .0100 | | | | | | .0100 | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | .4700 | | | .8400 | | | .4700 | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | < | .0100 | | | | | < | .1000 | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | .867 | | | | | | .655 | |
| NA / K | | | 109.984 | | | 217.655 | | | 81.986 | |
| CA+MG / NA+K | | | .776 | | | | | | .580 | |
| HCO3+CO3 / CL+SO4 | | | .259 | | | | | | .327 | |
| SO4 / CL | | | 3.254 | | | | | | 3.430 | |



350001806

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| SAMPLE POINT | LG45 WELL | LG46 WELL | LG47 ENGINAL WINDMILL |
|---|---|---|---|
| LOCATION DATA | 09.06.10.122 | 09.06.31.130 | 10.06.03.132 |
| SAMPLE NUMBER, AGENCY | LG030 - GS- | LG031 - GS- | LG032 - ACL-N |
| COLLECTION DATE, TIME | 02/27/53 1200 | 05/13/57 1200 | 08/27/62 1200 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | 14.50 | |
| PH (F=FIELD, L=LAB) | | 7.40F | 8.10L |
| TDS (SUM OF GROSS, MG/L) | 297.80 | 1892.30 | 962.50 |
| TDS (BY EVAP., MG/L) | | | 947.00 |
| TDS (BY CALC., MG/L) | 201.22 | 1749.98 | 862.87 |
| TDS (SUM-SIO2, MG/L) | 280.60 | 1871.30 | 992.50 |
| SP.COND. (UMHOS/CM@25C) | 347.00L | 2530.00L | 1275.00L |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 190.00 | 3.114 | .854 | 280.00 | 4.589 | .147 | 196.00 | 3.212 | .232 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 4.00 | .113 | .031 | 60.00 | 1.693 | .054 | 51.00 | 1.439 | .104 |
| SO4-- | 19.00 | .396 | .108 | 1200.00 | 24.984 | .798 | 440.00 | 9.161 | .662 |
| F- | .40 | .021 | .006 | .60 | .032 | .001 | .60 | .032 | .002 |
| NO3- | .20 | .003 | .001 | 1.70 | .027 | .001 | 0.00 | 0.000 | 0.000 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 213.60 | 3.647 | | 1542.30 | 31.325 | | 647.60 | 13.844 | |
| NA+ | | | | | | | 124.00 | 5.394 | .372 |
| K+ | | | | | | | 1.90 | .049 | .003 |
| CA++ | 60.00 | 2.994 | .835 | 240.00 | 11.976 | .621 | 99.00 | 4.940 | .341 |
| MG++ | 7.20 | .592 | .165 | 89.00 | 7.321 | .379 | 50.00 | 4.113 | .284 |
| TOTAL CATIONS | 67.20 | 3.586 | | 329.00 | 19.297 | | 274.90 | 14.496 | |
| SIO2 (MG/L) | | 17.00 | | | 21.00 | | | | |
| TOTAL EPM | | 7.233 | | | 50.622 | | | 28.339 | |
| ANIONS / CATIONS | | 1.017 | | | 1.623 | | | .955 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | | | | | |
| MN (MG/L) | | | | | | | | .0200 | |
| PHENOLS (MG/L) | | | | | | | | 0.0000 | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | 5.055 | | | 1.636 | | | 1.201 | |
| NA / K | | | | | | | | 111.526 | |
| CA+MG / NA+K | | | | | | | | 1.663 | |
| HCO3+CO3 / CL+SO4 | | 6.125 | | | .172 | | | .303 | |
| SO4 / CL | | 3.506 | | | 14.761 | | | 6.367 | |



350001807

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | LG48 WELL | LG49 WELL | LG50 SPRING |
|---|---|---|---|
| SAMPLE POINT | | | |
| LOCATION DATA | 10.06.03.334 | 10.06.04.222 | 10.06.21.400 |
| SAMPLE NUMBER, AGENCY | LG033 - GS- | LG034 - GS- | LG035 - GS- |
| COLLECTION DATE, TIME | 01/20/51 1200 | 03/25/65 1200 | 05/12/57 1200 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | | 11.00 |
| PH (F=FIELD, L=LAB) | | 8.10F | 7.90F |
| TDS (SUM OF GROSS, MG/L) | 1347.50 | 916.65 | 199.75 |
| TDS (BY EVAP., MG/L) | 1190.00 | 1080.00 @ 180 C | 168.00 @ 180 C |
| TDS (BY CALC., MG/L) | 1192.98 | 713.33 | 140.79 |
| TDS (SUM-SIO2, MG/L) | 1297.50 | 904.65 | 148.75 |
| SP.COND. (UMHOS/CM@25C) | 1650.00L | 1620.00L | 204.00L |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 304.00 | 4.983 | .264 | 400.00 | 6.556 | .394 | 116.00 | 1.901 | .904 |
| CO3-- | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.30 | 0.005 | 0.002 |
| CL- | 80.00 | 2.257 | .120 | 23.00 | .649 | .039 | 5.00 | .141 | .067 |
| SO4-- | 558.00 | 11.618 | .615 | 450.00 | 9.369 | .563 | 1.90 | .040 | .019 |
| F- | .50 | .026 | .001 | 1.10 | .058 | .003 | .40 | .021 | .010 |
| NO3- | | | | .05 | .001 | .000 | .05 | .001 | .000 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 942.50 | 18.983 | | 874.15 | 16.633 | | 123.35 | 2.104 | |
| NA+ | 156.00 | 6.786 | .359 | | | | | | |
| K+ | | | | | | | | | |
| CA++ | 132.00 | 6.587 | .349 | 22.00 | 1.098 | .611 | 19.00 | .948 | .643 |
| MG++ | 67.00 | 5.511 | .292 | 8.50 | .699 | .389 | 6.40 | .526 | .357 |
| TOTAL CATIONS | 355.00 | 18.884 | | 30.50 | 1.797 | | 25.40 | 1.475 | |
| SIO2 (MG/L) | | 50.00 | | | 12.00 | | | 51.00 | |
| TOTAL EPM | | 37.767 | | | 19.430 | | | 3.578 | |
| ANIONS / CATIONS | | 1.000 | | | 9.256 | | | 1.427 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | .2700 | | | | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | 1.195 | | | 1.570 | | | 1.801 | |
| NA / K | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | .359 | | | .654 | | | 10.527 | |
| SO4 / CL | | 5.148 | | | 14.440 | | | .280 | |

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG51 WELL | | | LG52 WELL | | | LG53 WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | | |
| LOCATION DATA | | 10.06.28.000 | | | 10.06.29.220 | | | 10.06.31.443 | | |
| SAMPLE NUMBER, AGENCY | | LG036 - GS- | | | LG037 - GS- | | | LG038 - GS- | | |
| COLLECTION DATE, TIME | | 11/20/52 1200 | | | 05/21/59 1200 | | | 05/25/60 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | 20.00 | | |
| PH (F=FIELD, L=LAB) | | | | | | | | 7.70F | | |
| TDS (SUM OF GROSS, MG/L) | | 614.00 | | | 40.00 | | | 1034.77 | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 339.52 | | | 40.00 | | | 851.78 | | |
| TDS (SUM-SIO2, MG/L) | | 614.00 | | | 40.00 | | | 998.77 | | |
| SP.COND. (UMHOS/CM@25C) | | 3540.00L | | | 2820.00L | | | 1510.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 540.00 | 8.851 | .802 | | | | 360.00 | 5.900 | .353 |
| CO3-- | | 20.00 | .667 | .060 | | | | 0.00 | 0.000 | 0.000 |
| CL- | | 54.00 | 1.523 | .138 | 40.00 | 1.128 | 1.000 | 70.00 | 1.975 | .118 |
| SO4-- | | | | | | | | 420.00 | 8.744 | .524 |
| F- | | | | | | | | 1.30 | .068 | .004 |
| NO3- | | | | | | | | .47 | .009 | .000 |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 614.00 | 11.041 | | 40.00 | 1.128 | | 851.77 | 16.696 | |
| NA+ | | | | | | | | | | |
| K+ | | | | | | | | | | |
| CA++ | | | | | | | | 100.00 | 4.990 | .563 |
| MG++ | | | | | | | | 47.00 | 3.866 | .437 |
| TOTAL CATIONS | | | | | | | | 147.00 | 8.856 | |
| SIO2 | (MG/L) | | | | | | | | 36.00 | |
| TOTAL EPM | | | 11.041 | | | 1.128 | | | 25.552 | |
| ANIONS / CATIONS | | | | | | | | | 1.885 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | | | | | | | | |
| MN | (MG/L) | | | | | | | | .2600 | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | | | | | | | 1.291 | |
| NA / K | | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | | | | | | | | .550 | |
| SO4 / CL | | | | | | | | | 4.428 | |



350001809

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG54 WELL | | | LG55 WELL | | | LG56 PARAJE WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | | |
| LOCATION DATA | | 10.06.31.443A | | | 10.06.33.100 | | | 10.06.33.122 | | |
| SAMPLE NUMBER, AGENCY | | LG039 - GS- | | | LG040 - GS- | | | LG041 - ACL-N | | |
| COLLECTION DATE, TIME | | 03/18/65 1200 | | | 10/20/52 1200 | | | 11/15/56 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | | | | | | | 32.00 | | |
| PH (F=FIELD, L=LAB) | | 8.00F | | | | | | 7.45L | | |
| TDS (SUM OF GROSS, MG/L) | | 1047.77 | | | 1982.72 | | | 2105.04 | | |
| TDS (BY EVAP., MG/L) | | 1080.00 @ 180 C | | | | | | 2018.00 | | |
| TDS (BY CALC., MG/L) | | 859.70 | | | 1669.23 | | | 1955.75 | | |
| TDS (SUM-SIO2, MG/L) | | 1019.77 | | | 1869.72 | | | 2106.04 | | |
| SP.COND. (UMHOS/CM@25C) | | 1530.00L | | | 2910.00L | | | | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 370.00 | 6.064 | .356 | 420.00 | 6.884 | .209 | 276.00 | 4.524 | .154 |
| CO3-- | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | | 68.00 | 1.918 | .113 | 37.00 | 1.044 | .032 | 41.60 | 1.157 | .039 |
| SO4-- | | 430.00 | 8.953 | .526 | 1200.00 | 24.984 | .757 | 1133.00 | 23.589 | .803 |
| F- | | 1.30 | .068 | .004 | 1.40 | .074 | .002 | 2.00 | .105 | .004 |
| NO3- | | .47 | .008 | .000 | .32 | .005 | .000 | .04 | .001 | .000 |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 869.77 | 17.011 | | 1658.72 | 32.990 | | 1452.04 | 29.375 | |
| NA+ | | | | | | | | 523.00 | 22.751 | .754 |
| K+ | | | | | | | | | | |
| CA++ | | 97.00 | 4.840 | .526 | 130.00 | 6.487 | .493 | 104.00 | 5.196 | .172 |
| MG++ | | 53.00 | 4.360 | .474 | 81.00 | 6.663 | .507 | 27.00 | 2.221 | .074 |
| TOTAL CATIONS | | 150.00 | 9.200 | | 211.00 | 13.150 | | 654.00 | 30.161 | |
| SIO2 | (MG/L) | | 28.00 | | | 13.00 | | | | |
| TOTAL EPM | | | 26.211 | | | 46.140 | | | 59.536 | |
| ANIONS / CATIONS | | | 1.849 | | | 2.509 | | | .974 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .0400 | | | | | | | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | 1.110 | | | .974 | | | 2.337 | |
| NA / K | | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | | .558 | | | .264 | | | .183 | |
| SO4 / CL | | | 4.667 | | | 23.936 | | | 20.795 | |



350001810

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS REPORT DATE 05/05/81

| SAMPLE POINT | LG57 WELL | LG57 WELL | LG58 PAGUATE (CASA BLANCA) WELL |
|---|---|---|---|
| LOCATION DATA | 10.06.33.142 | 10.06.33.142 | 10.06.33.443 |
| SAMPLE NUMBER, AGENCY | LG042 - GS- | LG043 - GS- | LG044 - AGL-N |
| COLLECTION DATE, TIME | 02/20/51 1200 | 02/22/51 1200 | 07/12/56 1200 |
| WATER LEVEL | | | |
| TEMPERATURE (C) | | | 28.00 |
| PH (F=FIELD, L=LAB) | | | 7.60L |
| TDS (SUM OF GROSS, MG/L) | 2068.10 | 1200.00 | 865.25 |
| TDS (BY EVAP., MG/L) | | | 852.00 |
| TDS (BY CALC., MG/L) | 1905.44 | 1200.00 | 734.09 |
| TDS (SUM-SIO2, MG/L) | 2053.10 | 1200.00 | 865.25 |
| SP.COND. (UMHOS/CM@25C) | 3410.00L | | |

| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
|---|---|---|---|---|---|---|---|---|---|
| HCO3- | 320.00 | 5.245 | .139 | | | | 140.00 | 2.295 | .197 |
| CO3-- | 0.00 | 0.000 | 0.000 | | | | 0.00 | 0.000 | 0.000 |
| CL- | 260.00 | 7.335 | .194 | | | | 38.00 | 1.072 | .092 |
| SO4-- | 1200.00 | 24.984 | .662 | 1200.00 | 24.984 | 1.000 | 395.00 | 8.224 | .707 |
| F- | 2.50 | .132 | .003 | | | | .70 | .037 | .003 |
| NO3- | 3.60 | .058 | .002 | | | | .55 | .009 | .001 |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 1786.10 | 37.753 | | 1200.00 | 24.984 | | 574.25 | 11.636 | |
| NA+ | | | | | | | 51.00 | 2.219 | .191 |
| K+ | | | | | | | | | |
| CA++ | 180.00 | 8.982 | .557 | | | | 167.00 | 8.333 | .717 |
| MG++ | 87.00 | 7.157 | .443 | | | | 13.00 | 1.069 | .092 |
| TOTAL CATIONS | 267.00 | 16.139 | | | | | 231.00 | 11.621 | |
| SIO2 (MG/L) | | 15.00 | | | | | | | |
| TOTAL EPM | | 53.892 | | | 24.984 | | | 23.257 | |
| ANIONS / CATIONS | | 2.339 | | | | | | 1.001 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | | | | | |
| MN (MG/L) | | | | | | | | 0.0000 | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | 1.255 | | | | | | 7.793 | |
| NA / K | | | | | | | | | |
| CA+MG / NA+K | | | | | | | | | |
| HCO3+CO3 / CL+SO4 | | .162 | | | | | | .247 | |
| SO4 / CL | | 3.406 | | | | | | 7.672 | |



350001811

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | LG59 WELL 10.06.35.140 LG045 - GS- 02/12/60 1200 | | | LG59 WELL 10.06.35.140 LG046 - GS- 02/12/60 2030 | | | LG60 WELL 10.06.35.300 LG047 - GS- 03/08/60 1500 | | |
|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | | | | | |
| LOCATION DATA | | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | | | | | | | | |
| COLLECTION DATE, TIME | | | | | | | | | |
| WATER LEVEL | | | | | | | | | |
| TEMPERATURE (C) | | | | 15.00 | | | 16.00 | | |
| PH (F=FIELD, L=LAB) | | | | 8.10F | | | 7.80F | | |
| TDS (SUM OF GROSS, MG/L) | 558.00 | | | 961.33 | | | 1022.10 | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | |
| TDS (BY CALC., MG/L) | 558.00 | | | 829.17 | | | 979.78 | | |
| TDS (SUM-SIO2, MG/L) | 554.00 | | | 932.33 | | | 938.10 | | |
| SP.COND. (UMHOS/CM@25C) | | | | 1460.00L | | | 1570.00L | | |
| | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | | | 260.00 | 4.261 | .262 | 280.00 | 4.589 | .261 |
| CO3-- | | | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | 38.00 | 1.072 | .090 | 38.00 | 1.072 | .066 | 43.00 | 1.213 | .069 |
| SO4-- | 520.00 | 10.826 | .910 | 520.00 | 10.826 | .666 | 560.00 | 11.659 | .664 |
| F- | | | | 1.90 | .100 | .006 | 2.10 | .111 | .006 |
| NO3- | | | | .43 | .007 | .000 | | | |
| PO4--- | | | | | | | | | |
| TOTAL ANIONS | 558.00 | 11.898 | | 820.33 | 16.267 | | 885.10 | 17.572 | |
| NA+ | | | | | | | | | |
| K+ | | | | | | | | | |
| CA++ | | | | 62.00 | 3.094 | .429 | 73.00 | 3.643 | .525 |
| MG++ | | | | 50.00 | 4.113 | .571 | 40.00 | 3.290 | .475 |
| TOTAL CATIONS | | | | 112.00 | 7.207 | | 113.00 | 6.933 | |
| SIO2 (MG/L) | | | | | 29.00 | | | 24.00 | |
| TOTAL EPM | | 11.898 | | | 23.474 | | | 24.505 | |
| ANIONS / CATIONS | | | | | 2.257 | | | 2.535 | |
| AS (MG/L) | | | | | | | | | |
| BA (MG/L) | | | | | | | | | |
| CD (MG/L) | | | | | | | | | |
| CR (MG/L) | | | | | | | | | |
| CN (MG/L) | | | | | | | | | |
| PB (MG/L) | | | | | | | | | |
| HG (MG/L) | | | | | | | | | |
| SE (MG/L) | | | | | | | | | |
| AG (MG/L) | | | | | | | | | |
| CU (MG/L) | | | | | | | | | |
| FE (MG/L) | | | | | 0.0000 | | | .0200 | |
| MN (MG/L) | | | | | | | | | |
| PHENOLS (MG/L) | | | | | | | | | |
| ZN (MG/L) | | | | | | | | | |
| AL (MG/L) | | | | | | | | | |
| B (MG/L) | | | | | | | | | |
| CO (MG/L) | | | | | | | | | |
| MO (MG/L) | | | | | | | | | |
| NI (MG/L) | | | | | | | | | |
| V (MG/L) | | | | | | | | | |
| GROSS ALPHA (PCI/L) | | | | | | | | | |
| URANIUM (MG/L) | | | | | | | | | |
| RA-226 (PCI/L) | | | | | | | | | |
| RA-228 (PCI/L) | | | | | | | | | |
| RA-226 + -228 (PCI/L) | | | | | | | | | |
| PB-210 (PCI/L) | | | | | | | | | |
| TH-230 (PCI/L) | | | | | | | | | |
| TH-232 (PCI/L) | | | | | | | | | |
| CA / MG | | | | | .752 | | | 1.107 | |
| NA / K | | | | | | | | | |
| CA+MG / NA+K | | | | | .358 | | | .357 | |
| HCO3+CO3 / CL+SO4 | | | | | 10.099 | | | 9.612 | |
| SO4 / CL | | 10.099 | | | | | | | |



350001812

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG61 WELL | | | LG62 WELL | | | LG63 WELL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT LOCATION DATA | | 10.06.35.322 | | | 10.06.35.324 | | | 10.06.35.342A | | |
| SAMPLE NUMBER, AGENCY | | LG048 - GS- | | | LG049 - GS- | | | LG050 - GS- | | |
| COLLECTION DATE, TIME | | 02/12/60 1200 | | | 09/09/60 1200 | | | 03/08/60 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | 16.00 | | | | | | 15.00 | | |
| PH (F=FIELD, L=LAB) | | 8.10F | | | 7.60F | | | 7.80F | | |
| TDS (SUM OF GROSS, MG/L) | | 1011.33 | | | 1073.01 | | | 1256.46 | | |
| TDS (BY EVAP., MG/L) | | | | | | | | | | |
| TDS (BY CALC., MG/L) | | 879.17 | | | 930.69 | | | 1114.14 | | |
| TDS (SUM-SIO2, MG/L) | | 982.33 | | | 1046.01 | | | 1232.46 | | |
| SP.COND. (UMHOS/CM@25C) | | 1460.00L | | | 1650.00L | | | 1570.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | 260.00 | 4.261 | .262 | 280.00 | 4.589 | .253 | 280.00 | 4.589 | .261 |
| CO3-- | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | | 38.00 | 1.072 | .066 | 42.00 | 1.185 | .065 | 43.00 | 1.213 | .069 |
| SO4-- | | 520.00 | 10.826 | .666 | 590.00 | 12.284 | .677 | 560.00 | 11.659 | .663 |
| F- | | 1.90 | .100 | .006 | 1.60 | .084 | .005 | 2.10 | .111 | .006 |
| NO3- | | .43 | .007 | .000 | .41 | .007 | .000 | .36 | .006 | .000 |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | 920.33 | 16.267 | | 914.01 | 18.149 | | 885.46 | 17.578 | |
| NA+ | | 50.00 | 2.175 | .232 | | | | 230.00 | 10.005 | .579 |
| K+ | | | | | | | | | | |
| CA++ | | 62.00 | 3.094 | .330 | 85.00 | 4.242 | .523 | 73.00 | 3.643 | .211 |
| MG++ | | 50.00 | 4.113 | .438 | 47.00 | 3.866 | .477 | 44.00 | 3.619 | .210 |
| TOTAL CATIONS | | 162.00 | 9.382 | | 132.00 | 8.108 | | 347.00 | 17.267 | |
| SIO2 | (MG/L) | | 29.00 | | | 27.00 | | | 24.00 | |
| TOTAL EPM | | | 25.649 | | | 26.256 | | | 34.845 | |
| ANIONS / CATIONS | | | 1.734 | | | 2.238 | | | 1.018 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | .4200 | | | .0400 | | | 8.1000 | |
| MN | (MG/L) | | | | | | | | | |
| PHENOLS | (MG/L) | | | | | | | | | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | .752 | | | 1.097 | | | 1.006 | |
| NA / K | | | | | | | | | | |
| CA+MG / NA+K | | | .358 | | | .341 | | | .357 | |
| HCO3+CO3 / CL+SO4 | | | 10.099 | | | 10.368 | | | 9.612 | |
| SO4 / CL | | | | | | | | | | |



350001813

ANACONDA COPPER COMPANY, JACKPILE-PAGUATE (NM) MINE - WATER QUALITY DATA

SUMMARY OF WATER CHEMISTRY ANALYSIS — REPORT DATE 05/05/81

| | | LG64 WELL | | | LG65 MESITA NEW WELL-BIA TEST | | | LG66 TEST WELL 2MI N OF ENCINAL | | |
|---|---|---|---|---|---|---|---|---|---|---|
| SAMPLE POINT | | | | | LG113 - ACL-N | | | LG126 - ACL-N | | |
| LOCATION DATA | | 10.06.35.3428 | | | | | | | | |
| SAMPLE NUMBER, AGENCY | | LG051 - GS- | | | | | | | | |
| COLLECTION DATE, TIME | | 08/08/60 1500 | | | 03/11/65 1200 | | | 04/23/64 1200 | | |
| WATER LEVEL | | | | | | | | | | |
| TEMPERATURE (C) | | 16.00 | | | | | | | | |
| PH (F=FIELD, L=LAB) | | | | | 7.80L | | | 8.00L | | |
| TDS (SUM OF GROSS, MG/L) | | | | | 1123.20 | | | 792.60 | | |
| TDS (BY EVAP., MG/L) | | | | | 1085.00 | | | 853.00 | | |
| TDS (BY CALC., MG/L) | | | | | 1023.57 | | | 674.67 | | |
| TDS (SUM-SIO2, MG/L) | | | | | 1123.20 | | | 792.60 | | |
| SP.COND. (UMHOS/CM@25C) | | 1700.00L | | | 1570.00L | | | 1120.00L | | |
| | | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. | MG/L | EPM | ION. RAT. |
| HCO3- | | | | | 196.00 | 3.212 | .203 | 232.00 | 3.802 | .363 |
| CO3-- | | | | | 0.00 | 0.000 | 0.000 | 0.00 | 0.000 | 0.000 |
| CL- | | | | | 77.00 | 2.172 | .137 | 18.00 | .508 | .048 |
| SO4-- | | | | | 472.00 | 9.827 | .622 | 294.00 | 6.121 | .584 |
| F- | | | | | 1.50 | .079 | .005 | .90 | .047 | .005 |
| NO3- | | | | | 32.00 | .516 | .033 | 0.00 | 0.000 | 0.000 |
| PO4--- | | | | | | | | | | |
| TOTAL ANIONS | | | | | 778.50 | 15.807 | | 544.30 | 10.479 | |
| NA+ | | | | | 240.00 | 10.440 | .633 | 114.00 | 4.959 | .371 |
| K+ | | | | | 4.70 | .120 | .007 | 4.70 | .120 | .009 |
| CA++ | | | | | 71.00 | 3.543 | .215 | 72.00 | 3.593 | .269 |
| MG++ | | | | | 29.00 | 2.386 | .145 | 57.00 | 4.689 | .351 |
| TOTAL CATIONS | | | | | 344.70 | 16.489 | | 247.70 | 13.361 | |
| SIO2 | (MG/L) | | | | | | | | | |
| TOTAL EPM ANIONS / CATIONS | | | | | | 32.295 .959 | | | 23.840 .784 | |
| AS | (MG/L) | | | | | | | | | |
| BA | (MG/L) | | | | | | | | | |
| CD | (MG/L) | | | | | | | | | |
| CR | (MG/L) | | | | | | | | | |
| CN | (MG/L) | | | | | | | | | |
| PB | (MG/L) | | | | | | | | | |
| HG | (MG/L) | | | | | | | | | |
| SE | (MG/L) | | | | | | | | | |
| AG | (MG/L) | | | | | | | | | |
| CU | (MG/L) | | | | | | | | | |
| FE | (MG/L) | | | | | | | | | |
| MN | (MG/L) | | | | | .0600 | | | .0600 | |
| PHENOLS | (MG/L) | | | | | 0.0000 | | | 0.0000 | |
| ZN | (MG/L) | | | | | | | | | |
| AL | (MG/L) | | | | | | | | | |
| B | (MG/L) | | | | | | | | | |
| CO | (MG/L) | | | | | | | | | |
| MO | (MG/L) | | | | | | | | | |
| NI | (MG/L) | | | | | | | | | |
| V | (MG/L) | | | | | | | | | |
| GROSS ALPHA | (PCI/L) | | | | | | | | | |
| URANIUM | (MG/L) | | | | | | | | | |
| RA-226 | (PCI/L) | | | | | | | | | |
| RA-228 | (PCI/L) | | | | | | | | | |
| RA-226 + -228 | (PCI/L) | | | | | | | | | |
| PB-210 | (PCI/L) | | | | | | | | | |
| TH-230 | (PCI/L) | | | | | | | | | |
| TH-232 | (PCI/L) | | | | | | | | | |
| CA / MG | | | | | | 1.485 | | | .766 | |
| NA / K | | | | | | 86.870 | | | 41.263 | |
| CA+MG / NA+K | | | | | | .561 | | | 1.631 | |
| HCO3+CO3 / CL+SO4 | | | | | | .268 | | | .574 | |
| SO4 / CL | | | | | | 4.524 | | | 12.055 | |



350001814

Plates Not Scanned
Original document located
in Gray Cabinet (glass-front)
Bottom Shelf in the
Storage Building

# APPENDIX B

# PLATE B. OFFSITE GROUND-WATER SAMPLE LOCATIONS SOUTH AND WEST OF JACKPILE-PAGUATE MINE

| PROJECT 1240-81 | REVISIONS |
|---|---|
| DATE July 17, 1981 | |

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CONSULTING HYDROLOGISTS-GEOLOGISTS
Austin • Denver • Reno

350001816

# PLATE I. EXPLANATION OF GEOLOGIC SYMBOLS FOR PLATES II, IV, AND V.

| | |
|---|---|
| Pleistocene or Recent | Qc - Colluvial Deposits<br>Qe - Eolian and Alluvial Deposits |
| Pliocene or Pleistocene | QTb - Basalt undifferentiated |
| Upper Cretaceous | Kpu - Upper part of Point Lookout Sandstone<br>sandstone |
| | Kmsa - Satan Tongue of Mancos Shale<br>shale and sandstone |
| | Kph - Hosta Tongue of Point Lookout Sandstone<br>sandstone interbedded with shale |
| | Kcg - Gibson Coal Member of Crevasse Canyon Formation<br>sandstone, shale and coal |
| | Kcd - Dalton Sandstone Member of Crevasse Canyon Formation<br>sandstone with siltstone |
| | Kmm - Mulatto Tongue of Mancos Shale<br>shale and sandstone |
| | Kcdi - Dilco Coal Member of Crevasse Canyon Formation<br>interbedded sandstone, siltstone and shale |
| | Km - Mancos Shale<br>shale interbedded with sandstone |
| | Kms - Three Sisters Sandstone of Mancos Shale, undifferentiated<br>sandstone, siltstone and shale |
| Lower Cretaceous | Kd - Dakota Sandstone<br>sandstone interbedded with shale |
| Upper Jurassic | Jmj - Jackpile sandstone of Morrison Formation<br>sandstone and mudstone |
| | Jmb - Brushy Basin Member of Morrison Formation<br>mudstone, sandstone and limestone |
| | Jmw - Westwater Canyon Member of Morrison Formation<br>sandstone |
| | Jmr - Recapture Member of Morrison Formation<br>mudstone, siltstone and sandstone |

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PLATE I.

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | |

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# PLATE II. LOCATION OF ELECTRICAL CONDUCTIVITY MEASUREMENTS AND STANDING WATER BODIES

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | |

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350001818

ıber,86.0, is the average of all flow measurements
)18, 1980. Lower left column is time of day. Lower
cified time for period July 15–18, 1980.

# PLATE III. STREAMFLOW HYDROGRAPHS AND SUMMARY OF STREAMFLOW SURVEY JULY 15–18, 1980

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | |

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# PLATE IV. CHEMICAL QUALITY OF SURFACE WATER

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | |

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# PLATE V. CHEMICAL QUALITY OF GROUND WATER

| | |
|---|---|
| PROJECT 1240-81 | REVISIONS |
| DATE July 17, 1981 | |

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U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 84-4255

# AQUIFER TESTS AT THE JACKPILE-PAGUATE URANIUM MINE, PUEBLO OF LAGUNA, WEST-CENTRAL NEW MEXICO

Albuquerque, New Mexico
1984

350001822

# AQUIFER TESTS AT THE JACKPILE-PAGUATE URANIUM MINE, PUEBLO OF LAGUNA, WEST-CENTRAL NEW MEXICO

By Dennis W. Risser, Paul A. Davis, Joe A. Baldwin, and Douglas P. McAda

---

U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 84-4255

Albuquerque, New Mexico
1984

350001823

UNITED STATES DEPARTMENT OF THE INTERIOR

WILLIAM P. CLARK, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

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## CONVERSION FACTORS

In this report, values for measurements are given in inch-pound units only. The following table contains factors for converting to metric units.

| Multiply inch-pound units | By | To obtain metric units |
|---|---|---|
| acre | 4,047 | square meter |
| foot | 0.3048 | meter |
| gallon per minute | 0.06309 | liter per second |
| mile | 1.609 | kilometer |
| inch | 25.40 | millimeter |
| foot per day | 0.3048 | meter per day |
| foot squared per day | 0.0929 | meter squared per day |



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# AQUIFER TESTS AT THE JACKPILE-PAGUATE URANIUM MINE, PUEBLO OF LAGUNA, WEST-CENTRAL NEW MEXICO

By

Dennis W. Risser, Paul A. Davis, Joe A. Baldwin, and Douglas P. McAda

## ABSTRACT

The transmissivity of the Jackpile sandstone bed in the Brushy Basin Shale Member of the Morrison Formation was determined to be 24 feet squared per day at well M2 and 47 feet squared per day at well M3 from constant-discharge aquifer tests conducted at the Jackpile-Paguate Uranium Mine. The storage coefficient of the Jackpile sandstone bed was estimated to be 0.00018 at well M2 and 0.00029 at well M3 from the same tests. An aquifer test conducted at well M21 indicated the transmissivity of the Jackpile sandstone bed was 2.0 feet squared per day and the storage coefficient was 0.00002.

The transmissivity of an unnamed sandstone bed in the Brushy Basin Shale Member of the Morrison Formation was estimated from "slug-test" results to be about 20 feet squared per day. Water levels in this sandstone probably did not change due to pumping from the overlying Jackpile sandstone bed for 88 hours at an average discharge of 15.3 gallons per minute.

A constant-discharge aquifer test at well M4C indicated that the transmissivity of the alluvium at this location was about 430 feet squared per day. Water levels in the underlying Jackpile sandstone bed began declining within 15 minutes after withdrawals of ground water from the alluvial aquifer began.

## INTRODUCTION

An evaluation of the environmental impacts of alternative reclamation plans for the Jackpile-Paguate Uranium Mine was initiated by the Conservation Division of the U.S. Geological Survey and is being completed by the U.S. Bureau of Land Management. As part of this evaluation, the Water Resources Division of the U.S. Geological Survey was requested to study the hydrologic system in the vicinity of the mine. To better quantify the hydraulic properties of rocks in the mine area, five aquifer tests were conducted and are described in detail in this report.



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## Purpose and Scope

This report describes the methods used to evaluate the aquifer tests and lists the values of hydrologic properties determined from the tests. The scope of the report is limited to a discussion of methods and results from each aquifer test.

Sites for aquifer testing were selected from about 30 test wells drilled to monitor water levels in the mine area. The wells were selected and tested to determine the hydraulic properties of the Jackpile sandstone bed of the Morrison Formation, the alluvium near the junction of the Rio Moquino and Rio Paguate, and an unnamed sandstone unit in the Brushy Basin Shale Member of the Morrison Formation. The information on hydraulic properties obtained from the tests could be used in numerical-model predictions of ground-water flow and solute movement in the vicinity of the mine.

## Background

The Jackpile-Paguate Uranium Mine is located on the Pueblo of Laguna about 30 miles east of Grants, New Mexico (fig. 1). It is one of the largest uranium mines in the world (Melancon, 1963, p. 4). Mining began in 1953 and continued through 1982, when operations ceased due to a decreased demand for uranium ore. Both open-pit and underground mining methods were used to remove the uranium-bearing Jackpile sandstone bed of the Morrison Formation. A total of 2,656 acres were affected by mining of which 485 acres have been reclaimed (Harold Zehner, U.S. Geological Survey, written commun., 1982). Reclamation is planned for all the affected area by backfilling open pits, modifying the shapes of waste-rock piles, and planting new vegetation.

## Previous Investigations

Dinwiddie (1963) described the principal aquifers and well yields in the vicinity of the mine. An investigation of ground-water occurrence on parts of the Acoma and Laguna Indian lands was made by Dinwiddie and Motts (1964). A more complete study of the water resources on the entire Pueblo of Laguna was conducted by Risser and Lyford (1984). Their report describes the general availability of surface and ground water in the vicinity of the mine. Reports by Lyford (1979) and Lyford and others (1980) provide general descriptions of ground-water conditions in northwestern New Mexico.



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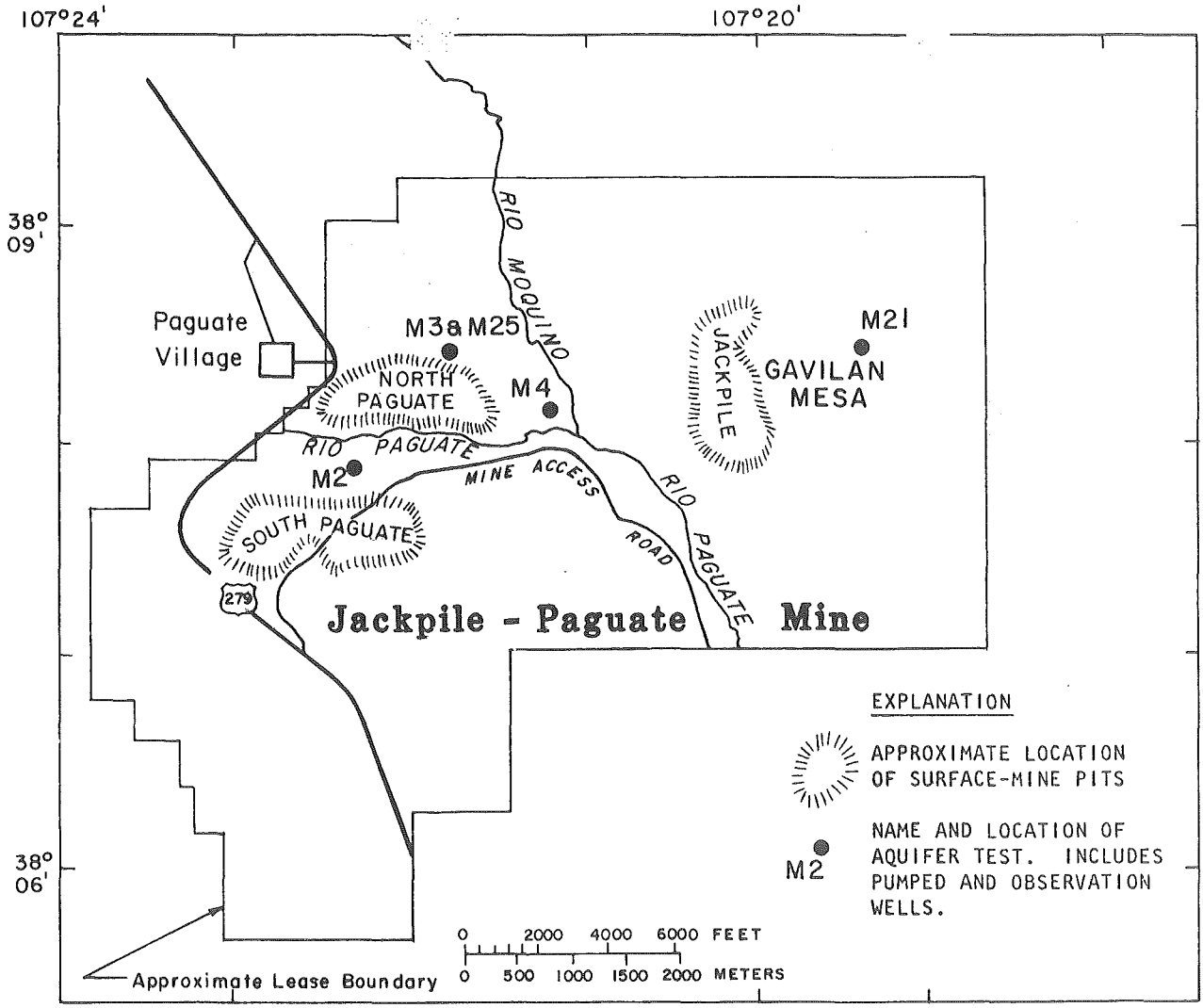


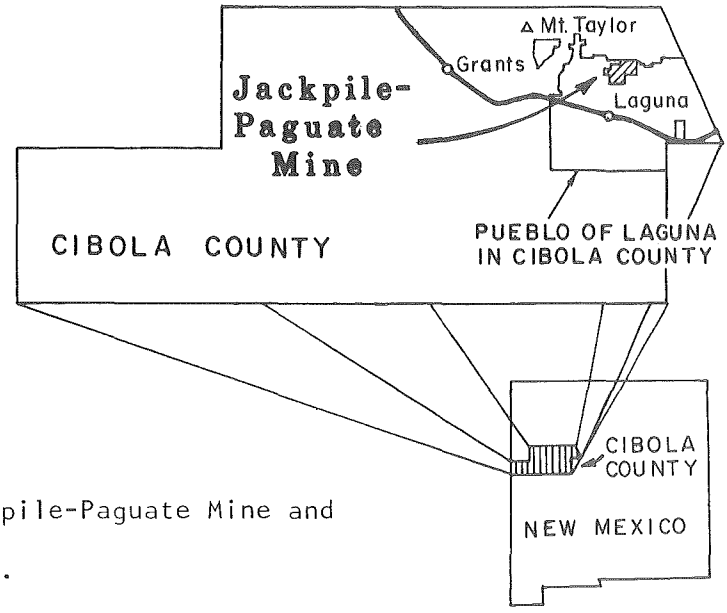


Figure 1.--Location of the Jackpile-Paguate Mine and aquifer-test sites.



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## Hydrologic Units

Hydrologic units exposed in the vicinity of the Jackpile-Paguate Mine include strata from Late Jurassic to Quaternary age (fig. 2). The following summary of the physical properties of these units is mainly from Moench and Schlee (1967).

The uppermost member of the Morrison Formation (of Late Jurassic age), the Brushy Basin Shale Member, generally is a grayish-green, silty to sandy mudstone. In a few places, the mudstone is almost all clay. The total thickness of this member ranges from about 300 to 500 feet. Locally, sandstone beds as thick as 200 feet are found in the Brushy Basin Shale Member. One such sandstone bed is the Jackpile sandstone bed, the major uranium-bearing unit of the Jackpile-Paguate Mine. This sandstone is in the uppermost part of the Brushy Basin Shale Member and is fine to medium grained and poorly to moderately well sorted. It is composed of detrital quartz with calcite cement in the basal part, becoming increasingly clay-cemented upward. In the wells tested, the thickness of the Jackpile sandstone bed ranges from 39 feet at well M4 to 162 feet at well M2.

The Dakota Sandstone, of Cretaceous age, unconformably overlies the Jurassic rocks. In the mine area, the Oak Canyon Member of the Dakota Sandstone unconformably overlies the Jackpile sandstone bed. The lower part of the Oak Canyon Member is composed of orange or brown, fine-grained silty sandstone, whereas the upper part is predominantly siltstone and shale. Where present at the wells tested, the thickness of the Oak Canyon Member ranges from 39 feet at well M2 to 180 feet at well M3.

Alluvium of Quaternary age is present along the Rio Moquino and Rio Paguate, where it was deposited in channels cut in the Mancos Shale, Oak Canyon Member of the Dakota Sandstone, and Brushy Basin Shale Member of the Morrison Formation. The alluvium consists of sand, silt, and gravel with occasional lenses of clay. Thickness of the alluvium ranges from 60 to 68 feet near the junction of the Rio Moquino and Rio Paguate at wells M4, M4A, M4B, and M4C.

## Acknowledgments

The authors wish to thank personnel of Anaconda Minerals Company for their assistance in conducting the aquifer tests. Meade Stirland, Environmental Division, was particularly helpful in providing existing hydrologic data for the mine area. James Basler of the U.S. Geological Survey provided the expertise needed to conduct the aquifer tests using pressure transducers.



350001830

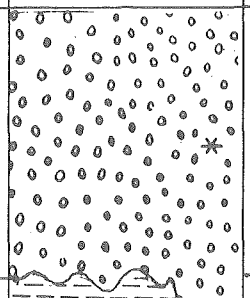
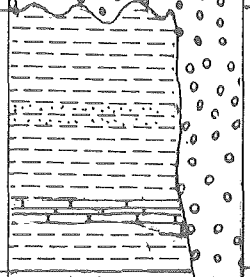
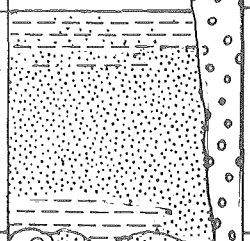
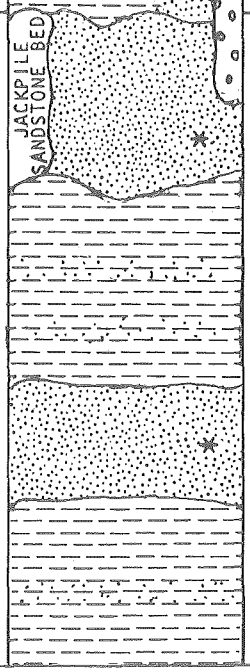
| SYSTEM | FORMATION | MEMBER | LITHOLOGY (* DENOTES HYROLOGIC UNIT TESTED) | APPROXIMATE THICKNESS | DESCRIPTION (Modified from Moench and Schlee, 1967) |
|---|---|---|---|---|---|
| QUATERNARY | ALLUVIUM | —— |  | 0-80 | Sand, gravel, and silt deposited along the Rio Paguate and Rio Moquino. Discontinuous clay lenses also are present. The alluvium lies unconformably on Mancos Shale, Dakota Sandstone and the Morrison Formation in the mine area. |
| CRETACEOUS | MANCOS SHALE | —— |  | 0-150 | Shale, dark gray to black; minor amounts of siltstone. Thin layers of bentonite and limestone also are present. |
| CRETACEOUS | DAKOTA SANDSTONE | OAK CANYON |  | 0-180 | Sandstone and siltstone; gray to tan, fine- to coarse-grained, calcareous and carboniferous. Thin shale layers are similar in lithology to the Mancos Shale. |
| JURASSIC | MORRISON FORMATION | BRUSHY BASIN SHALE MEMBER |   | 300-500 FEET | Mudstone, grayish-green, mottled red in places, interbedded with layers of siltstone and sandstone. The uppermost sandstone is the Jackpile sandstone bed, which consists of 90-200 feet of kaolinitic, carbonaceous sandstone. The Jackpile sandstone bed is cemented mainly by calcite near its base and clay near the top. An unnamed sandstone bed about 115 feet below the bottom of the Jackpile sandstone bed. This sandstone is about 60 feet thick and similar in lithology to the Jackpile sandstone bed. |

Figure 2.--Generalized geologic column showing major hydrologic units in the study area.



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## AQUIFER TESTS

The alluvium near the junction of the Rio Paguate and Rio Moquino, the Jackpile sandstone bed, and an unnamed sandstone unit in the Brushy Basin Shale Member of the Morrison Formation were tested to estimate values for transmissivity and storage coefficient. The alluvium was tested at well M4C; the Jackpile sandstone bed was tested at wells M2, M3, and M21; and the unnamed sandstone unit was tested at well M25 (fig. 1). The transmissivity and storage values of these aquifers presented in this report were estimated using only drawdown data. Recovery data were collected and analyses of these data yielded results nearly identical to the drawdown data. Therefore, a discussion of the recovery tests is not presented in this report.

### Well M2

Hydraulic properties of the Jackpile sandstone bed were estimated at aquifer-test site M2, located near the South Paguate Pit (fig. 1). The pumped well, M2, and nearby observation well, M2ob, are both gravel packed and open to the entire thickness of the Jackpile sandstone bed (fig. 3). At well M2, the Jackpile sandstone bed is 162 feet thick, 93 feet of which is saturated.

A constant-discharge aquifer test (Lohman, 1972, p. 15) was performed by withdrawing water from well M2. The test began on August 19, 1981. The water-level response was measured in the pumped well and in observation well M2ob, which was located 54 feet from M2. The rate of ground-water discharge averaged 5.1 gallons per minute for about 43 hours (fig. 4). The discharged water was diverted away from the well to an arroyo. Water-level response was monitored in each well by downhole pressure transducers, which were connected to a digital recorder at the surface. The pressure transducer in well M2ob automatically compensated for changes in barometric pressure. Adjustments of the transducer readings from well M2 for fluctuations in barometric pressure were made manually using measurements taken at the well site during the test.

Before analyzing the data, an additional correction was made to the drawdown data. The prepumping water-level trend of 0.002 foot per hour was subtracted from the water-level responses in both wells M2 and M2ob.



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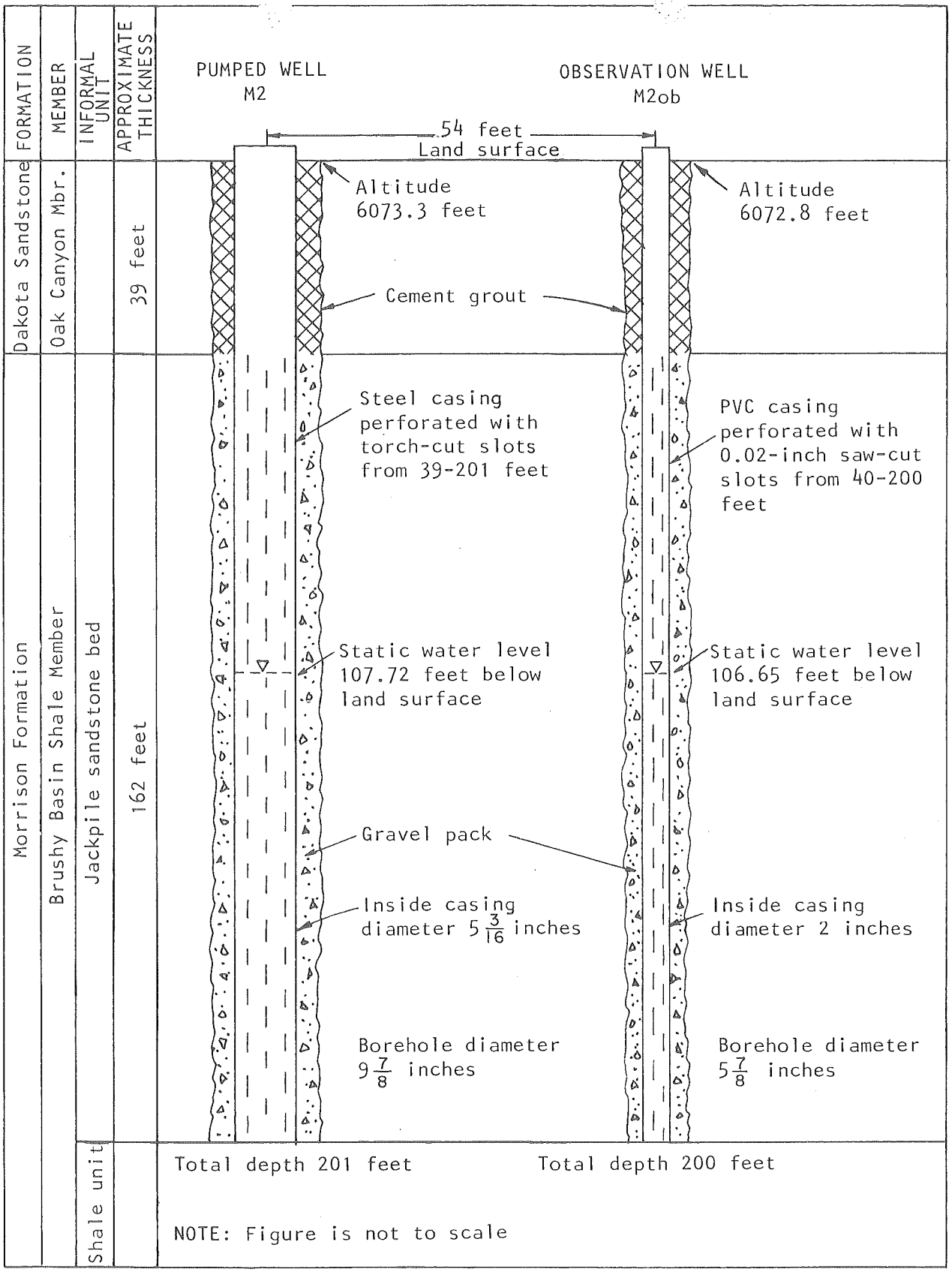


Figure 3.--Well-completion details and geologic units penetrated by wells M2 and M2ob.



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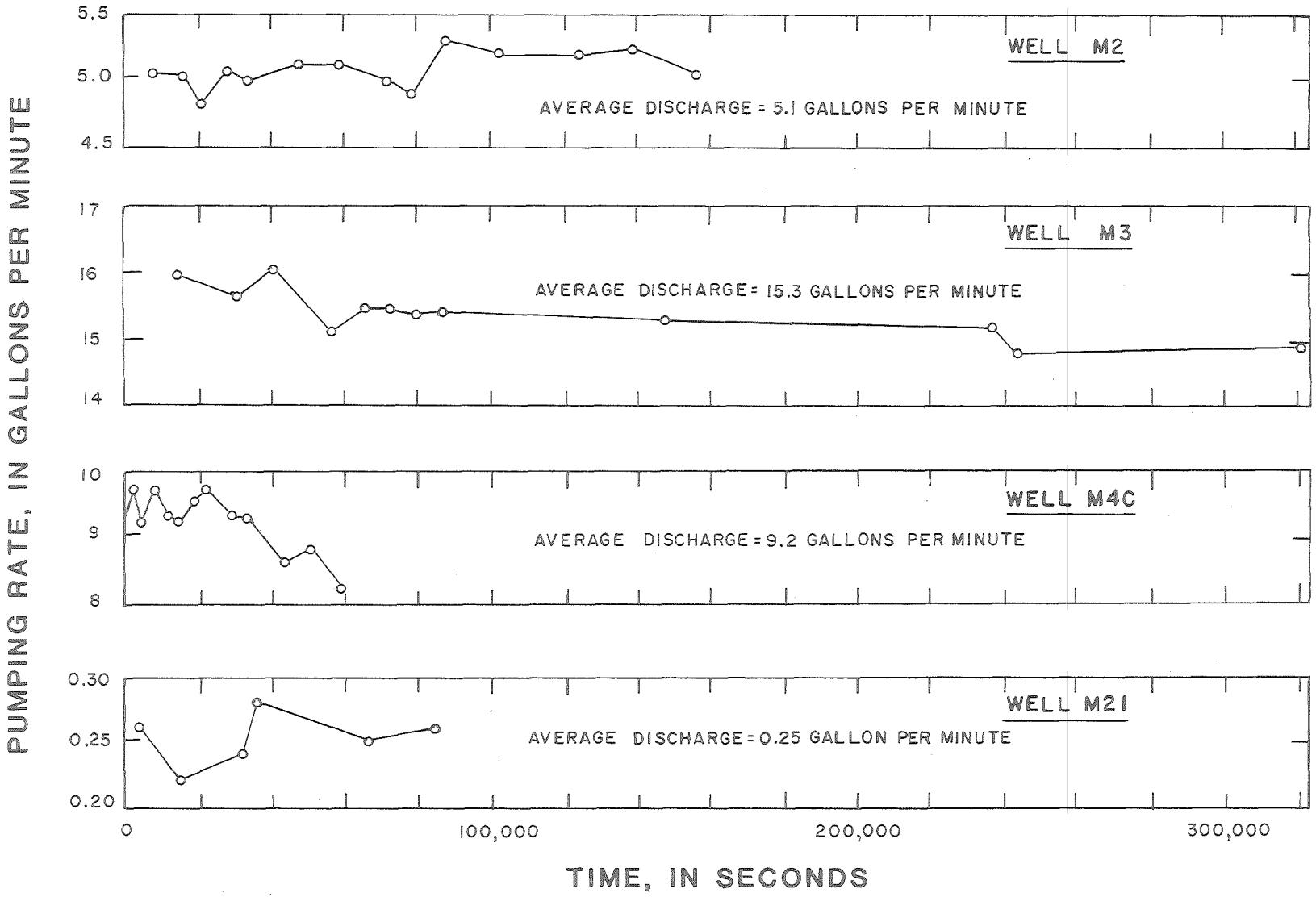


Figure 4. -- Pumping rates during aquifer tests at wells M2, M3, M4C, and M21.



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Time-drawdown curves were plotted using the corrected data for wells M2 and M2ob (fig. 5). Standard curve-matching procedures (Lohman, 1972, p. 18) were used to obtain values for transmissivity and storage coefficient of the Jackpile sandstone bed at wells M2 and M2ob. A nonsteady-state, water-table type curve (Bolton, 1954) was used to match the data from each well separately. An acceptable curve fit was obtained for well M2, the pumped well, by matching time-drawdown data recorded after 150 seconds of the test had elapsed. Drawdown of water in the first 150 seconds of the test was greater than would be predicted by the type curve. Drilling fluids could have decreased the permeability of the Jackpile sandstone bed near the well, which could cause the observed deviation of time-drawdown data. From the type-curve match for drawdown of water in the pumped well, a transmissivity of 10 feet squared per day was calculated. For observation well M2ob, the time-drawdown data were matched to a nonsteady-state, water-table type curve. A transmissivity value of 24 feet squared per day was calculated for the Jackpile sandstone bed from this match.

The transmissivity of the Jackpile sandstone bed at the test site probably is better represented by the value determined from the drawdown in observation well M2ob. The drawdown measured in the observation well is less affected by small fluctuations in the pumping rate and the large vertical gradients near the pumped well. Also, the quantity of water withdrawn from storage within the observation wellbore is small. Hydraulic conductivity for the Jackpile sandstone bed near wells M2 and M2ob was estimated to be about 0.26 foot per day by dividing the transmissivity of 24 feet squared per day by the 93-foot saturated thickness at well M2.

A storage coefficient of 0.00018 was calculated from the drawdown data at well M2ob (fig. 5). Apparently, during the first part of the test, water released from storage was provided by expansion of water in the aquifer and compaction of the aquifer. For times greater than about 2,000 seconds, the measured drawdown was less than would be predicted using the Theis (1935) solution. Possibly this "extra water," unaccounted for by the Theis solution, is provided by dewatering of the unconfined aquifer. The long delay before dewatering of the aquifer begins would be expected for consolidated fine-grained sand and clay materials that compose the Jackpile sandstone bed. The specific yield could not be determined for the Jackpile sandstone bed because the duration of the test was too short. Using Bolton's theory (Prickett, 1965, p. 6), and assuming a specific yield of the aquifer of 0.05, the calculated time after which the delayed yield of water from storage would cease to affect drawdown measured in M2ob is greater than 1 year.



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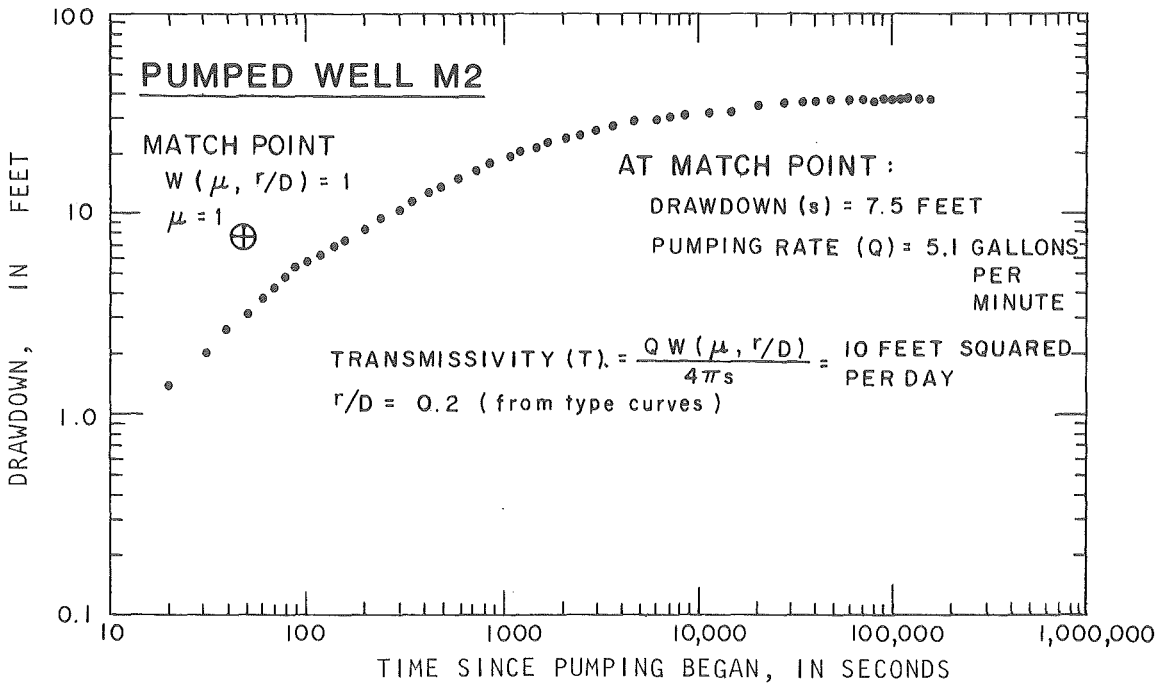


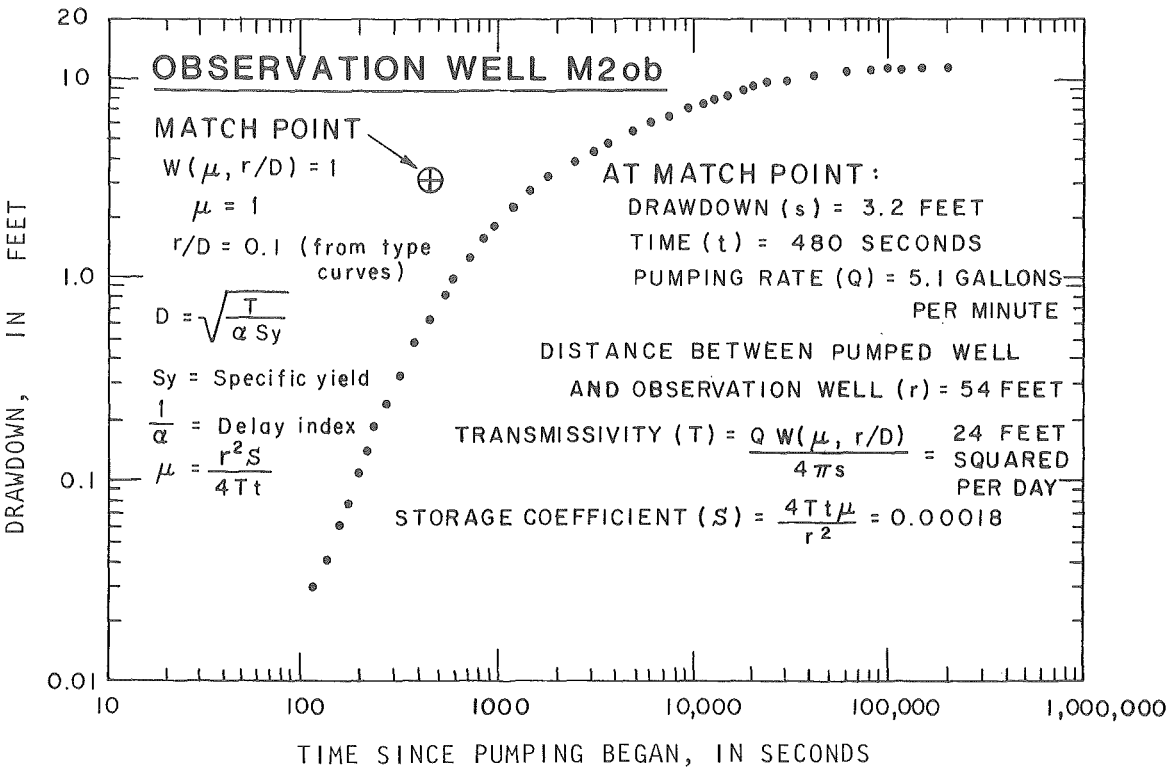


Figure 5.--Drawdown in pumped well M2 and in observation well M2ob.



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## Well M3

An aquifer test also was performed at well M3, which was completed in the Jackpile sandstone bed near the North Paguate Pit (fig. 1). Well M3 and observation well M3ob, located 44 feet away, are gravel packed and open to the entire thickness of the Jackpile sandstone bed (fig. 6). Well M25, which also was used as an observation well for this test, is completed in an unnamed sandstone bed within the Brushy Basin Shale Member of the Morrison Formation. The sandstone bed lies beneath the Jackpile sandstone bed and is separated from it by about 115 feet of shale.

The water level in wells M3 and M3ob was about 20 feet above the top of the Jackpile sandstone bed. Water in the Jackpile sandstone probably is confined at this location by a shale unit in the Dakota Sandstone, which directly overlies the Jackpile sandstone bed.

To determine aquifer properties at this location, well M3 was pumped at an average discharge rate of 15.3 gallons per minute for 88 hours beginning on August 24, 1981 (fig. 4). The discharge water was diverted away from the well. Water levels were monitored in wells M3 and M3ob by downhole pressure transducers. Changes in barometric pressure were compensated for automatically by the transducer in well M3ob. Measurement of barometric pressure was made at the well site to manually correct readings from the pressure transducer used in well M3. Periodic steel-tape measurements of the water levels were also made to correct pressure-transducer readings for the effects of instrument drift. In addition, a correction factor of 0.0025 foot per hour was subtracted from the drawdown at wells M3 and M3ob to compensate for the declining prepumping water-level trend. Also, drawdowns were adjusted as much as 0.73 foot at M3ob and 7.45 feet at M3 to correct for the decreasing saturated thickness of the aquifer using the method described by Jacob (1963, p. 246). The water level in well M25 was monitored with a steel tape and m-scope electronic probe.

The corrected drawdown as a function of time for wells M3 and M3ob is shown in figure 7. An unexplained "blip" in the drawdown curves at wells M3 and M3ob occurred at about 400 seconds. The "blip" occurred at about the same time that the water level in the pumped well fell below the top of the Jackpile sandstone bed. The anomaly resembles the change from artesian to water-table conditions observed in other tests. However, the anomoly occurred in the pumped well and observation well at nearly the same time, which would not be the case for a change from confined to unconfined conditions. A possible explanation for the "blip" is that an undetected fluctuation in the power supply for the data logger occurred.

Standard curve-matching procedures were used to obtain values for the transmissivity of the Jackpile sandstone bed at well M3 and M3ob (fig. 7). A nonsteady-state type curve (Theis, 1935) was used to match the data from both wells. An acceptable curve fit was obtained for well M3, the pumped well, by matching the entire set of time-drawdown data. From the type-curve match, a transmissivity of 47 feet squared per day was calculated. For observation



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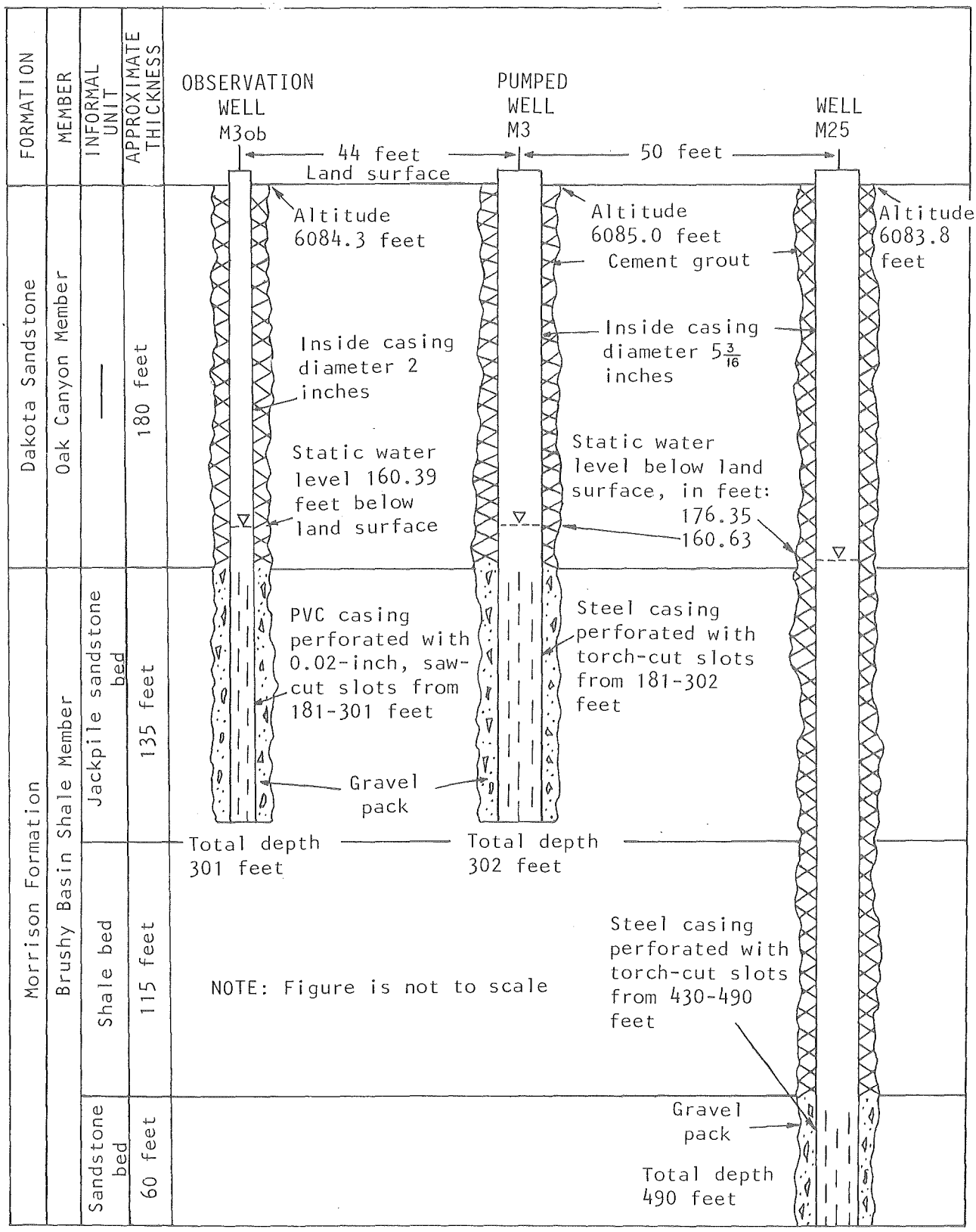


Figure 6.--Well-completion details and geologic units penetrated by wells M3ob, M3, and M25.



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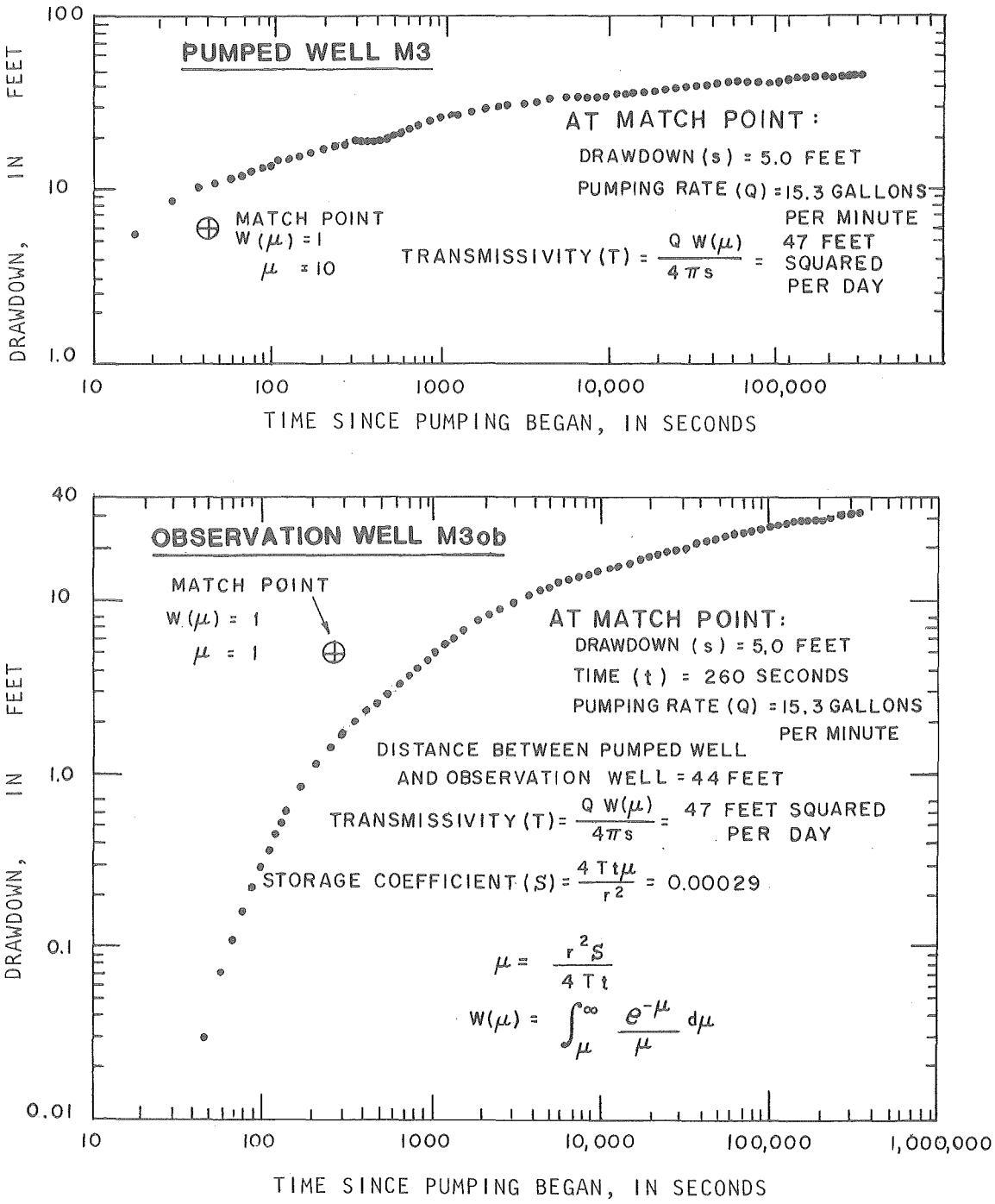


Figure 7.--Drawdown in pumped well M3 and observation well M3ob.



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well M3ob, the time-drawdown data recorded after 400 seconds of the test had elapsed were matched to a nonsteady-state type curve. A transmissivity value of 47 feet squared per day also was calculated for the Jackpile sandstone bed from this match.

The hydraulic conductivity of the Jackpile sandstone bed in the vicinity of wells M3 and M3ob is about 0.39 foot per day. This value was calculated by dividing the transmissivity of 47 feet squared per day by the 120-foot saturated thickness at well M3ob. The storage coefficient of 0.00029 obtained from the M3ob data (fig. 7) represents the artesian response of the aquifer.

In observation well M25, located 50 feet from the pumped well, the water level remained about 3 feet above the top of the Jackpile sandstone bed throughout the duration of the aquifer test. The water level in M25 declined a maximum of 0.03 foot during the test. This small change could easily have been caused by fluctuations in barometric pressure, which varied 0.16 inch of mercury during the test. The test indicates that the shale that separates the Jackpile sandstone bed from the sandstone bed open to well M25 probably has a small vertical hydraulic conductivity. The small vertical hydraulic conductivity of the shale delays the effects of pumping between the two sandstone units.

## Well M4C

An aquifer test was conducted at well M4C to determine aquifer characteristics in the alluvium and to test the hydraulic connection between the alluvium and the underlying Jackpile sandstone. The pumped well (M4C) and its accompanying observation wells (M4A, M4B, M4) are located near the junction of the Rio Paguate and Rio Moquino (fig. 1). Wells M4 and M4A were drilled through the entire thickness of Jackpile sandstone and are completed in about the bottom 20 feet of the Jackpile sandstone with casing perforated with torch-cut slots (fig. 8).

The hydraulic heads measured in the alluvium are about 1 to 2 feet higher than the hydraulic head of water in the Jackpile sandstone bed (fig. 8). Therefore, ground water moves from the alluvium to the Jackpile sandstone bed. No obvious confining unit separates the alluvium from the Jackpile sandstone bed at this location.

A constant-discharge aquifer test (Lohman, 1972) was begun on August 21, 1981. Well M4C was pumped at an average rate of 9.5 gallons per minute, but after 5 hours of pumping the test was stopped due to generator failure. After allowing water levels in the wells to recover for 13 hours, the test was restarted. At that time the water level in observation well M4B had recovered to within 0.02 foot of the prepumping water level, and the water level in the



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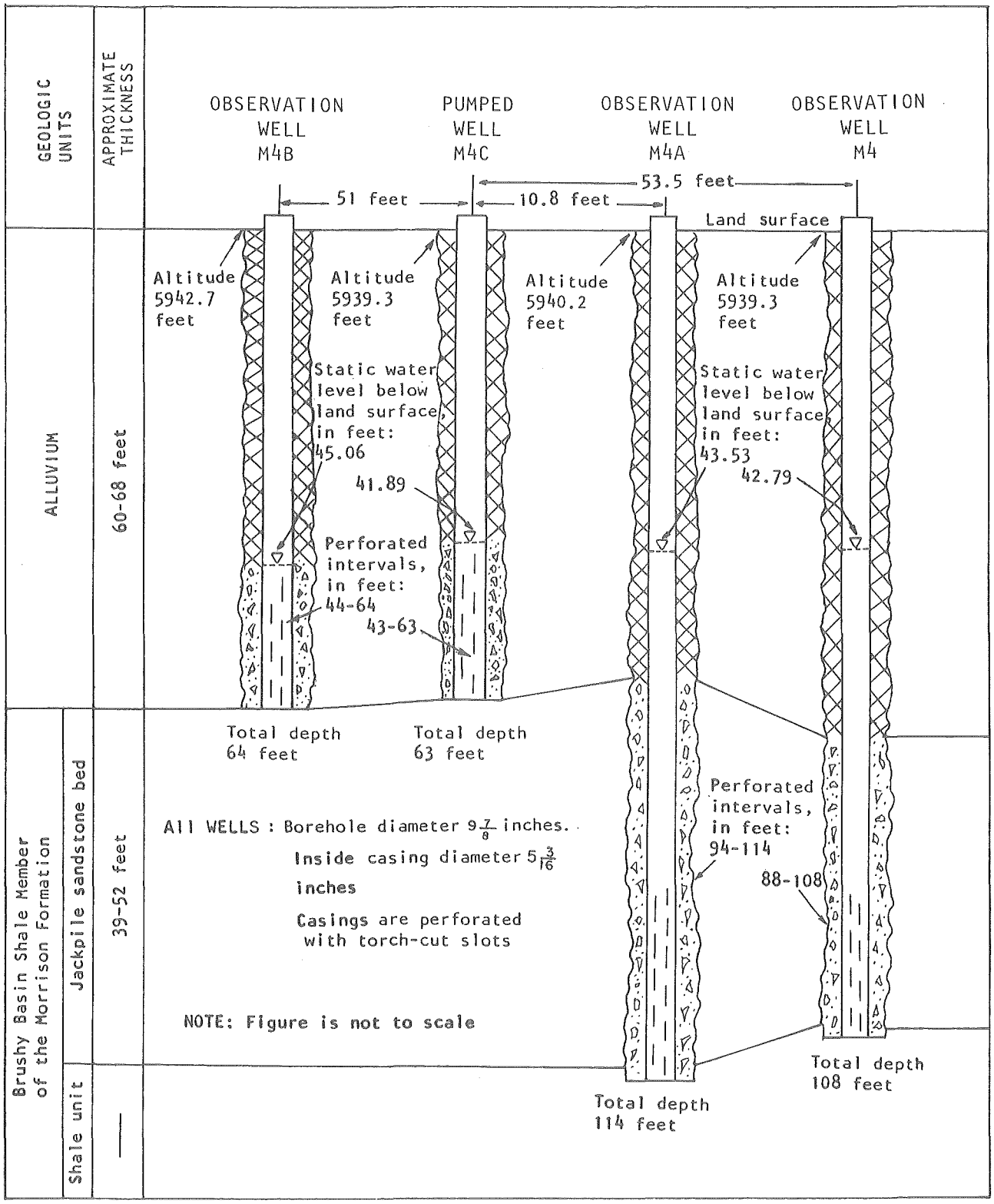


Figure 8.--Well-completion details and geologic units penetrated by wells M4B, M4C, M4A, and M4.



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pumped well M4C was 0.10 foot lower than the prepumping level. Well M4C was then pumped for 17.5 hours at an average rate of 9.2 gallons per minute (fig. 4). Water-level declines in the alluvium and Jackpile sandstone bed were monitored at wells M4, M4A, M4B, and M4C with pressure transducers connected to a digital recorder at the surface. Changes in barometric pressure were automatically compensated for by the transducers in wells M4B and M4A. Data from the transducers in wells M4C and M4 were adjusted manually for changes in barometric pressure. Water-level measurements were made at regular intervals using a steel tape to ensure that the transducer readings were accurate. Drawdown data also were corrected as much as 0.12 foot at well M4B and 0.08 foot at well M4C by a method described by Jacob (1963) to compensate for the decreasing saturated thickness of the aquifer. Corrections to the drawdown data were needed to compensate for the prepumping water-level trend only at the pumped well M4C.

The corrected time-drawdown data were plotted for observation well M4B, located 51 feet from the pumping well, to determine the hydraulic properties of the alluvium at this location (fig. 9). The drawdown recorded in pumped well M4C was too irregular to analyze, probably because of surges in the pumping rate. The data from well M4B were analyzed using standard curve-matching techniques and type curves for nonsteady radial flow (Theis, 1935). The drawdown data collected before 1,500 seconds indicated a transmissivity for the alluvium of about 430 feet squared per day. After 1,500 seconds, less drawdown was measured than would be predicted by the Theis method. The deviation could be caused by delayed yield of water by gravity drainage, by upward leakage of water from the underlying Jackpile sandstone bed, by seepage through the streambed of the nearby Rio Moquino and Rio Paguate, or by the decreased pumping rate. Dividing the apparent transmissivity of 430 feet squared per day by the approximate saturated thickness of the alluvium of 19 feet resulted in a hydraulic conductivity of about 23 feet per day for the alluvium near the M4 wells.

An apparent specific yield of 0.0021 was calculated for the alluvium from the drawdown data for well M4B (fig. 9). Evidently, water mainly was released from artesian storage during the first 1,500 seconds of the test. This value is unreasonably low for a specific yield of an aquifer composed of unconsolidated sands, gravels, and clays. The drawdown data at M4B after 1,500 seconds may be responding to the delayed dewatering of the aquifer. The long-term specific yield of materials similar in compostion to the alluvium at this location has been reported to be between 10 and 20 percent (Johnson, 1967).

Water levels in observation wells M4 and M4A, completed in the Jackpile sandstone bed, declined a total of 0.25 and 0.24 foot, respectively, due to pumping from the alluvium (fig. 9). These declines indicate that ground water flows between these aquifers at this location.



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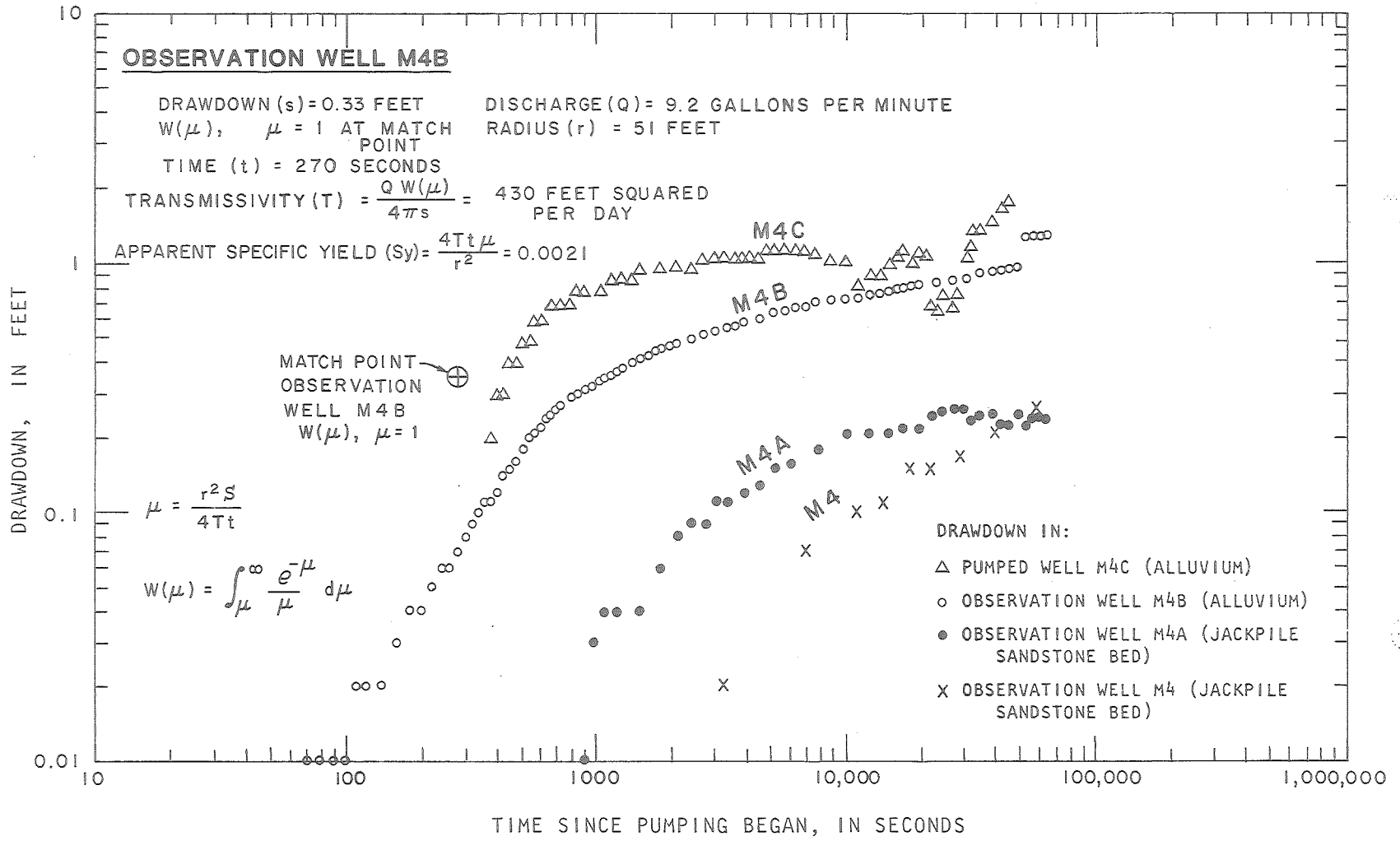


Figure 9.--Drawdown in pumped well M4C and in observation wells M4, M4A, and M4B.



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## Well M21

The hydraulic properties of the Jackpile sandstone bed were tested at wells M21 and M21ob, located northeast of the Jackpile Pit near Gavilan Mesa (fig. 1). Both the pumped well (M21) and the observation well (M21ob) were gravel packed and open to the entire thickness of the Jackpile sandstone bed (fig. 10). The Jackpile sandstone bed is 140 feet thick at both wells, although the saturated thickness is about 81 feet at M21ob and 83 feet at M21.

An aquifer test was conducted by pumping well M21 at an average discharge of about 0.25 gallon per minute for about 24 hours (fig. 4). Drawdown was monitored in the pumped well and in the observation well, which is located 57 feet away. The water-level declines were measured using downhole pressure transducers. The pressure transducer in well M21ob automatically compensated for changes in barometric pressure. Adjustments for changes in barometric pressure at well M21 were made manually using measurements taken at the well site during the test. The drawdowns were corrected for the effect of decreasing saturated thickness by a method described by Jacob (1963) by as much as 9.14 feet in well M21 and 0.29 foot in well M21ob. Corrections for prepumping water-level fluctuations were not needed.

Corrected values of drawdown were plotted against time for wells M21 and M21ob (fig. 11). Curve-matching procedures were used to attempt to fit the data from each well. In M21, the data collected during the first 100 seconds of the test appear to have been affected by wellbore storage (fig. 11). After 100 seconds, the time-drawdown curve displays an abrupt change in slope. The slope changes from the steep, straight-line segment dominated by wellbore storage, to a flatter section of the curve between 100 and 10,000 seconds, which has a shape similar to theoretical curves developed for an aquifer where water released by dewatering is delayed. The data collected after 10,000 seconds of pumping are probably free of borehole and delayed-drainage effects but may be affected by boundaries.

The time-drawdown data at observation well M21ob were analyzed according to a method developed by Papadopulos and Cooper (1967) and discussed in Reed (1980, p. 37). The assumptions for this method are the same as for the Theis solution except that the volume of water withdrawn from storage in the pumped well is considered. Transmissivity of the Jackpile sandstone bed is about 2.0 feet squared per day according to the type-curve match in figure 11. Storage coefficient is estimated to be about 0.00002. Apparently, the aquifer properties of the Jackpile sandstone bed are about one-tenth as large at this location as at other test sites. Possibly the entire saturated thickness was not contributing water to the pumped well. However, if the entire thickness were contributing, the hydraulic conductivity of the Jackpile sandstone bed at this location would be about 0.025 foot per day.



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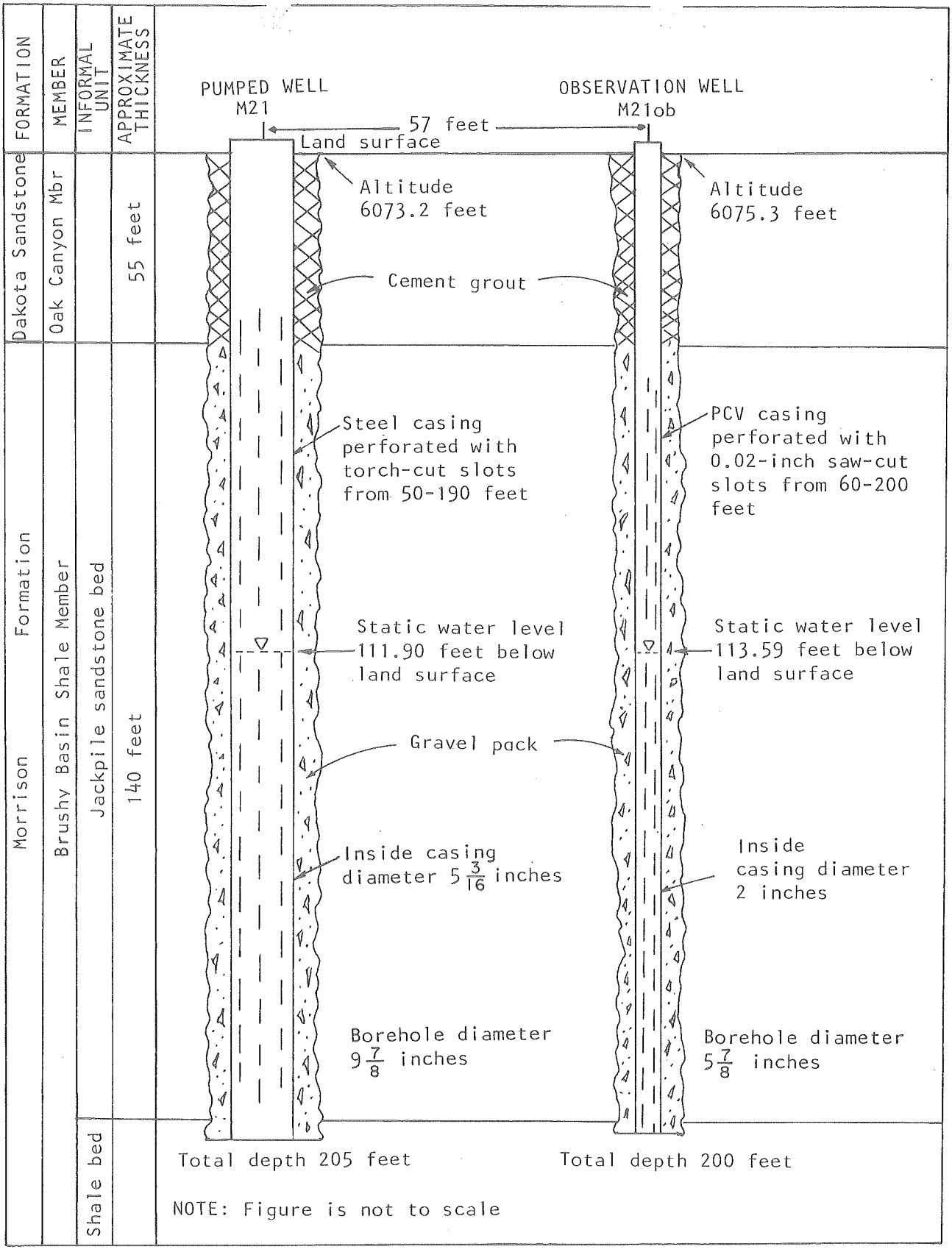


Figure 10.--Well-completion details and geologic units penetrated by wells M21 and M21ob.



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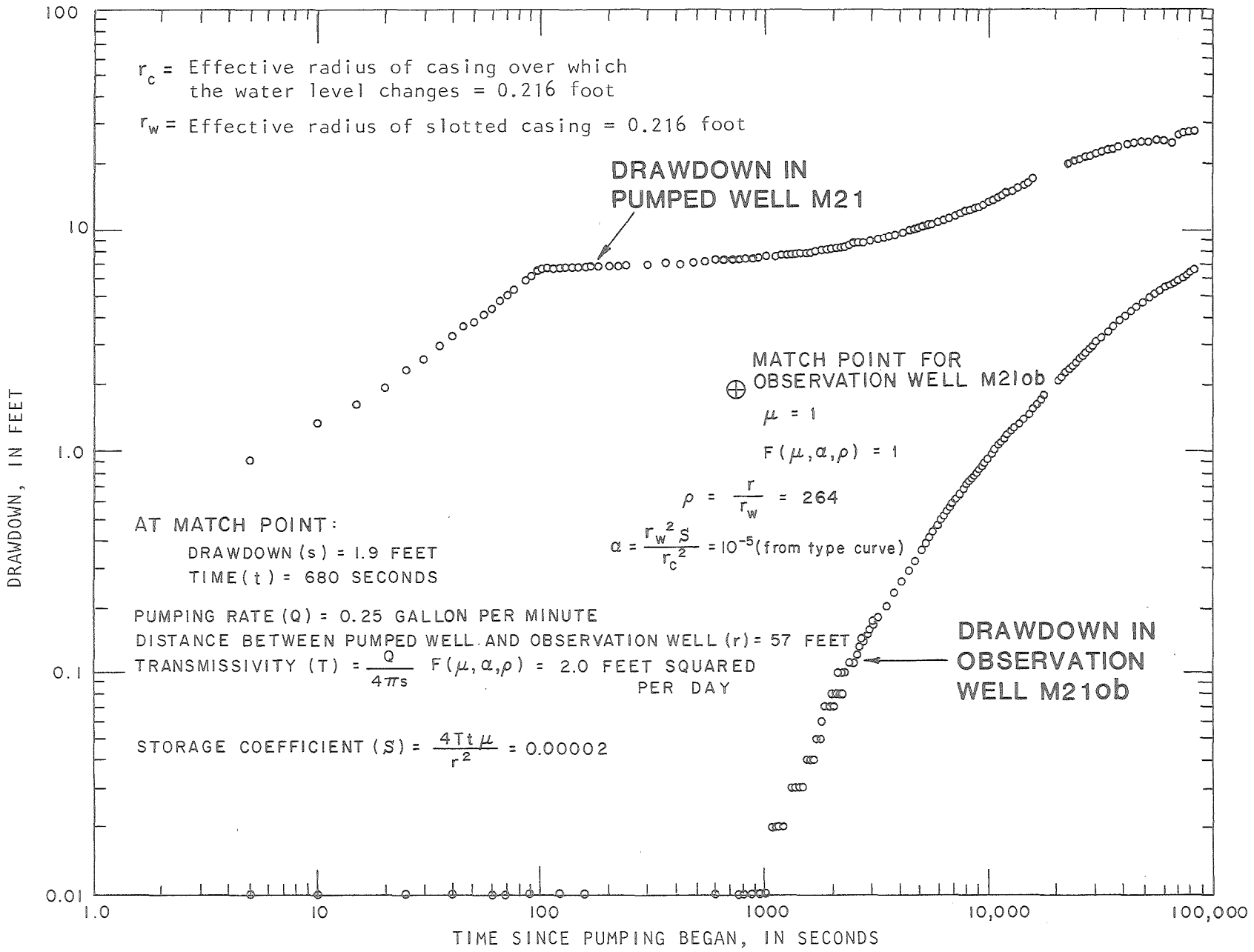


Figure 11.--Drawdown in pumped well M21 and in observation well M21ob.



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## Well M25

A "slug-type" aquifer test (Lohman, 1972, p. 27) was conducted at well M25, located near the North Paguate Pit (fig. 1). The purpose of the test was to determine the transmissivity at that location of an unnamed sandstone bed in the Brushy Basin Shale Member of the Morrison Formation. The well was gravel packed and open only to the 60-foot-thick sandstone bed (fig. 6). This sandstone bed is separated from the Jackpile sandstone bed by about 115 feet of shale of the Brushy Basin Shale Member. Prior to the aquifer test, the water level in well M25 was about 254 feet above the top of the sandstone bed, indicating that water in the formation was under confined conditions.

The aquifer test was conducted by rapidly lowering an 8-foot-long displacement barrel into the well. The initial increase in the water level was about 4 feet. The sudden increase and subsequent slow decline of the water level was measured by a downhole pressure transducer. The effects of changes in barometric pressure were automatically compensated for by the transducer instrumentation.

The drawdown data were plotted as a function of time (fig. 12) and fit to type curves according to the method of Cooper, Bredehoeft, and Papadopulos (1967). The best fit curve, $=10^{-4}$, indicated a transmissivity of 20 feet squared per day. Hydraulic conductivity of this 60-foot-thick sandstone bed is about 0.33 foot per day, which is similar to values calculated for the Jackpile sandstone bed. The storage coefficient indicated from the curve match is 0.0001. However, Cooper, Bredehoeft, and Papadopulos (1967, p. 268) state that the value of storage coefficient calculated by this method is very sensitive to the type curve selected and therefore should be viewed only as an approximate value.



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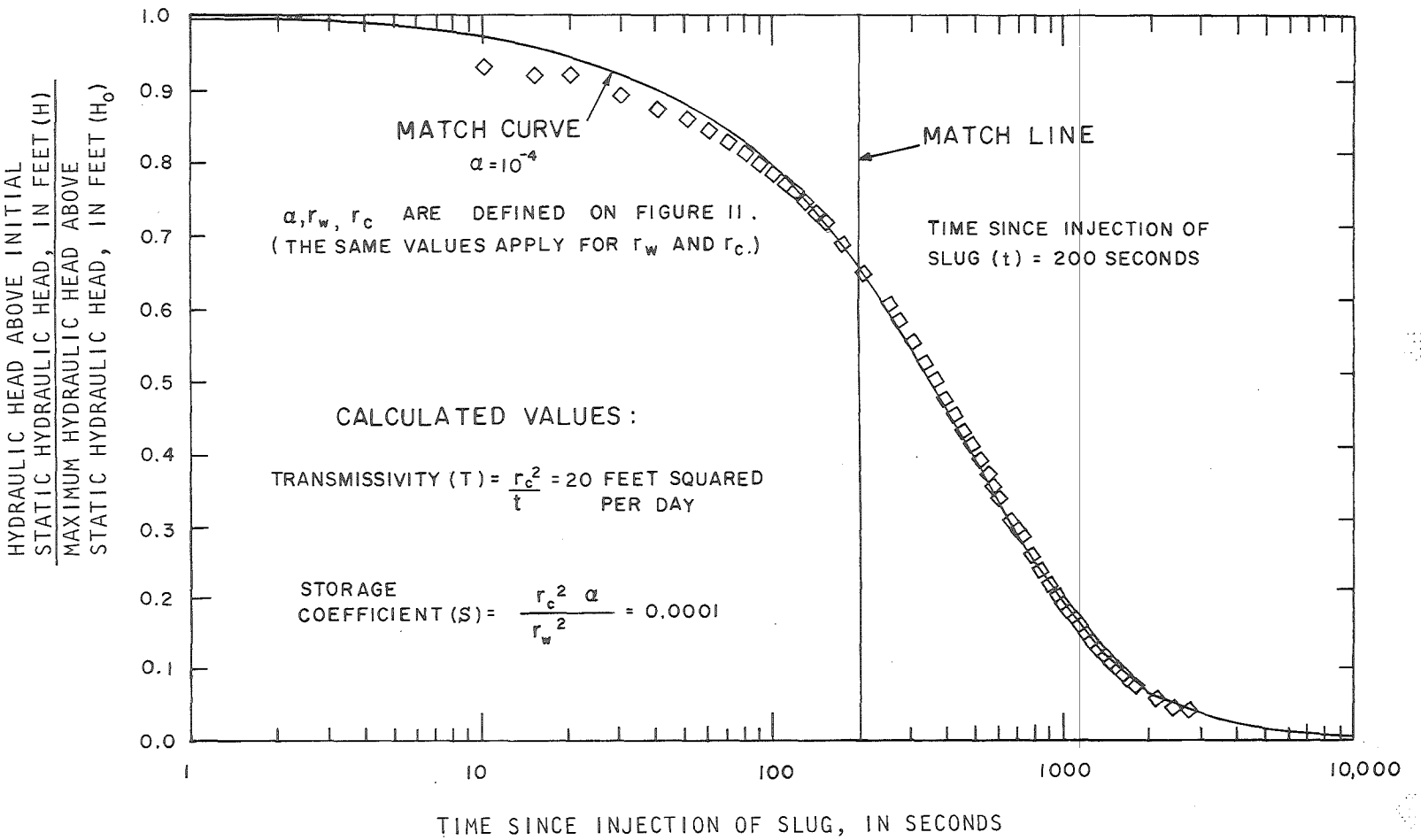


Figure 12.--Result of slug test for well M25.



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## SUMMARY

The hydraulic properties of alluvium near the junction of the Rio Paguate and Rio Moquino, the Jackpile sandstone bed, and an unnamed sandstone bed in the Brushy Basin Shale Member of the Morrison Formation were evaluated by aquifer testing. The results of the aquifer tests are summarized below.

| Test site | Well M2 | Well M3 | Well M4C | Well M21 | Well M25 |
|---|---|---|---|---|---|
| Aquifer tested | Jackpile sandstone bed | Jackpile sandstone bed | Alluvium | Jackpile sandstone bed | Unnamed sandstone in Brushy Basin Shale Member |
| Type of test | Constant discharge | Constant discharge | Constant discharge | Constant discharge | Slug |
| Method used | Bolton, (1954) | Theis (1935) | Theis (1935) | Papadopulos and Cooper (1967) | Cooper, Bredehoeft, and Papadopulos (1967) |
| Duration of test, in hours | 43 | 88 | 17.5 | 24 | 0.67 |
| Average pumping rate, in gallons per minute | 5.1 | 15.3 | 9.2 | 0.25 | Instantaneous slug |
| Saturated thickness at observation well, in feet | 93 | 121 | 19 | 81 | 60 |
| Transmissivity, in feet squared per day | 24 | 47 | 430 | 2.0 | 20 |
| Hydraulic conductivity, in feet per day | 0.26 | 0.39 | 23 | 0.025 | 0.33 |
| Storage coefficient | 0.00018 | 0.00029 | .0021* | 0.00002 | 0.0001 |

*Apparent specific yield



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The aquifer test at well M4C was monitored with observation wells in the alluvium and in the Jackpile sandstone bed. Water levels in the Jackpile sandstone bed responded rapidly to the pumping of water from the alluvium.

For the aquifer test at well M3, observation well M25, which is completed in an unnamed sandstone unit in the Brushy Basin Shale Member of the Morrison Formation, was monitored. The water level in well M25 changed a maximum of 0.03 foot during the 88 hours of pumping from the Jackpile sandstone bed, probably due to changes in barometric pressure. The negligible amount of drawdown indicates that the shale that separates the two units has a low vertical hydraulic conductivity that delays the hydraulic stress imposed during the test.

Well M21 and observation well M21ob were completed in the Jackpile sandstone bed and tested by pumping about 0.25 gallon per minute for 24 hours. Drawdown measured at observation well M21ob indicated that the transmissivity, storage coefficient, and hydraulic conductivity of the Jackpile sandstone bed probably were about one-tenth as large at this site as at other test locations.



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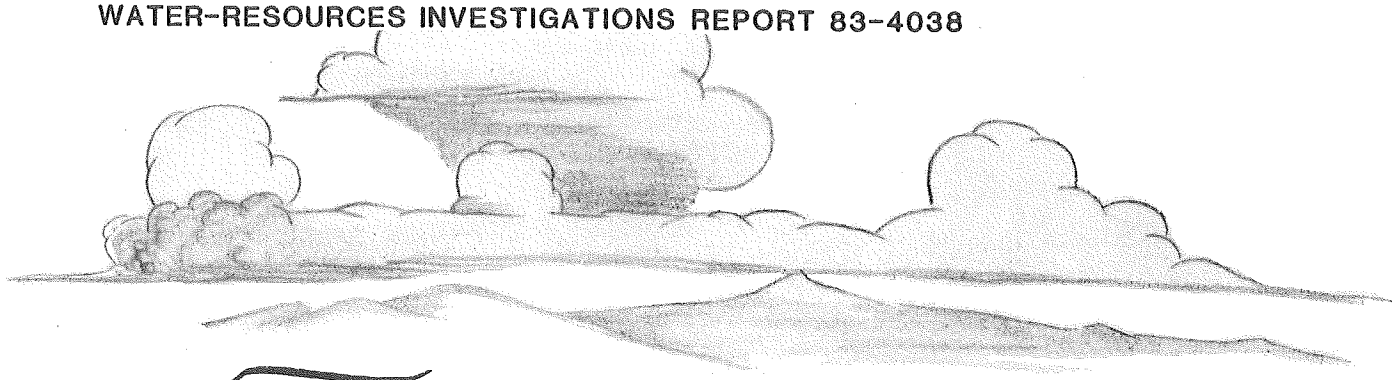

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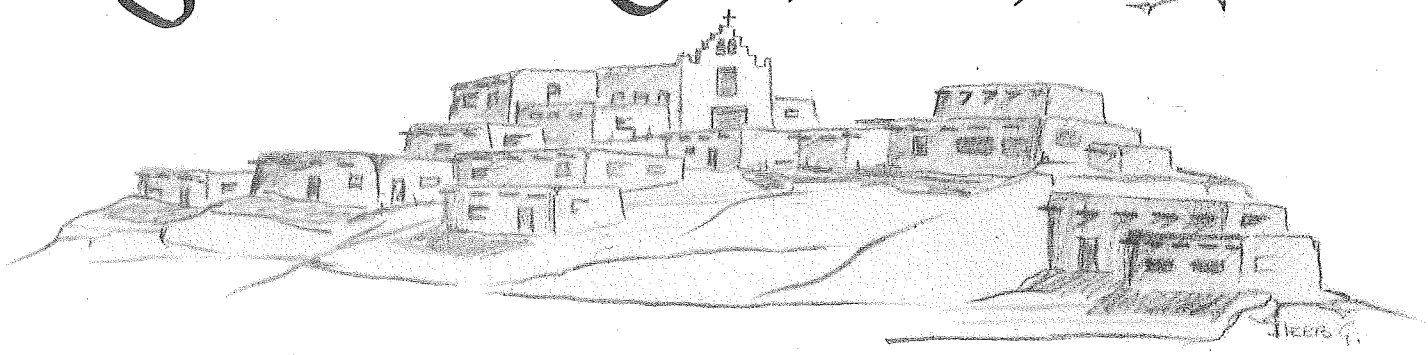

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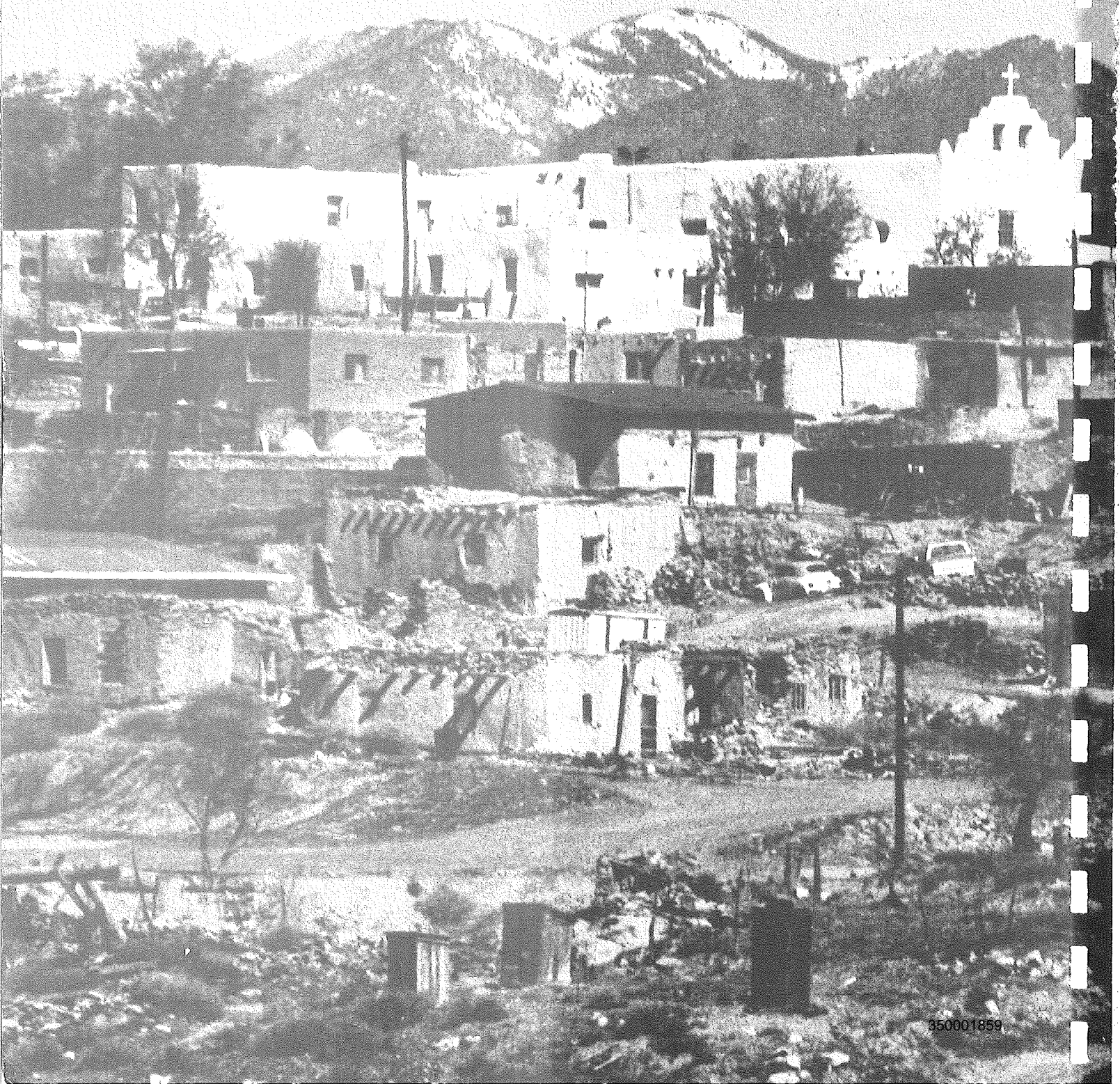

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## CONVERSION FACTORS

In this report, values for measurements are given in inch-pound units only. The following table contains factors for converting these units to metric units.

| Multiply inch-pound units | By | To obtain metric units |
|---|---|---|
| acre | 0.4047 | hectare |
| acre-foot | 1,233 | cubic meter |
| foot | 0.3048 | meter |
| gallon | 3.785 | liter |
| gallon per day | 3.785 | liter per day |
| gallon per minute | 0.06309 | liter per second |
| gallon per minute per foot | 0.2070 | liter per second per meter |
| mile | 1.609 | kilometer |
| square mile | 2.590 | square kilometer |
| inch | 25.40 | millimeter |
| cubic foot per second | 28.32 | liters per second |
| cubic foot per second per mile | 17.60 | liters per second per kilometer |
| foot per day | 0.3048 | meter per day |
| foot squared per day | 0.0929 | meter squared per day |
| pound per square inch | 703.1 | kilograms per square meter |
| foot per mile | 0.1894 | meter per kilometer |

Chemical concentrations are given only in metric units -- milligrams per liter (mg/L) and micrograms per liter (µg/L). Degrees Fahrenheit are converted to degrees Celsius as follows: $°C = [(5/9)°F] - 32$

National Geodetic Vertical Datum of 1929 (NGVD of 1929): A geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called mean sea level. NGVD of 1929 is referred to as sea level in this report.



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# WATER RESOURCES ON THE PUEBLO OF LAGUNA, WEST-CENTRAL NEW MEXICO

by Dennis W. Risser and Forest P. Lyford

## ABSTRACT

The Pueblo of Laguna, located on semiarid lands in west-central New Mexico, needs additional quantities of water chemically suitable for public supply and irrigation. This study evaluates the quantity and quality of water available on the Pueblo of Laguna.

Ground water for public supply can be found in the valley fill along the Rio San Jose, in the Paguate and Encinal areas, and possibly in the northern part of the Sedillo Grant. The valley fill along the Rio San Jose at the mouths of Cubero and Encinal Creeks will supply 50 to 450 gallons per minute of water containing 500 to 1,200 milligrams per liter of dissolved solids to properly constructed wells. In the alluvium along Rio Paguate, as much as 250 gallons per minute of ground water containing 300 to 500 milligrams per liter of dissolved solids can be developed. Sandstone units in the Morrison Formation will yield 5 to 50 gallons per minute of water containing 500 to 1,500 milligrams per liter of dissolved solids to properly constructed wells. About 15 to 30 gallons per minute of water from Encinal Springs are presently (1982) used for public supply for the village of Encinal. An additional 70 to 85 gallons per minute of springflow containing less than 200 milligrams per liter of dissolved solids is suitable for public supply. The Dakota Sandstone near Encinal also may supply water suitable for public supply. About 20 to 50 gallons per minute of water containing 800 to 1,200 milligrams per liter of dissolved solids may be obtained in this area. Tertiary sediments that fill a graben structure near Canon de los Apaches on Sedillo Grant may yield 20 to 100 gallons per minute of water containing 300 to 1,500 milligrams per liter of dissolved solids to properly constructed wells.

Ground water for irrigation is restricted by available well yields and quality to the valley fill along the Rio San Jose and possibly the western part of the Major's Ranch area. In the Rio San Jose valley west of New Laguna, well yields of 50 to 450 gallons per minute of water containing 1,200 to 3,000 milligrams per liter of dissolved solids can be obtained. At the mouths of Cubero and Encinal Creeks, dissolved-solids concentrations are less, about 500 to 1,200 milligrams per liter. Digital-model simulations of the valley-fill aquifer west of the village of Laguna show a potential evapotranspiration salvage of as much as 900 acre-feet per year if water levels are lowered. On the western part of the Major's Ranch area, the Morrison Formation may yield several hundred gallons per minute of water containing 1,000 to 2,000 milligrams per liter of dissolved solids to properly constructed wells.



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As much as 300 acre-feet of additional surface water could be used for irrigation from the Rio Paguate if water flow into the pueblo during winter months were stored in a reservoir. Digital-model studies indicate that the winter flow of the Rio San Jose could be used to recharge the ground-water reservoir in the valley.

# INTRODUCTION

## Purpose and Scope

The economic growth of the Pueblo of Laguna and the lifestyle of the Laguna people are dependent, to a great extent, upon the availability of water for irrigation and public supply. Because ground- and surface-water resources on the pueblo are limited, detailed knowledge of these resources is needed to insure their protection and efficient use.

In response to the need for hydrologic information expressed by the Laguna Indians, the U.S. Bureau of Indian Affairs in 1970 requested a comprehensive study of the hydrology on the Pueblo of Laguna. The resulting plan of study consisted of a qualitative investigation followed by an intensive hydrologic investigation. The findings of both phases of the study are presented in this report.

The purpose of this study was to assess the quality and quantity of ground and surface water on the Pueblo of Laguna. The work focused on aspects of the hydrologic system that were recognized in the early phase of the investigation as needing further study. Specific objectives of this study were to: (1) Define areas of potential ground-water development for irrigation and public supply; (2) estimate the availability and suitability of surface water for irrigation; (3) predict possible long-term effects of ground-water withdrawals in the Rio San Jose valley on water levels and streamflow; and (4) report the results of test drilling.

The scope of this study was limited to ground- and surface-water resources on the pueblo that could be used for irrigation and public supply. However, brackish-water resources, which may be important in the future as the demand for water increases, also are discussed briefly in this report.

## Location and geographic setting

The Pueblo of Laguna is located in west-central New Mexico (fig. 1). Pueblo lands consist of about 690 square miles, which include the original Spanish grant and lands acquired later by purchase and executive order. The



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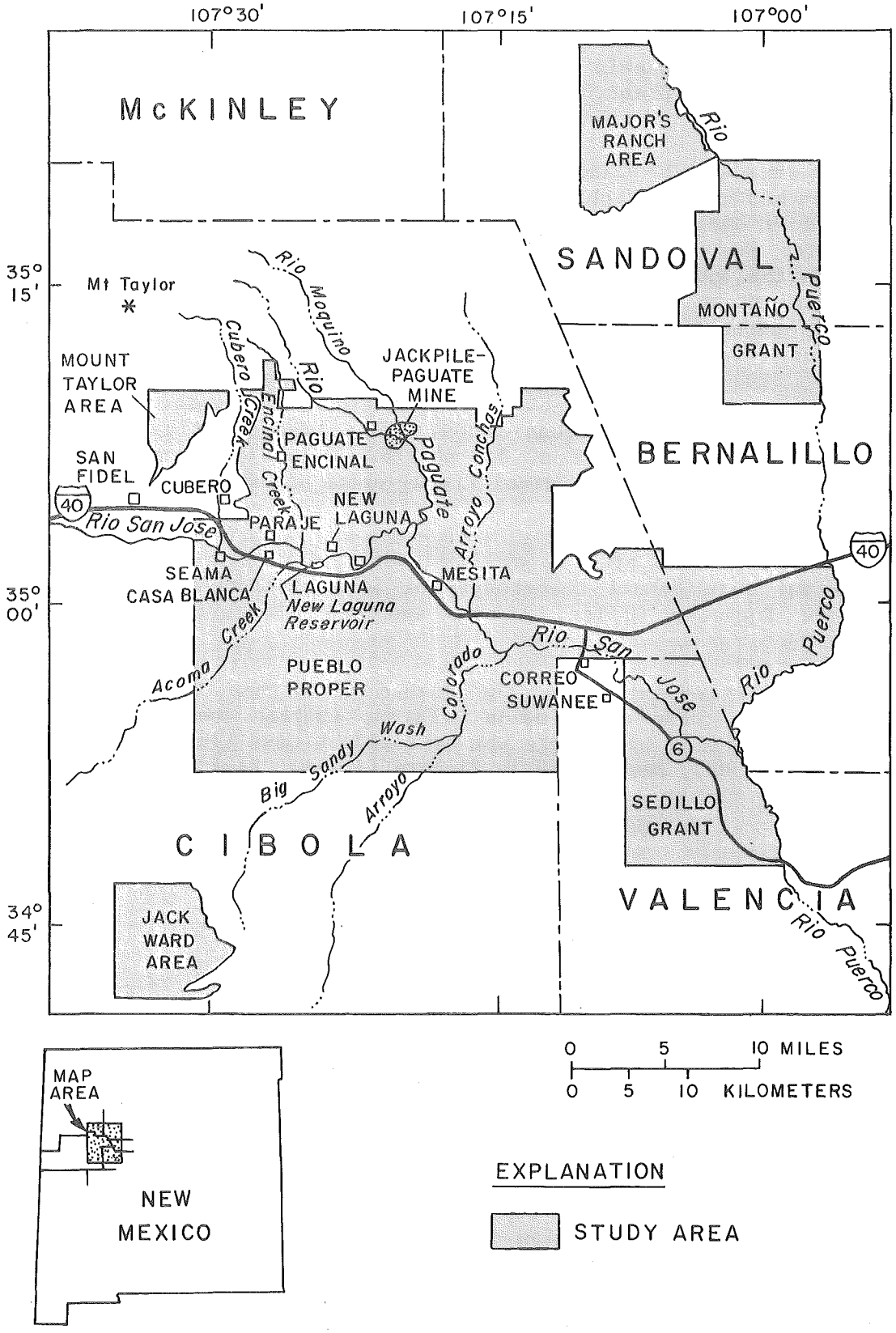


Figure 1.--Location of study area.



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major divisions of the pueblo referred to in this report are: Pueblo Proper, Sedillo Grant, Montaño Grant, Mount Taylor Area, Major's Ranch Area, and Jack Ward Area.

Most of the pueblo lands are situated in the Datil section of the Colorado Plateaus physiographic province (Fenneman, 1931). The province is characterized by high mesas, canyons, and abundant evidence of volcanic activity. The Puerco fault zone passes through the Montaño and Sedillo Grants and is the boundary separating the Colorado Plateaus province from the Rio Grande trough to the east. The most prominent feature in the area is Mount Taylor, northwest of the Pueblo of Laguna, which rises to an altitude of 11,301 feet.

The major stream on the pueblo is the Rio San Jose, which flows eastward through the center of the Laguna lands. The stream empties into the Rio Puerco at the southeast corner of the pueblo. Major tributaries of the San Jose include: Cubero Creek, Encinal Creek, Acoma Creek, Rio Paguate, Arroyo Conchas, and Arroyo Colorado.

The climate of the area is semiarid with mean annual precipitation of 7.8 inches and mean annual temperature of 53.3° Fahrenheit at Laguna (New Mexico State Engineer Office, 1956a, and U.S. Department of Commerce, 1955-79).

The resident population on the Pueblo of Laguna in 1980 was 6,233 (Daniel Carr, U.S. Bureau of Indian Affairs, written commun., 1980). The population distribution by village was as follows: Casa Blanca (303), Encinal (347), Laguna (1,585), Mesita (791), Paguate (1,483), Paraje (791), and Seama (933).

## Previous investigations

A number of hydrologic studies have been conducted on or near the Pueblo of Laguna. A report on ground water in eastern Valencia County by Titus (1963) contains data for wells on Sedillo Grant and Major's Ranch area. Dinwiddie (1963) briefly described the ground-water resources in the vicinity of Paguate. The availability of ground water on parts of the Pueblos of Acoma and Laguna was studied by Dinwiddie and Motts (1964). Their report includes the results of exploratory drilling and aquifer testing in the alluvium along the Rio San Jose and its tributaries. Cooper and West (1967) wrote a general report describing the major aquifers between the Pueblo of Laguna and city of Gallup, New Mexico.



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## Acknowledgments

Several individuals and companies provided data and assistance during the course of this project. John Martinez of the Pueblo of Laguna acted as interpreter during onsite investigations, collected historical data pertaining to wells and springs from tribal members, and made monthly water-level measurements. Ray Johnson of the Pueblo of Laguna also made monthly measurements of ground-water levels and surface-water quality on the pueblo. Daniel Carr of the U.S. Bureau of Indian Affairs provided information on many occasions on wells and irrigation systems on the Pueblo of Laguna. Norm Fairbanks, Field Engineer for the Indian Health Service, provided information on public-supply wells and the water-distribution system of the pueblo. Many water samples were analyzed by the U.S. Bureau of Indian Affairs' Soils, Water, and Materials Testing Laboratory in Gallup, New Mexico. The Anaconda Company, El Paso Natural Gas Company, and Transwestern Pipeline Company provided useful information pertaining to their water-related activities. The Continental Oil Company provided data for exploratory test holes on Montaño Grant, and Standard Oil of Ohio (Sohio) provided information for their deep wells north of the pueblo.

## Site-identification numbering system

The location of wells, springs, and surface-water sampling sites in this report is identified by a number based on the common subdivision of lands into townships, ranges, and sections. Section lines are extended from sectionized lands across previously unsectionized areas for the purpose of accurately locating wells, springs, and other features.

The location number based on the township-range system is divided by periods into four segments. The first indicates the township north of the New Mexico Base Line, and the second denotes the range west of the New Mexico Principal Meridian. The third segment is the number of the section within the township, and the fourth segment indicates the tract within which the well or spring is situated. To determine the fourth segment of the location number, the section is divided into four quarters numbered 1, 2, 3, and 4 for the NW¼, NE¼, SW¼, and SE¼, respectively. Where map accuracy permits, these quarters are further subdivided down to the nearest 10-acre tract. The numbers are based on a 1-mile-square section that is determined from the southeast corner of the section. The use of zeros in the fourth segment of the location numbers indicates that the well or spring could not be accurately located. For example, well number 9.7.28.400 would indicate that the well could not be located any closer than the southeast quarter of section 28. Letters a, b, c, d, and e are added to the last segment to designate the second through sixth wells in the same 10-acre tract. An example of the numbering system is shown in figure 2.



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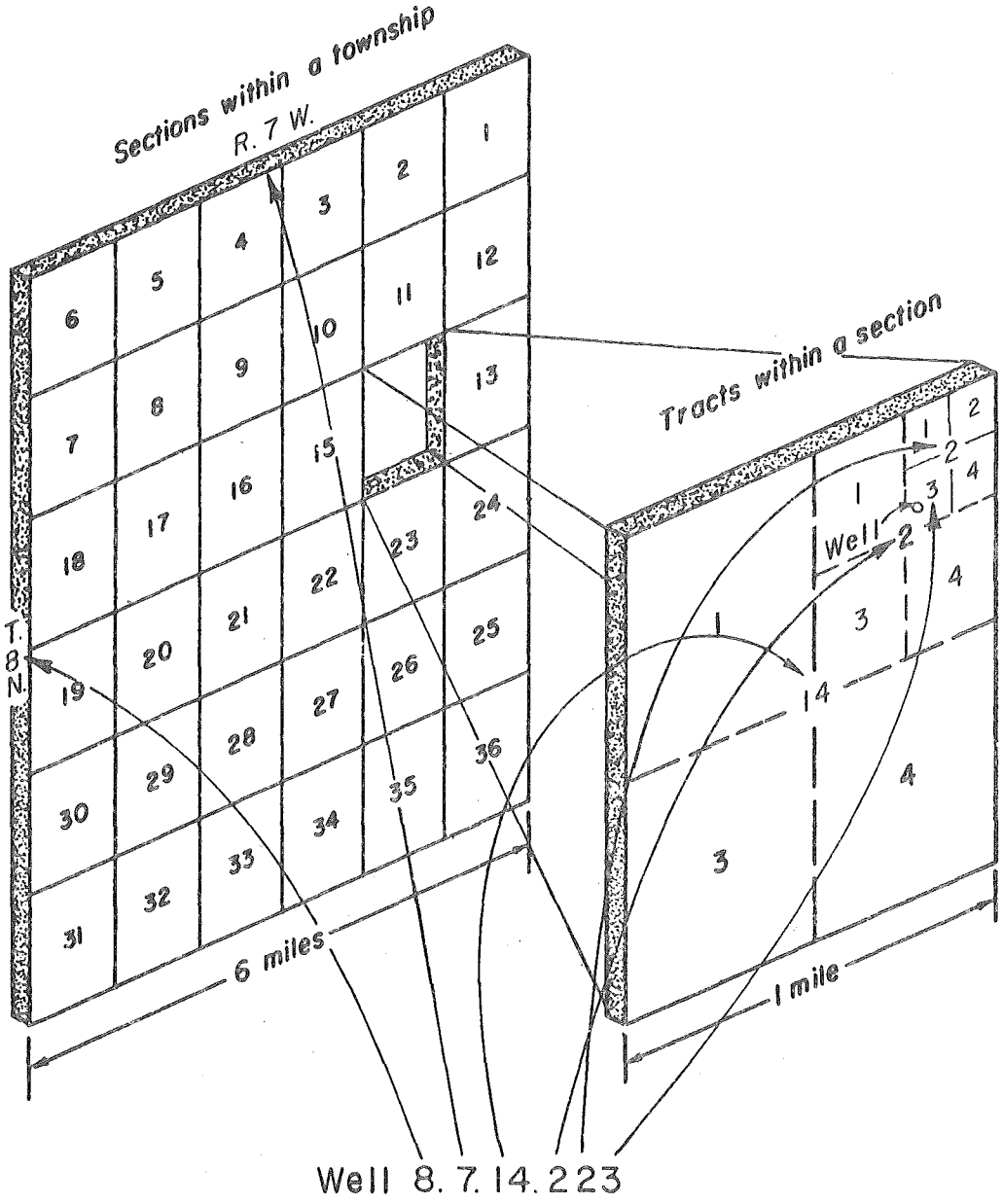


Figure 2.--Method of numbering wells, springs, and surface-water sites.



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## Methods of investigation

The hydrologic investigation began with an inventory of all wells and springs located on or near the Pueblo of Laguna except for those on the Major's Ranch area, which was purchased by the pueblo after the inventory was complete. The wells and springs are listed in tables 1 and 2 (all tables are at the back of the report); their locations are shown on plate 1.

The potential yields of aquifers on the Pueblo of Laguna were evaluated by a program of well drilling and aquifer testing. The locations of new test wells and wells selected for pumping are shown on figure 3. Eight shallow test holes were drilled in the alluvium along the Rio San Jose, Encinal Creek, Seco Canyon, and Castillo Canyon. Three deeper wells were drilled on the Pueblo Proper and Mount Taylor area to test bedrock aquifers. Descriptions of formation cuttings for all new test wells are listed by location number in table 3. Samples of the formation cuttings and geophysical logs of the test wells are on file at the U.S. Geological Survey, Albuquerque, New Mexico.

Nine of the 11 new wells and 6 existing stock, public-supply, or irrigation wells were pumped to evaluate aquifer properties. Results of these tests and other previously reported tests are summarized in table 4.

To evaluate surface- and ground-water relations, water levels in 10 shallow wells completed in the alluvium along the Rio San Jose valley were monitored monthly (fig. 3). Continuous recorders were placed on wells 10.7.36.322 (Laguna 76-2) and 10.6.35.342 (Pueblo Test 2). Water levels were also measured monthly in three deep wells that are completed in bedrock aquifers.

Samples of ground and surface water were collected and analyzed for major ions, nutrients and minor elements, trace elements, and radiochemicals. Results of the water analyses collected from selected wells and springs are listed in tables 5-8. Water-quality samples of surface waters were collected from the Rio Puerco, Rio San Jose, and some tributaries of the Rio San Jose. These analyses are listed in tables 9-13.

A 2-dimensional digital-computer model was used to help evaluate some alternative plans of ground-water development in the alluvium along the Rio San Jose. The model simulates ground-water flow in the valley between the western boundary of the pueblo and the village of Laguna.



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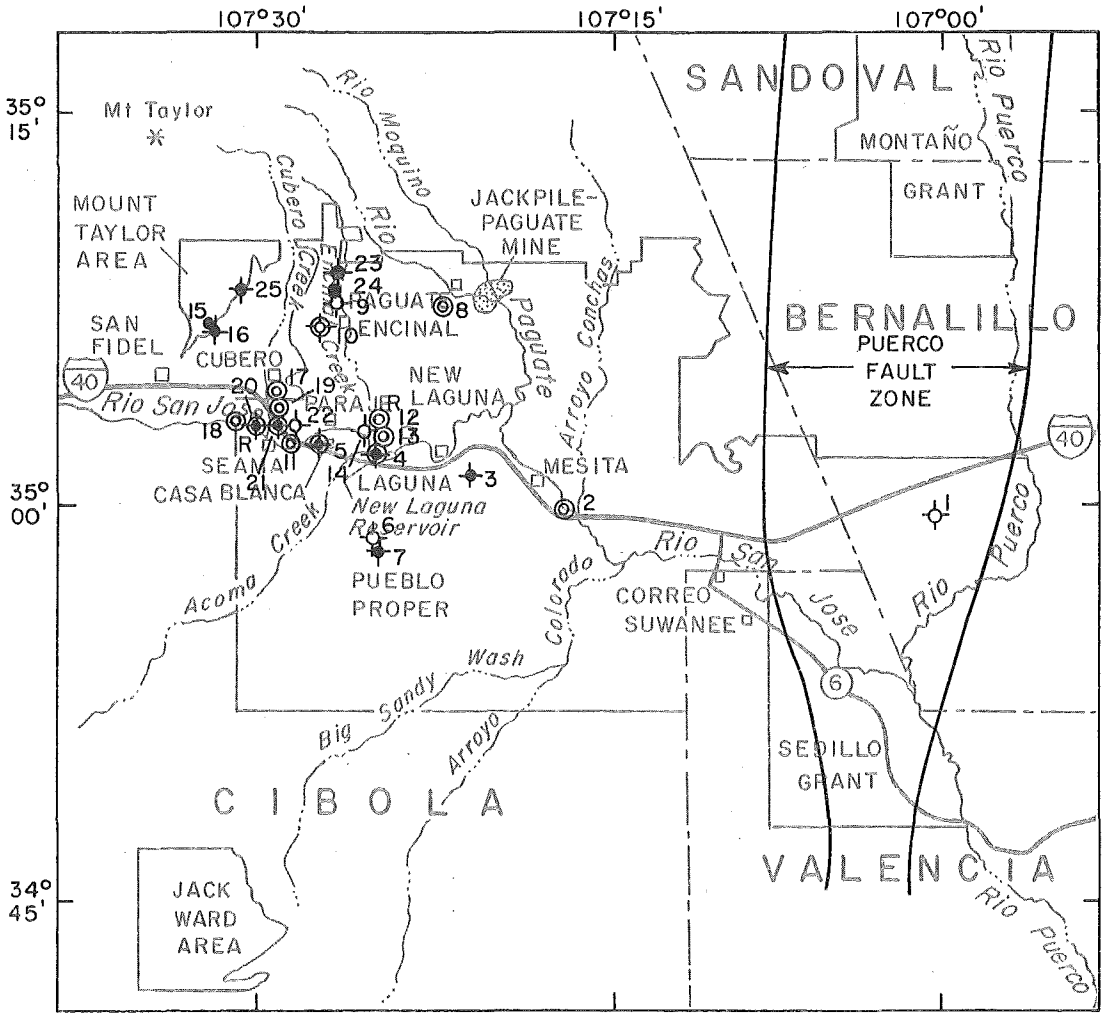


| NUMBER ON FIGURE | WELL NAME | LOCATION NUMBER |
|---|---|---|
| 1 | BIA Sedillo | 9.2.24.230 |
| 2 | El Rito | 9.4.19.124 |
| 3 | Laguna 78-1 | 9.5.9.231 |
| 4 | Laguna 76-7 | 9.6.2.123 |
| 5 | Laguna 76-6 | 9.6.5.222 |
| 6 | RWP 24 | 9.6.26.233 |
| 7 | Timia Well | 9.6.26.443 |
| 8 | MDH 771 | 10.5.5.142 |
| 9 | Encinal 1 | 10.6.3.111 |
| 10 | Encinal 2 | 10.6.9.121 |
| 11 | Seama P.S. | 10.6.31.434 |
| 12 | Pueblo Test 1 | 10.6.35.322 |
| 13 | Pueblo Test 2 | 10.6.35.342 |
| 14 | Laguna Irrigation 2 | 10.6.35.342a |
| 15 | Seco Canyon 1 | 10.7.10.122 |
| 16 | Laguna 79-1 | 10.7.10.213 |
| 17 | Abandoned New York | 10.7.25.432 |
| 18 | Irrigation Test 6 | 10.7.35.232 |
| 19 | New York 1 | 10.7.36.221 |
| 20 | Laguna 76-2 | 10.7.36.322 |
| 21 | Laguna 76-1 | 10.7.36.424 |
| 22 | Laguna Irrigation 1 | 10.7.36.424a |
| 23 | Encinal Canyon 1 | 11.6.27.334 |
| 24 | Encinal Canyon 2 | 11.6.34.134 |
| 25 | Castillo Canyon 1 | 11.7.35.243 |

0 5 10 MILES
0 5 10 KILOMETERS

EXPLANATION

- ○ WELL
- ⊹ WELL WITH AQUIFER TEST (See table 4)
- ◎$_R$ OBSERVATION WELL--"R" indicates continuous water-level recorder.

NOTE: Solid circle (●) indicates well that was drilled for this study.

Figure 3.--Location of test wells and ground-water monitoring sites.



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# GROUND WATER

## Hydrologic properties of geologic units

Geologic units that crop out on and around the Pueblo of Laguna range in age from Permian to Holocene. The location and distribution of these units are shown on the geologic map of the pueblo (plate 2) and on geologic sections (plate 3). The geologic characteristics, general water quality, and well yields that may be expected from the different geologic units are summarized in table 14.

The areas on the Pueblo of Laguna that have geologic units capable of providing water of suitable quality for public supply, irrigation, and stock are shown on plate 1. The contoured water levels (plate 1) indicate only the elevation of water beneath the pueblo in various geologic formations; the reader should not assume that formations are hydraulically connected or that ground water flows perpendicular to the contours. The geologic units on the Pueblo of Laguna and their hydrologic properties are discussed in detail in the following sections.

### Permian System

Permian rocks in the study area include limestone, sandstone, siltstone, and gypsum of the Yeso Formation, Glorieta Sandstone, and San Andres Limestone. These units crop out on Mesa Lucero in the southern part of the Sedillo Grant. Permian units probably are not major aquifers and would supply water with excessive dissolved-solids concentrations to wells in the study area. The water-bearing characteristics of the Glorieta Sandstone and San Andres Limestone warrant special discussion because: (1) Some data exist for the study area; (2) these units are important aquifers in some parts of New Mexico, particularly the Grants-Bluewater area (Gordon, 1961); and (3) many individuals and companies have expressed an interest in the water-bearing properties of these units in the study area.

Glorieta Sandstone and San Andres Limestone--The Mesita test hole (9.5.12.442) was drilled by the U.S. Bureau of Indian Affairs during 1963 and 1964 to test the San Andres Limestone and Glorieta Sandstone for water yield and quality. G. A. Dinwiddie and S. W. West (U.S. Geological Survey, written commun., 1965) believed that the well did not fully penetrate the Chinle Formation at a total depth of 1,729 feet. However, re-examination of cuttings from the well during this study led to the conclusion that the limestone, starting at a depth of about 1,615 feet, is the San Andres and that sandstone beds near the total depth are part of the San Andres Limestone.



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The Mesita test hole had a shut-in pressure of 170 pounds per square inch and yielded 15 gallons per minute when allowed to flow. Specific capacity of the well computed from these data is 0.04 gallon per minute per foot of drawdown.

Other deep wells on or near the pueblo that may have penetrated the San Andres include one 8 miles south of Mesita (8.5.17.213) and one about 1 mile south of Suwanee (8.3.15.413) (table 1). Both wells were drilled by the Atchison, Topeka, and Santa Fe Railway early in this century. In 1974, well 8.5.17.213 flowed less than 0.5 gallon per minute, and the specific conductance of the water was 82,800 micromhos (micromhos per centimeter at 25° Celsius) (table 5); well 8.3.15.413 flowed less than 24 gallons per minute and had a specific conductance of 15,800 micromhos. Gas from this well is predominantly carbon dioxide with a little helium, hydrogen, argon, and nitrogen (J. L. Kunkler, U.S. Geological Survey, written commun., 1974).

Shell Oil Company drilled a deep oil test hole (9.1.8.142) at the east edge of the pueblo on Sedillo Grant. Tests of the well showed that water in the Glorieta Sandstone had a dissolved-solids concentration of about 15,500 milligrams per liter and that the San Andres Limestone was not a permeable reservoir rock for oil production (N. J. Isto, Shell Oil Company, written commun., 1973).

A well north of Paguate in the Bibo area (11.5.14.241) drilled in 1974 by Standard Oil of Ohio (Sohio) to a depth of 3,390 feet penetrated the San Andres Limestone and Glorieta Sandstone. Water rose in the well to within 10 feet of the land surface. The well was pumped at 5 gallons per minute, which lowered the water level 390 feet, giving a specific capacity of 0.01 gallon per minute per foot (Dr. Lynn Jacobson, Sohio, oral commun., 1975).

Evidently, the conditions that create significant permeabilities in carbonate rocks in the Grants-Bluewater area do not exist in the study area. A long period of erosion prior to deposition of the overlying Triassic Chinle Formation either did not create solution permeability or the permeability was later destroyed. The likelihood of obtaining large yields of water chemically suitable for public supply and irrigation in rocks of Permian age under the Pueblo of Laguna probably is small.

### Triassic System

The Triassic System on the Pueblo of Laguna consists of siltstones and mudstones of the Chinle Formation. Occasional sandstone beds in the formation are minor aquifers of local importance.

Chinle Formation of Late Triassic age lies beneath all Laguna lands with the exception of several small areas on Sedillo Grant, where it was displaced by faults and subsequently eroded (plate 2). The formation crops out or is covered by a veneer of alluvium in the southeast section of the Pueblo Proper



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and dips gently to the north and west. The Petrified Forest Member of the Chinle Formation is composed of as much as 1,500 feet of grayish-red siltstones and mudstones; the Petrified Forest Member contains the Correo Sandstone Bed, which is composed of as much as 100 feet of grayish-red, arkosic sandstone in the upper part of the Petrified Forest Member (Moench and Schlee, 1967).

Wells completed in only the Petrified Forest Member of the Chinle Formation probably have yields of less than 5 gallons per minute. Wells 8.6.21.224 (RWP 30) and 8.6.24.412 (RWP 22) completed in the Petrified Forest Member were reported as "dry holes" at depths greater than 400 feet.

The Correo Sandstone Bed of the Petrified Forest Member is the most productive water-bearing unit in the Chinle Formation although its areal extent is restricted to a narrow zone between Mesita and Correo. Water from the Correo Sandstone Bed is pumped from wells 9.5.24.413 (EPNG 3) and 9.5.24.414 (EPNG 2) by the El Paso Natural Gas Company. About 1 mile to the northeast, yearly water-level fluctuations of 6 to 14 feet were recorded at well 9.4.19.124 (El Rito) in response to withdrawals from the El Paso wells at rates that averaged from 25 gallons per minute during summer months to less than 1 gallon per minute during winter months (Pat Adkins, El Paso Natural Gas Company, oral commun., 1979) (fig. 4). The large water-level fluctuations in the El Rito well and the small areal extent of the aquifer indicate that the sandstone could not support large withdrawals of ground water. Although the El Paso Natural Gas Company wells were tested at rates as great as 40 gallons per minute (D.C. Kelly, El Paso Natural Gas Company, written commun., 1973), the Correo Sandstone Bed probably is able to sustain yields of only 5 to 20 gallons per minute for long periods.

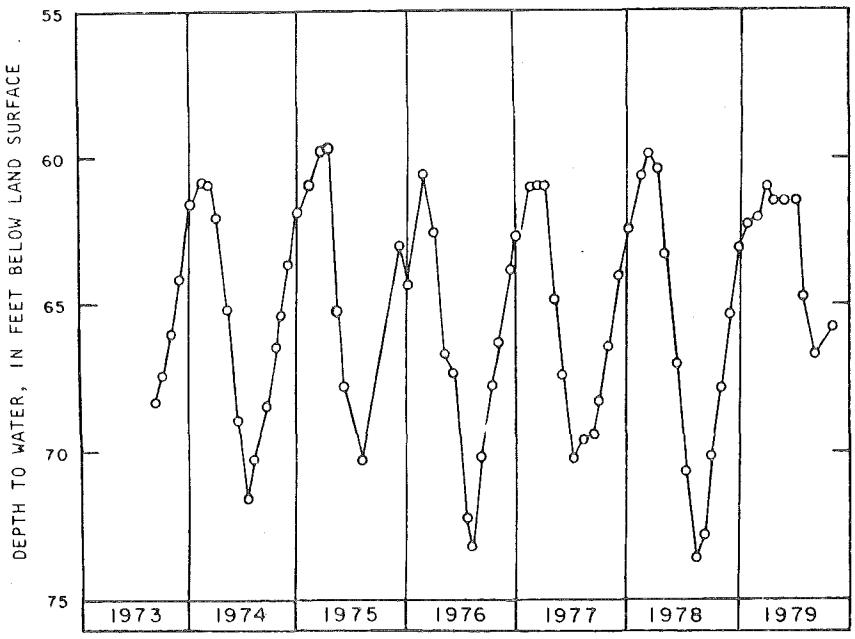


Figure 4.--Water-level fluctuations in well 9.4.19.124 (El Rito), 1973-79.



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## Jurassic System

Jurassic rocks on the Pueblo of Laguna include the Entrada Sandstone, Todilto Formation, Summerville Formation, Bluff Sandstone, and Morrison Formation. Many stock wells and a few public-supply and industrial wells on the pueblo obtain water from the Jurassic sandstone units.

Entrada Sandstone--The Entrada Sandstone of Middle Jurassic age lies beneath all Laguna lands with the exception of the southeast corner of the Pueblo Proper and small parts of the Jack Ward area and Sedillo Grant (plate 2). The sandstone crops out from the northeast to southwest across the Pueblo Proper and dips about 50 feet per mile to the north and west. Three units are recognized in the Entrada Sandstone: (1) A basal, fine- to coarse-grained, crossbedded sandstone; (2) a medial silty member; and (3) an upper unit composed of a fine to medium-grained, crossbedded sandstone (Moench and Schlee, 1967). The three geologic units are considered together in this report as a single hydrologic unit.

Wells deriving water from the Entrada primarily are used to water stock because yields are small and the quality is marginal for other uses. Well 9.5.13.233 (Mesita P.S.), however, provides part of the public supply for the village of Mesita. This well is completed in both the Correo Sandstone Bed of the Petrified Forest Member of the Chinle Formation and Entrada Sandstone.

The hydrologic properties of the Entrada were tested in two wells (9.6.26.443, Timia Well; and 9.5.9.231, Laguna 78-1), both drilled to the top of the Chinle Formation (fig. 3 and tables 1 and 3). The Timia well produced less than 1 gallon per minute from a 495-foot, open-hole section that included the Bluff Sandstone, Summerville Formation, Todilto Formation, and Entrada Sandstone. Laguna 78-1, drilled in the sand-dune area south of Laguna, produced water mainly from the Todilto Formation. Little additional water was yielded from the Entrada Sandstone. Transmissivity values for the Entrada at both locations probably are minimal.

Reported yields from the Entrada Sandstone on other areas of the pueblo also are small. The Standard well (9.6.4.433) flowed at a rate of 3 gallons per minute with a shut-in pressure of 5 1/2 pounds per square inch, giving a specific capacity of 0.24 gallon per minute per foot of drawdown. The Paraje deep test hole (10.6.33.122) was bailed dry following completion. It is probable that sustained yields from the Entrada Sandstone will be less than 10 gallons per minute on Laguna lands.

Todilto Formation--North of the Rio San Jose valley, the Todilto Formation of Middle Jurassic age, mainly consists of 100 feet or less of gypsum overlying 40 feet or less of limestone. Anhydrite occurs in place of gypsum at depths greater than 1,000 feet (Moench and Schlee, 1967, p. 12). Gypsum occurs in isolated areas on mesas south of the Rio San Jose valley, and the limestone pinches out south of the Pueblo Proper (plate 2).



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Well 9.5.9.231 (Laguna 78-1) was drilled in 1978 to a depth of 510 feet to test water quality and yields in Jurassic units. The well penetrated sandstones and siltstones of the Bluff Sandstone and Summerville Formation to a depth of 280 feet. A 70-foot thickness of Todilto Formation, composed primarily of gypsum, was penetrated from 310 to 380 feet, directly beneath about 30 feet of diabase. The diabase probably was part of one of the numerous dikes or sills that crop out in the vicinity of the well (Moench, 1963a). At the bottom of the hole, between depths of 380-503 feet, the Entrada Sandstone was present (table 3). The well was completed only with 30 feet of surface casing. Therefore, water could be contributed to the well from the Bluff Sandstone and Summerville Formation, Todilto Formation, and Entrada Sandstone. Because the dominant ions in the water are calcium and sulfate, possibly a large percent of the water produced by the well is contributed from gypsum in the Todilto Formation.

The well was pumped for 24 hours beginning on December 20, 1978. Discharge averaged 74 gallons per minute for the first 820 minutes of the test but was decreased to 64 gallons per minute for the remainder of the test. The water level could not be measured from 660 to 840 minutes and 1,155 to 1,410 minutes into the test because the water level was below the access tubing in the well. Specific capacity calculated at the end of 660 minutes of pumping at 74 gallons per minute is 0.39 gallon per minute per foot of drawdown. Transmissivity of the aquifer is about 55 feet squared per day based on the first 100 minutes of drawdown data using the modified nonequilibrium formula (Ferris, and others, 1962, p. 98) (fig. 5). Drawdowns after 100 minutes of pumping appear to be affected by a barrier of less permeable material. This barrier could be caused by a change in the number of interconnected fractures in the Todilto Formation away from the well or by intersecting of the aquifer by one of the igneous intrusives near the well.

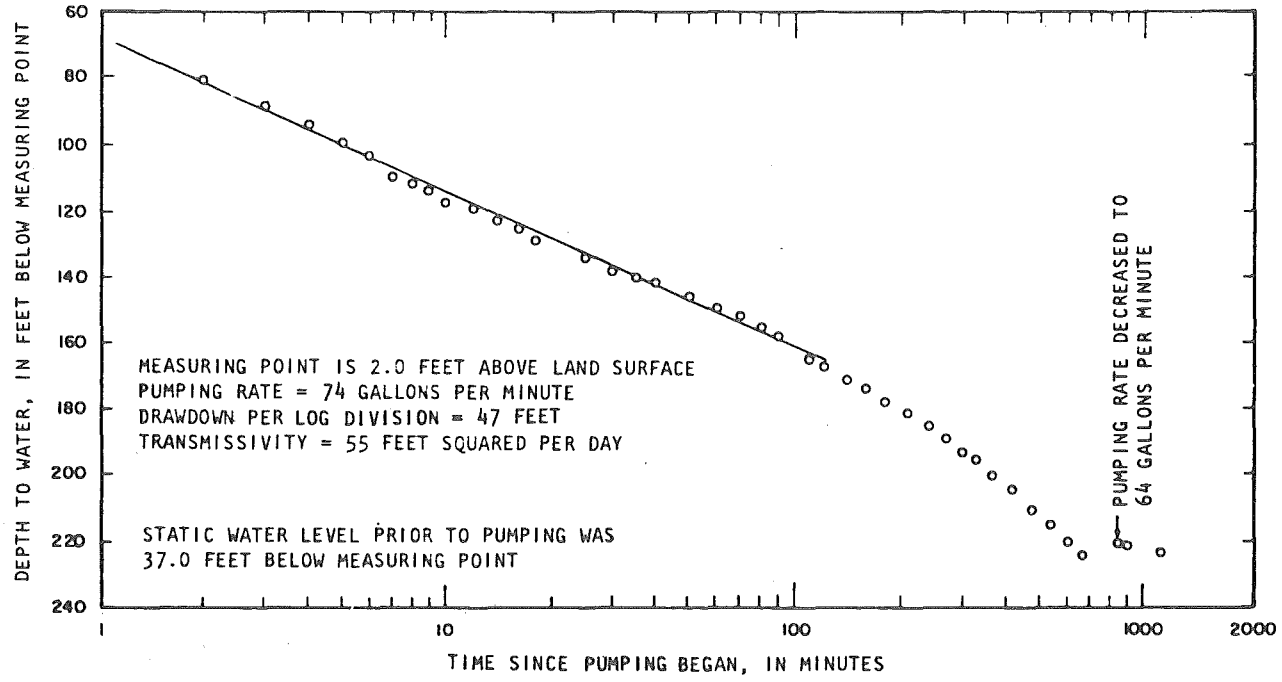


Figure 5.--Water-level drawdown from test of well 9.5.9.231 (Laguna 78-1).



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Two sinkholes and other evidence of solution and collapse near the Rio San Jose valley between Laguna and Mesita indicate that solution porosity and permeability may be present in this area. A sinkhole south of the Jackpile-Paguate mine (10.5.14.234) probably is about 500 feet above the soluble Todilto gypsum, indicating the former occurrence of a large solution cavity. This sinkhole contains water at a depth of 50 feet.

Another sinkhole about 300 feet from Dipping Vat Spring (8.3.12.413) probably is the result of the solution of Todilto gypsum and collapse of the overlying Summerville Formation and Bluff Sandstone. The large flow from this spring, averaging more than 500 gallons per minute, may be partly due to solution permeability.

Summerville Formation--The Summerville Formation of Middle Jurassic age consists of alternating beds of mudstone and sandstone, which crop out from the southwest corner to the east-central part of the Pueblo Proper (plate 2). The Summerville Formation does not readily yield water to wells. Test wells 9.5.9.231 (Laguna 78-1) and 9.6.26.443 (Timia well), located south of the Rio San Jose, showed that no water flowed from the Summerville Formation during drilling. The log of well 10.6.33.213 (ECW 12) indicates that a small quantity of water flowed from the Summerville Formation during drilling. No other wells on the pueblo are known to obtain water from this unit.

Bluff Sandstone--The Bluff Sandstone of Middle Jurassic age is present beneath all Laguna lands except the southeast part of the Pueblo Proper, along Acoma Creek, and small sections of the Sedillo Grant (plate 2). The sandstone crops out in a wide band across the center of the pueblo and dips to the north and northwest. The Bluff Sandstone consists of 200 to 400 feet of very fine to medium-grained, moderate to well-sorted sandstone. An upper eolian sandstone and a lower fluviatile sandstone can be recognized in some areas. The upper eolian sandstone is named the Zuni Sandstone and the lower fluviatile sandstone is named the Bluff Sandstone (C. H. Maxwell, U.S. Geological Survey, written commun., 1973). Both units are termed Bluff Sandstone in this report.

Most wells deriving water from the Bluff Sandstone are used to water stock because of the generally small well yields and water quality unacceptable for other uses. However, water suitable for public supply may be obtained from the Bluff Sandstone in outcrop areas south of the Rio San Jose valley. Yields are variable, however, ranging from less than 1/2 gallon per minute in Transwestern Company wells and test holes (9.5.17.141 through 9.5.19.421 on table 1) to perhaps 30 gallons per minute or more in well 9.6.26.233 (RWP 24).



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The hydraulic properties of the Bluff Sandstone were tested on outcrop areas south of Laguna in stock well 9.6.26.233 (RWP 24) and test wells 9.6.26.443 (Timia) and 9.5.9.231 (Laguna 78-1) (fig. 3 and tables 1 and 3). Stock well 9.6.26.233 (RWP 24) was pumped for 8 hours at a rate of 5.1 gallons per minute, which resulted in lowering the water level in the well 1.1 feet (table 4). Transmissivity calculated from the test by the modified nonequilibrium method (Ferris and others, 1962, p. 98) is about 450 feet squared per day (fig. 6), a large value for the Bluff Sandstone. Drawdown data collected during the first 8 minutes of the test were not used due to fluctuations in the pumping rate.

A new test well, 9.6.26.443 (Timia), was drilled about 1/2 mile south of stock well 9.6.26.233 (RWP 24) to verify the large yields and chemical quality of the water in this area. However, the well produced less than 1 gallon per minute from an interval that included not only the Bluff Sandstone but also the Summerville Formation, Todilto Formation, and Entrada Sandstone (table 3). This test indicates that the transmissivity of the Bluff calculated for stock well RWP 24 may be the result of local fracture permeability caused by igneous intrusives and faulting in the area (Moench, 1964b).

Test well 9.5.9.231 (Laguna 78-1) seems to confirm the results of the Timia well test. Laguna 78-1 was drilled by cable-tool method in the sand-dune area south of Laguna, where less than 1 gallon per minute of water was produced from the Bluff Sandstone. Apparently, when fractures are not encountered, yields are minimal from this formation. Sustained yields from wells, in general, may be expected to be less than 10 gallons per minute from the Bluff Sandstone.

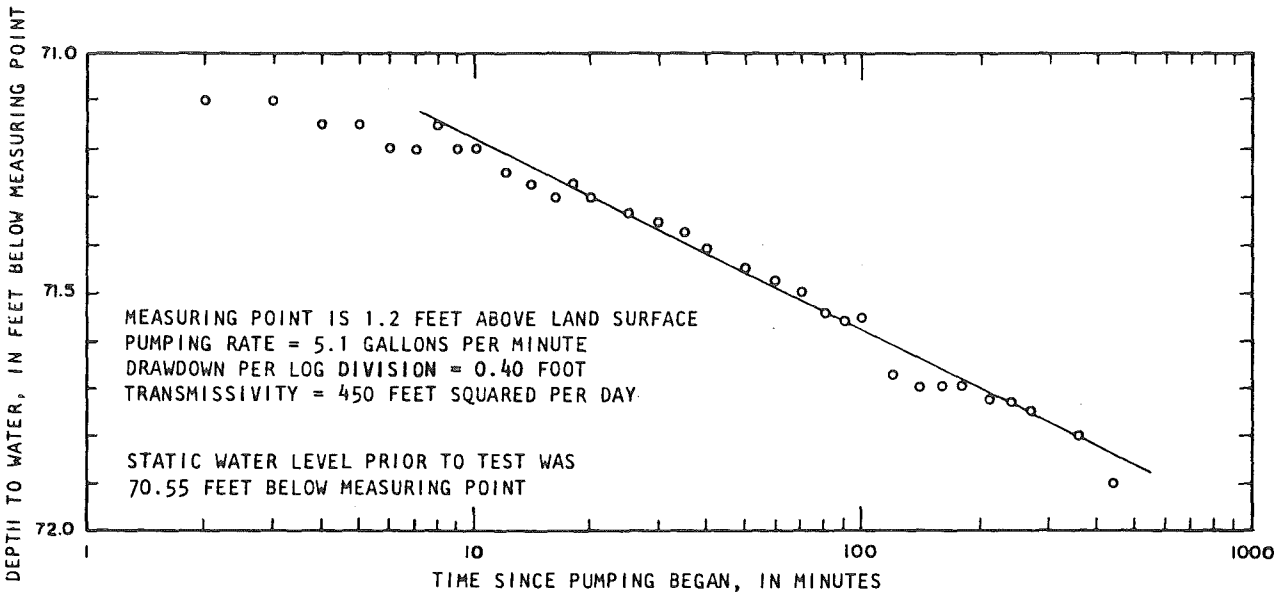


Figure 6.--Water-level drawdown from test of well 9.6.26.233 (RWP-24).



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Morrison Formation--The Morrison Formation of Late Jurassic age is present beneath the northern one-half of the Pueblo Proper and all outlying lands except the Jack Ward area. The Morrison crops out in areas shown on plate 2 and dips to the north and northwest into the San Juan Basin. The Morrison Formation is divided into three members and one informal unit. In ascending order the units are: (1) Recapture Member, composed of as much as 50 feet of interbedded mudstone, siltstone, sandstone, and limestone; (2) Westwater Canyon Member, composed of as much as 300 feet of fine- to coarse-grained sandstone; (3) Brushy Basin Member, composed of as much as 300 feet of interbedded mudstone, siltstone, sandstone, and limestone; and the Jackpile sandstone (economic usage), as much as 200 feet of kaolinitic sandstone within the Brushy Basin Member, which is restricted in location to a zone about 13 miles wide extending from Seama to the Major's Ranch area (Moench and Schlee, 1967).

The principal water-bearing units in the Morrison Formation are the Westwater Canyon Member and sandstones in the Brushy Basin Member, which include the Jackpile sandstone. Near Paguate, wells completed in the Westwater Canyon and Brushy Basin Members presently produce water for domestic, industrial, and stock uses. Most wells in this area produce from 5 to 50 gallons per minute although well 11.5.27.322 (Anaconda 4) reportedly was pumped at 100 gallons per minute. In the Major's Ranch and Montaño areas, yields of several hundred gallons per minute may be possible from the Westwater Canyon Member. The rate of ground-water pumpage from Kerr McGee's Rio Puerco and Bokum's Marquez underground uranium mines averaged 1,400 and 1,030 gallons per minute during 1979 (New Mexico Environmental Improvement Division, 1980). Well 12.2.36.442 (Conoco WW-101) completed in the Westwater Canyon was pumped in 1976 at an average rate of 1,212 gallons per minute (D. K. Green and L. C. Halpenny, Water Development Corporation, written commun., 1976).

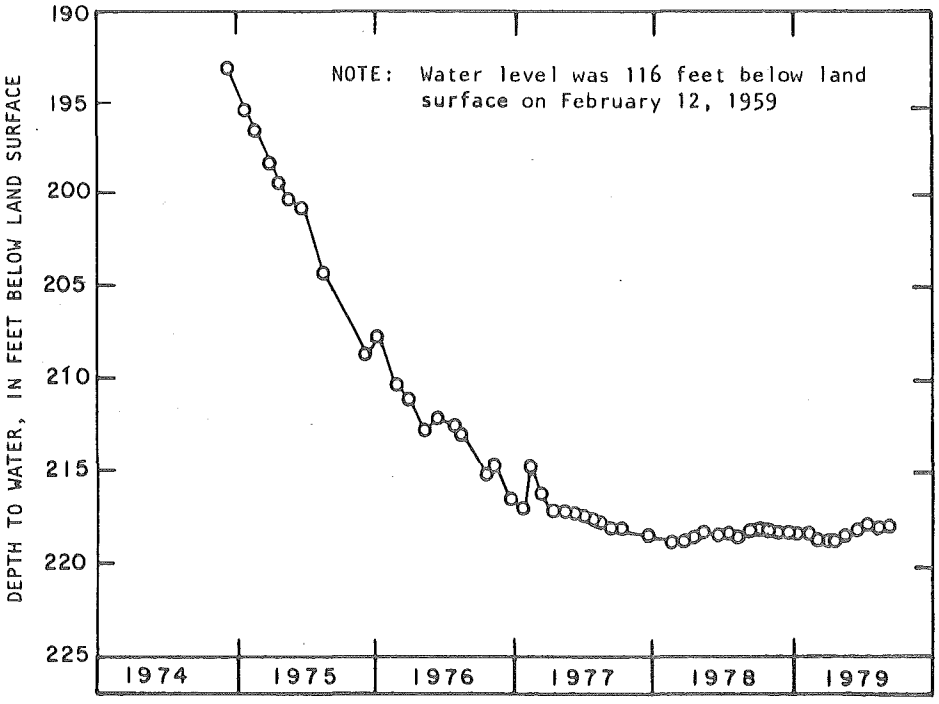


Figure 7.--Water-level declines in well 10.5.5.142 (MDH-771), 1974-79.



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The water level in well 10.5.5.142 (MDH-771), which is completed in the Jackpile sandstone, declined 25 feet from December 1974 to December 1977, at least partly in response to mine dewatering from Anaconda's underground workings (fig. 7). Dewatering for Anaconda's P-10 underground mine began in the fall of 1974 at a rate of 86,000 gallons per day and averaged 200,000 gallons per day during 1978 (U.S. Geological Survey, 1978). The water-level decline in well MDH-771 from 1959 to 1979 was about 102 feet. Apparently even before the start of underground mining in 1974, water levels had declined, possibly as a result of ground-water discharging into the pits excavated for the surface mining that began in the early 1950's.

Well 10.7.10.213 (Laguna 79-1) was drilled in 1979 in Seco Canyon on the Mount Taylor area to test yields and water quality of the Morrison Formation (fig. 3, tables 1 and 3). The aquifer of greatest interest was the Westwater Canyon Member of the Morrison Formation because of the large quantity of water yielded in the uranium mining areas west of the Pueblo of Laguna. A second reason for drilling a deep test well at this location was to monitor possible hydraulic-head declines in the Westwater Canyon Member due to extensive pumping from this unit by the uranium mines. The well was drilled to a depth of 1,330 feet and was open to the Dakota Sandstone and Westwater Canyon Member.

To determine hydraulic properties, the well was pumped for 24 hours at an average rate of 10 gallons per minute, which resulted in lowering the water level in the well 128 feet (table 4). Transmissivity of the open-hole section is 19 feet squared per day, calculated from the recovery data shown in figure 8 using the Theis recovery formula (Ferris and others, 1962, p. 100). The nonlinearity of the curve for recovery times of t/t' greater than 10 was probably caused by the effect of well-bore storage. Therefore, late-time data were used to calculate transmissivity. The late-time drawdown data should have projected back to a residual drawdown of zero at t/t' = 1. The apparent incomplete recovery shown in figure 8 indicates that the hydrologic units supplying water may be of small size and therefore have experienced a permanent lowering of the water level, at least until leakage is received from adjacent units.

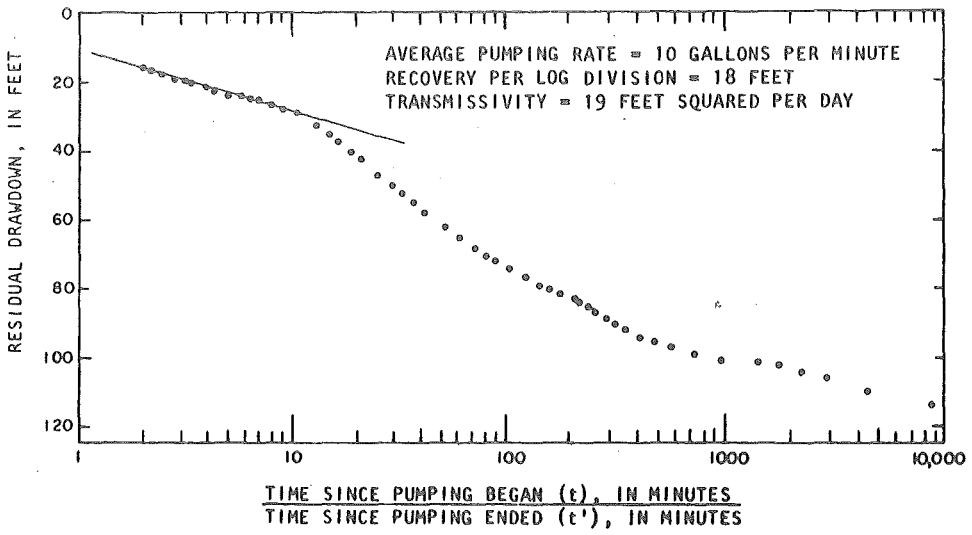


Figure 8.--Water-level recovery from test of well 10.7.10.213 (Laguna 79-1).



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The calculated transmissivity of 19 feet squared per day and well yield of 10 gallons per minute were unexpectedly small, especially because the formation samples of the Westwater Canyon Member showed it to be a well-sorted sandstone and neutron logs indicated significant apparent porosity. Possibly drilling mud had plugged the formation and was not properly removed during development of the well.

An aquifer test was conducted on well 12.2.36.442 (Conoco WW-101) by Continental Oil Company on the Montaño Grant. The well penetrated the entire thickness of the Westwater Canyon between depths of 1,381 and 1,685 feet. The well was pumped for 14 days at an average rate of 1,212 gallons per minute, which lowered the water level 470 feet in the well (D. K. Green and L. C. Halpenny, Water Development Corp., written commun., 1976). Transmissivity of the Westwater Canyon determined from the aquifer test was reported to be 240 feet squared per day; however, numerous faults in the area act as hydrologic boundaries that make the test results difficult to interpret.

## Cretaceous System

On the Pueblo of Laguna, the Cretaceous System consists of the Dakota Sandstone, the Mancos Shale, and the Mesaverde Group. The geologic units with the greatest water-bearing capabilities are the Dakota Sandstone and sandstone units of the Mesaverde Group.

Dakota Sandstone--The Dakota Sandstone of Late Cretaceous age is present beneath the northern section of the Pueblo Proper and parts of all outlying Laguna lands (plate 2). The Dakota Sandstone is composed of four, fine- to coarse-grained, well-consolidated sandstone beds separated by intertonguing beds of Mancos Shale. Collectively, the sandstone beds range in thickness from 0 to 200 feet (Moench and Schlee, 1967). The sandstones and interbedded shales crop out in areas shown on plate 2 and dip to the north and northwest.

Most wells that penetrate the Dakota Sandstone yield less than 15 gallons per minute of water, which generally is used for stock purposes. However, near Encinal the Dakota yields 10 to 50 gallons per minute of potable water. Well 10.6.3.111 (Encinal 1), for example, is connected to the Encinal public-supply system to augment the better quality spring source when needed. Two aquifer tests were conducted by pumping wells 10.6.3.111 (Encinal 1) and 10.6.9.121 (Encinal 2) to better define the water resource in the Encinal area.

Well 10.6.3.111 (Encinal 1) was drilled in 1964 in the valley of Encinal Creek about 1 mile north of the village of Encinal. Bailing tests conducted by the driller in the open hole indicated a yield of at least 25 gallons per minute from a combined thickness of about 235 feet of Dakota Sandstone and Mancos Shale. After casing off all but the lower 25 feet of Dakota Sandstone, a pumping test was conducted on Encinal 1 by the driller. The



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well was pumped for an unknown duration at 14 gallons per minute with 63 feet of drawdown. The decrease in yield between the bailer test and pumping test possibly was caused by casing off the upper beds of Dakota Sandstone. The aquifer was tested again by pumping the well on November 17, 1978. The well was pumped for 24 hours at a rate that decreased irregularly from 44 to 8 gallons per minute. The pumping resulted in lowering the water level in the well 190 feet at the end of the test (table 4). Transmissivity of the aquifer could not be determined from the data collected during the test due to the irregular pumping rate.

Well 10.6.9.121 (Encinal 2) was drilled in 1964 about 1 mile west of Encinal. The well yield reportedly was tested in 1964 by pumping "all day" at 30 gallons per minute, which lowered the water level in the pumped well only 1 foot. To estimate transmissivity of the Dakota Sandstone, the well was pumped for 24 hours on November 8, 1978. The pumping rate decreased irregularly during the test from 100 to 47 gallons per minute and averaged 54 gallons per minute (table 4). To analyze the test, pumping was separated into 4 successive steps with average discharge rates of 100, 69, 60, and 50 gallons per minute. Transmissivity estimated from the recovery data using the method of Harrill (1970, p. C212) is 2,000 feet squared per day (fig. 9).

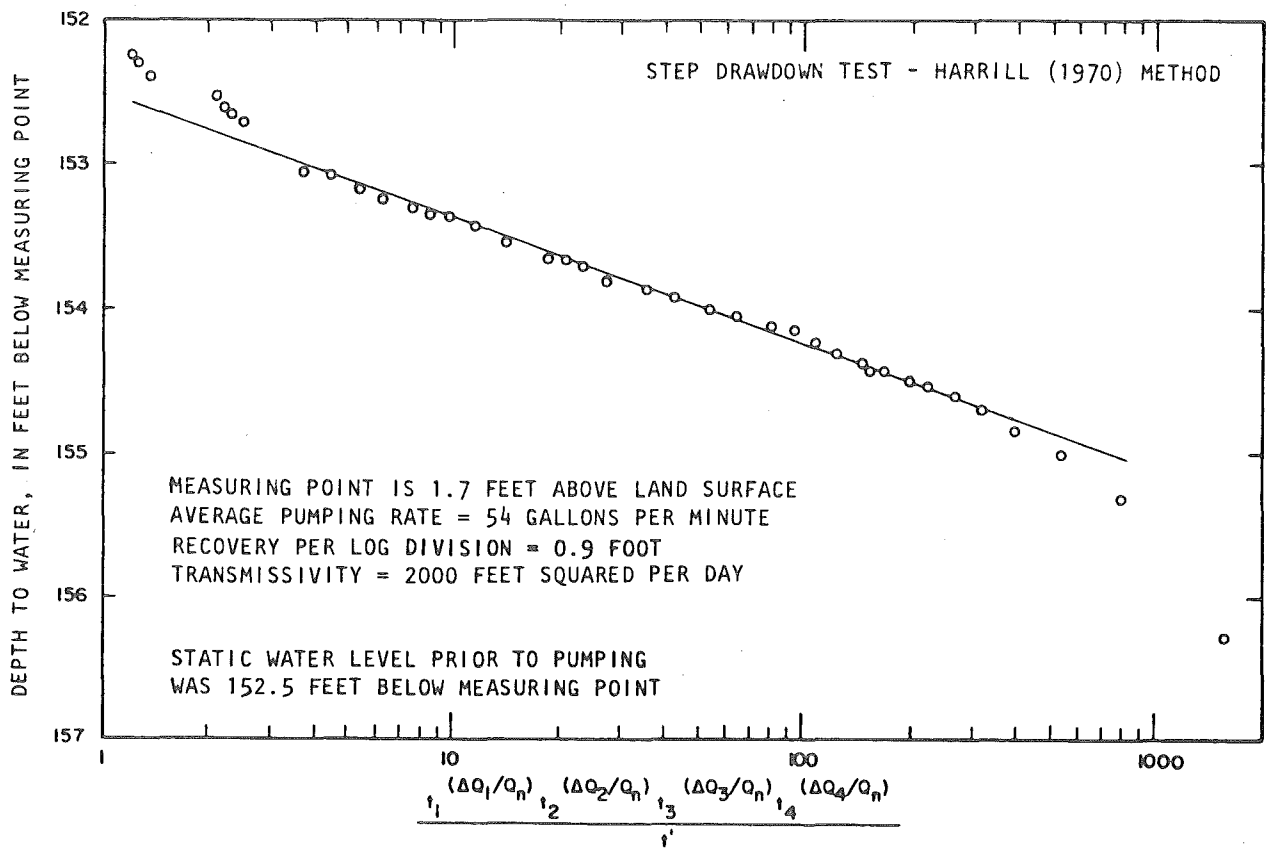


Figure 9.--Water-level recovery from test of well 10.6.9.121 (Encinal 2).



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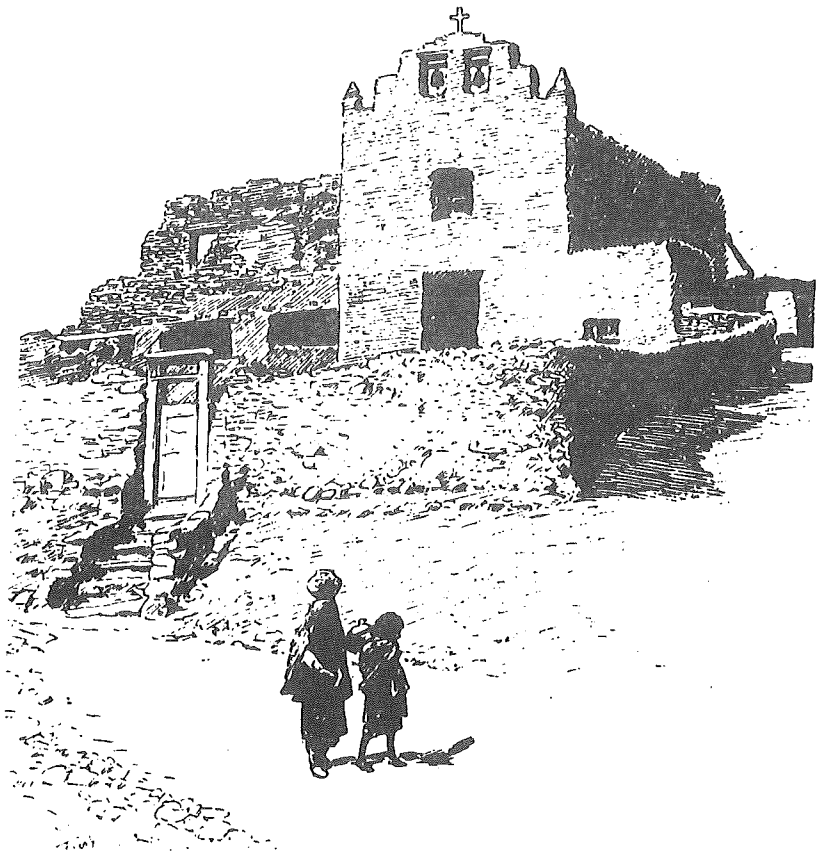
A transmissivity of 2,000 feet squared per day is a large value for 20 feet of Dakota Sandstone; possibly, fracturing in the unit has increased the hydraulic conductivity in the vicinity of the well. The late-time recovery data (t/t' less than 3) were not used to calculate this transmissivity value. The steeper slope of the late-time data indicates the possible effect of a hydrologic boundary of lesser permeability. The igneous intrusives mapped by Moench (1963b) about 1 mile west of the well could represent the hydrologic boundary indicated by the recovery curve. The fact that water levels recovered 0.3 foot above the initial static level may be due to a change in barometric pressure during the recovery period.

Mesaverde Group--Sandstone units of the Mesaverde Group of Late Cretaceous age, including the basal Gallup Sandstone, yield water to stock wells in the southern part of Montaño Grant and the northern part of Sedillo Grant. Reported yields for wells completed in the Mesaverde Group range from 8 to 30 gallons per minute in these areas. Well 11.7.35.243 (Castillo Canyon 1) yielded about 5 gallons per minute of water containing 670 milligrams per liter of dissolved solids from a 20-foot thickness of Gallup Sandstone on the Mount Taylor area. Some of the flow in Paguate Creek also may come from the Mesaverde Group.





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## Tertiary and Quaternary Systems

The major water-bearing units in the Tertiary and Quaternary Systems are the Mount Taylor basalt flows and unconsolidated valley-fill deposits of the Santa Fe Group.

Basalt--The combined flow from six springs that issue from basalt around Mount Taylor is about 200 gallons per minute. These springs contribute water with a specific conductance generally less than 300 micromhos to streamflow in Encinal Canyon and Paguate Creek. The springs discharge about 100 gallons per minute to Encinal Creek upstream from the village of Encinal.

Santa Fe Group--The Santa Fe Group of Miocene, Pliocene, and Pleistocene age is composed of unconsolidated sand, gravel, and clay. These sediments were deposited in the Puerco fault zone on Sedillo Grant (plate 2). Wells completed in the Santa Fe Group near Interstate Highway 40 just east of the pueblo yield water with specific conductances ranging from 4,000 to 6,000 micromhos, which is suitable for stock use but not for domestic use or irrigation. Wells penetrating a north-trending graben, which probably is present under the Pueblo of Laguna in the vicinity of Cañada de los Apaches, produce water with specific conductances ranging from 460 to 2,180 micromhos (pl. 1). Well 9.2.24.230 (BIA Sedillo), drilled in 1980 by the U.S. Bureau of Indian Affairs in this graben, produced about 12 gallons per minute of water with a specific conductance of 1,600 micromhos. This well is located away from stream valleys, which could provide a source of local recharge. Wells completed in the graben may yield 20 to 100 gallons per minute of water containing dissolved-solids concentrations of between 300 and 1,500 milligrams per liter. This water probably is the best quality water in the Sedillo Grant area.

## Quaternary System

The major water-bearing units of the Quaternary System consist of valley-fill deposits of basalt and alluvium.

Basalt--Two basalt flows near the Laguna and Suwanee are present in the study area (plate 2). The Laguna basalt flow originated from volcanic centers west of pueblo lands and flowed eastward down the valley. The basalt is as much as 60 feet thick and overlies 20 to 80 feet of alluvium. The Laguna flow crops out from New Laguna to Mesita but is buried on Laguna lands west of New Laguna by as much as 40 feet of more recent alluvium. The Suwanee basalt flow, which originated about 7 miles south of the pueblo, is present between Correo and Suwanee although locally it may be buried by a thin layer of alluvium.



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Two springs (9.5.8.113 and 9.5.8.121) near Laguna discharge from the base of the Laguna flow at a rate of 2 gallons per minute or less. These and other seeps and springs from the Laguna basalt contribute to the perennial flow in the Rio San Jose in this area. Several wells in the Rio San Jose valley west of New Laguna may produce part of their water from the Laguna basalt flow.

Several springs issue from the Suwanee basalt flow near Correo where the Rio San Jose has eroded into and through this unit. One of these, Suwanee Spring, flowed approximately 100 gallons per minute in 1973. The specific conductance of water from springs in this area averages about 4,000 micromhos with only minor differences between springs.

Alluvium and basalt along the Rio San Jose--The valley of the Rio San Jose ranges from 1/2 mile to more than 2 miles wide through the center of the Pueblo Proper and Sedillo Grant (plate 2). The valley was cut mainly in shales and sandstones of the Morrison Formation, San Rafael Group, and Chinle Formation to depths as much as 160 feet below the present valley floor and then filled in Quaternary time with deposits of alluvium and basalt. The altitude of the base of the valley-fill deposits west of the village of Laguna (fig. 10) was mapped based on data from 16 well logs.

The composition of the alluvial deposits is quite variable in both vertical and lateral extent. The alluvium consists of unconsolidated deposits ranging in grain size from very fine sand to gravel. Clay layers, which probably exist as discontinuous lenses, commonly are penetrated in test drilling. Correlation of individual alluvial deposits between wells was not attempted because of the wide spacing between wells and discontinuous nature of the alluvial deposits.

The valley-fill deposits along the Rio San Jose comprise a significant aquifer on the pueblo. The unconsolidated alluvial deposits and the basalt flows that comprise the valley fill probably are the only known source of ground water on the pueblo capable of supplying yields sufficient for irrigation. In general, yields from alluvium increase with increasing saturated thickness and grain size. Relatively large saturated thicknesses combined with large grain size at the mouths of Encinal Canyon and Cubero Creek result in yields from 50 to 450 gallons per minute to public-supply wells and test holes in these areas.

Transmissivity of the valley fill west of New Laguna ranges from 290 to 17,000 feet squared per day based on aquifer tests at wells penetrating 40 to 138 feet of saturated aquifer thickness (table 4 and fig. 10). Hydraulic conductivity of the valley fill based on these tests ranges from 2.4 to 300 feet per day (fig. 10), and specific capacity of the test wells ranges from 0.04 to 33.9 gallons per minute per foot of drawdown. A detailed account of the results from six aquifer tests conducted in the Rio San Jose valley during this study is presented in the following paragraphs.



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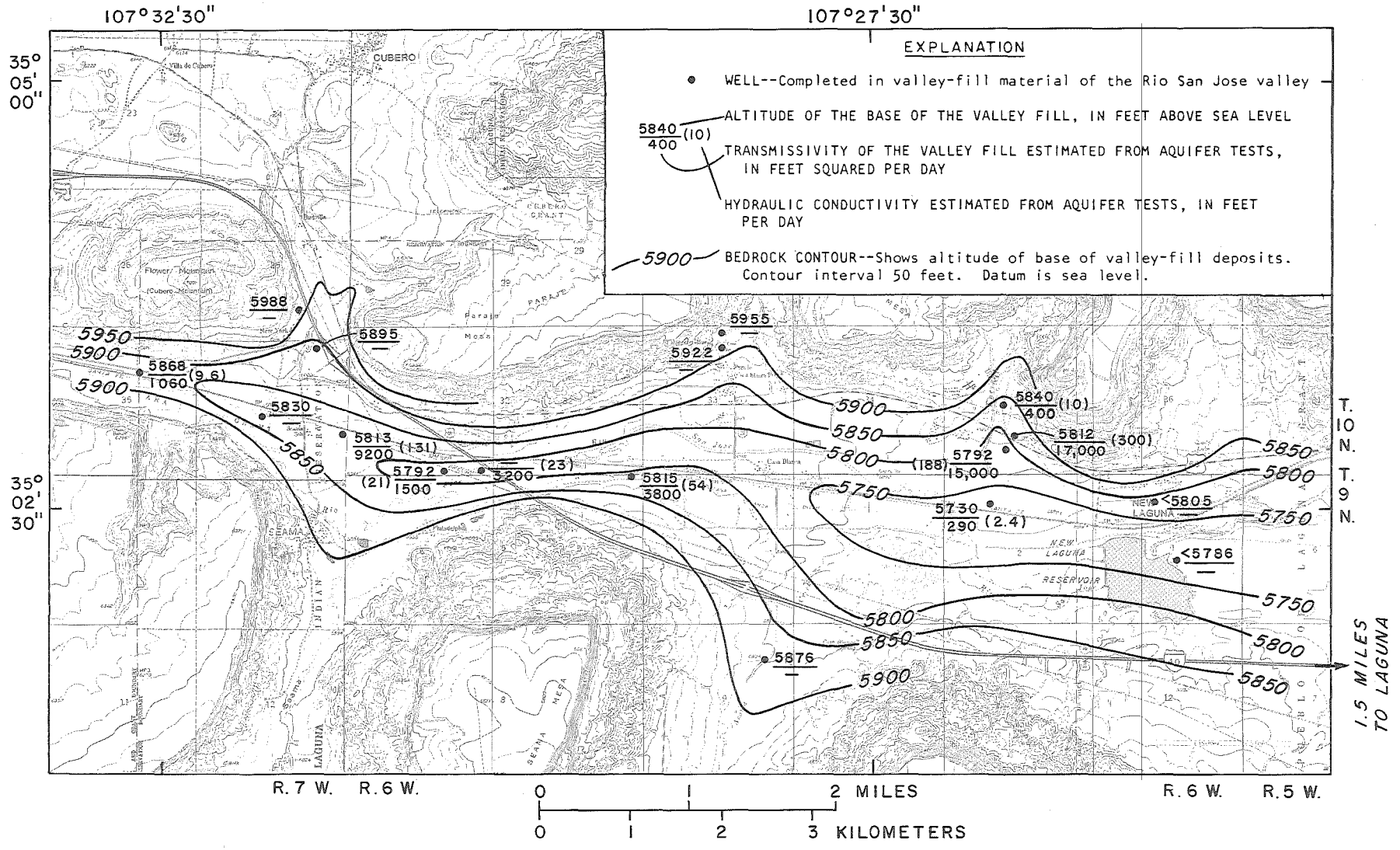


Figure 10.--Altitude of the base of the valley fill and transmissivity values in the Rio San Jose valley west of Laguna.



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Well 10.7.36.424 (Laguna 76-1) was drilled about 3/4 mile north of Seama (fig. 3). To test the aquifer properties of the valley fill, the well was pumped at 140 gallons per minute. After pumping for 3 hours, the pump stopped and the water level in the well recovered for 4.5 hours. The test was started again and the well pumped for 20 hours at 140 gallons per minute, resulting in a total drawdown of 8.5 feet from both pumping periods. Transmissivity calculated from the drawdown data using the modified non-equilibrium formula (Ferris and others, 1962, p. 98) is about 8,200 feet squared per day (fig. 11). However, recovery data indicate a slightly greater transmissivity of 9,200 feet squared per day calculated by the Theis recovery method (Ferris and others, 1962). The late-time recovery data may indicate the presence of a boundary of lesser permeability but the change in slope is slight so the data were included in the analysis. The recovery data probably give a more accurate estimate of transmissivity because of the difficulty in measuring drawdown in the pumped well.

Irrigation well 10.7.36.424a (Laguna Ir. 1) was pumped at rates that ranged from 240 to 490 gallons per minute primarily to determine the capacity of the well. The test was conducted for 24 hours, resulting in a final drawdown of 86 feet while pumping at 490 gallons per minute. Specific capacity of the well at the end of the test was 5.7 gallons per minute per foot.

Well 10.7.36.322 (Laguna 76-2) was drilled in the Rio San Jose valley about 1 mile northwest of Seama (fig. 3). The well was pumped for 24 hours at an average rate of 80 gallons per minute to test the hydrologic properties of the valley-fill material at this location. A maximum drawdown of 53 feet was reached after pumping about 200 minutes, then the water level rose about 8 feet for the remainder of the test (fig. 12). The rise in water level may have been caused by a slight decrease in the pumping rate or increase in well efficiency when the well began to produce sand. Because of the possible change in well efficiency during the test and effects of nearby boundaries and water-table conditions, a transmissivity value for the aquifer was not determined for this test.

Well 9.6.5.222 (Laguna 76-6) was drilled in the Rio San Jose valley about 1 mile southwest of Casa Blanca (fig. 3). The well was pumped for 24 hours at an average rate of 125 gallons per minute to test the aquifer properties at this location. Drawdown and recovery of the water level was observed in the pumped well and in stock well 9.6.5.221 (Acoya), located 413 feet away. Transmissivity and storage coefficient were estimated by the Theis non-equilibrium method (Ferris and others, 1962, p. 92) using drawdown data in the stock well. The estimated value of transmissivity is about 3,800 feet squared per day (fig. 13). The calculated value of storage coefficient of $1.9 \times 10^{-4}$ indicates that confined conditions existed for the duration of the test. For longer periods of pumping, however, the aquifer will become dewatered and a specific yield value of between .05 and .20 should be used in any estimates of long-term pumping effects.



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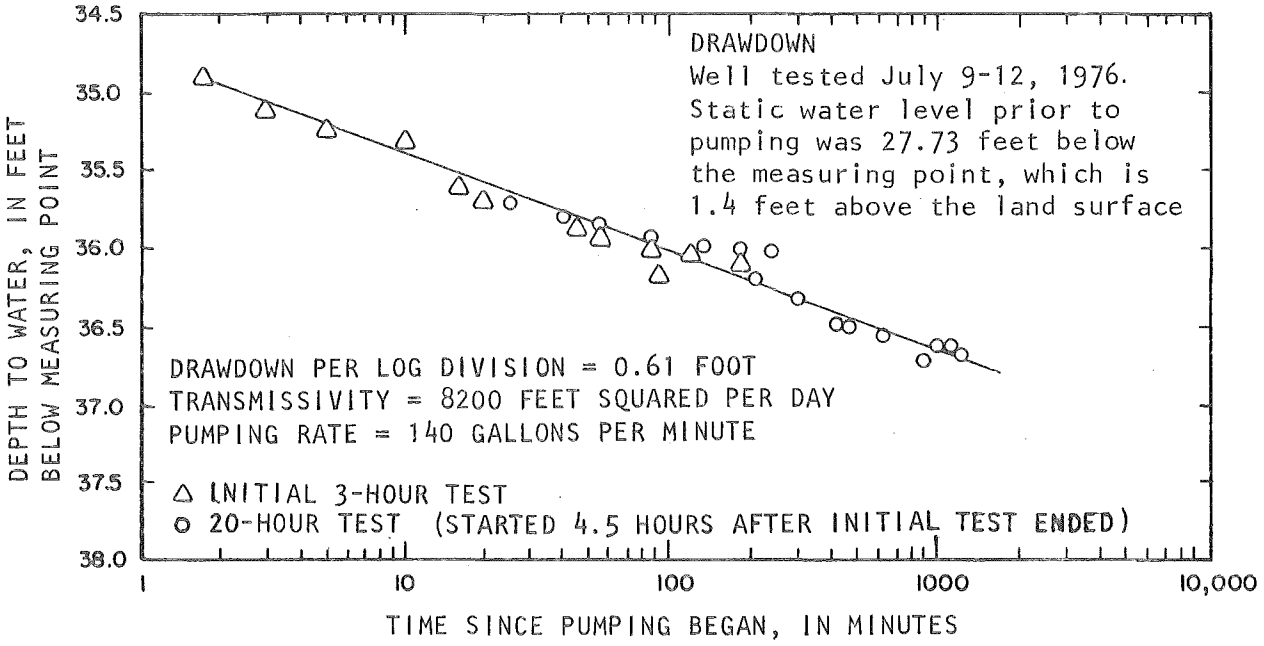


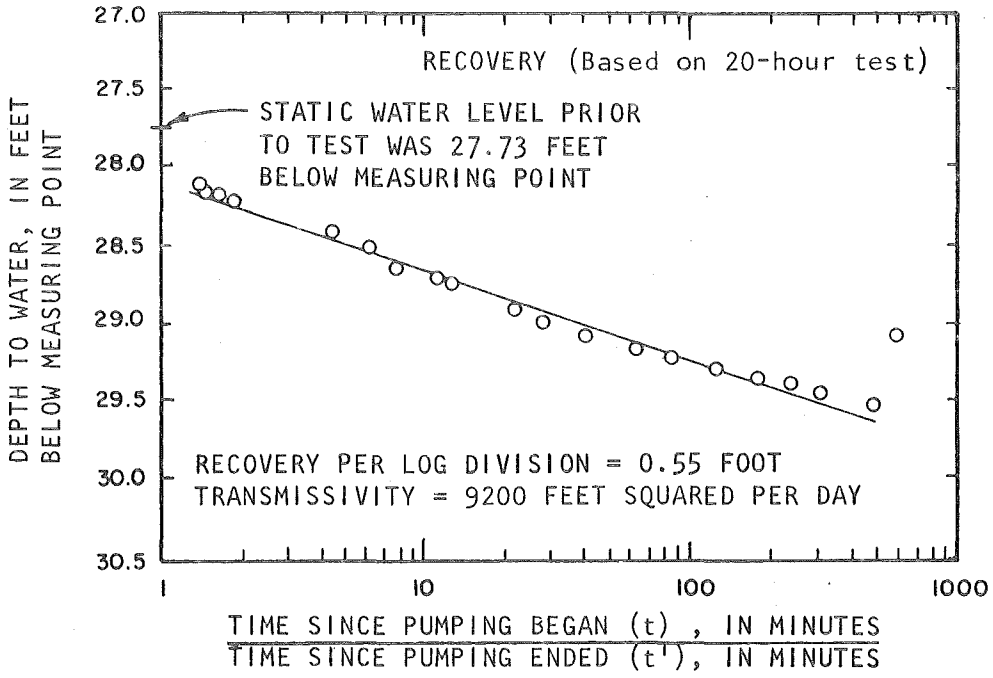


Figure 11.--Drawdown and recovery in well 10.7.36.424 (Laguna 76-1).



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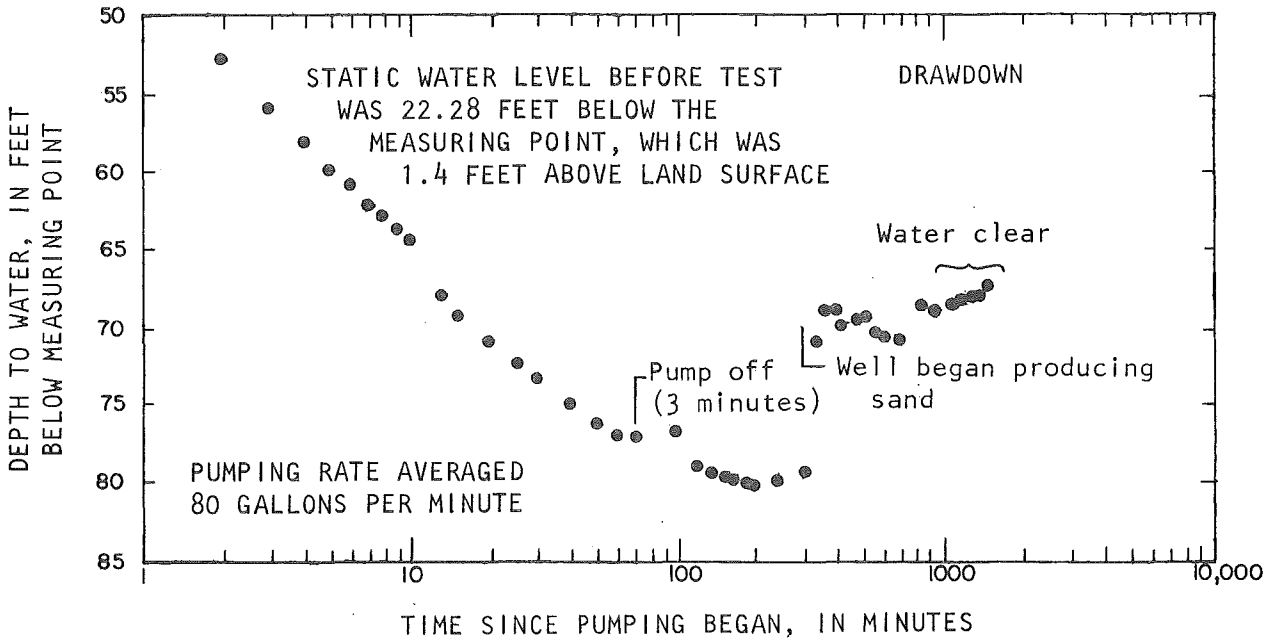


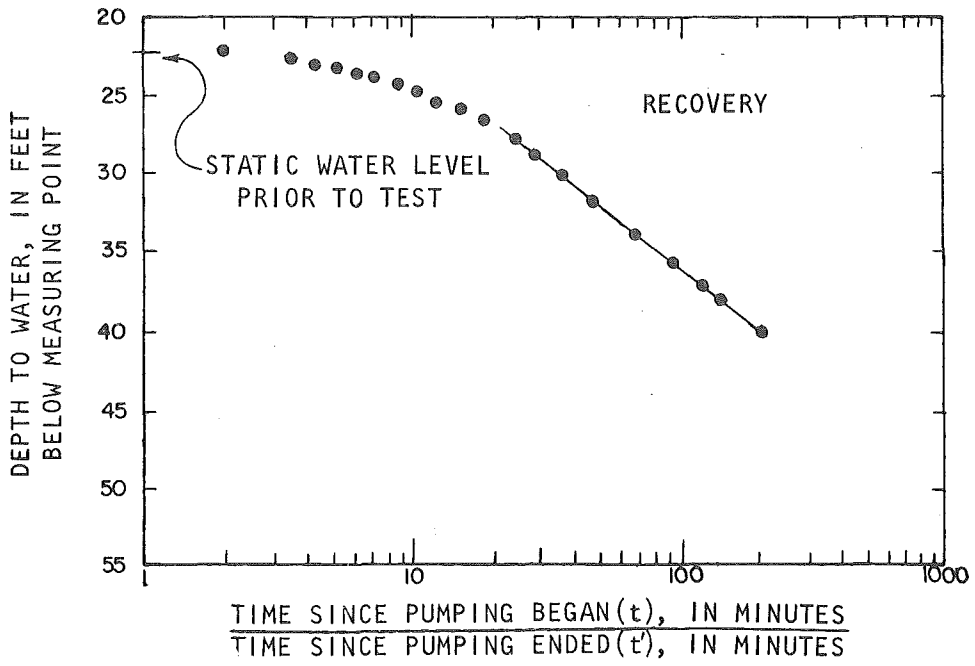


Figure 12.--Drawdown and recovery of water level in well 10.7.36.322 (Laguna 76-2).



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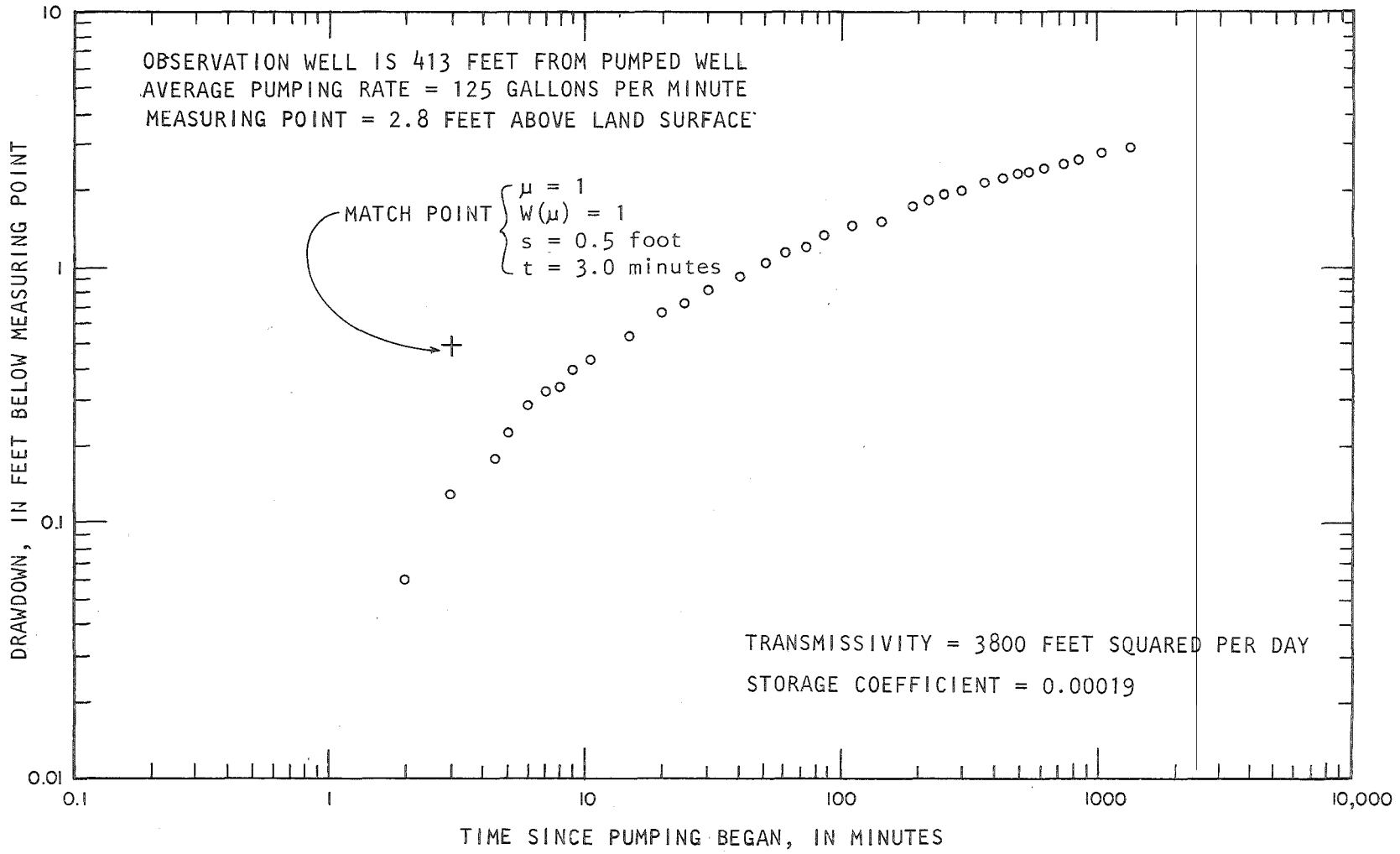


Figure 13.--Drawdown in observation well 9.6.5.221 (Acoya) in response to pumping from well 9.6.5.222 (Laguna 76-6).



350001896

Well 9.6.2.123 (Laguna 76-7) was drilled in the Rio San Jose valley where Encinal Creek joins the Rio San Jose (fig. 3). The well was pumped for 24 hours at an average rate of 4.5 gallons per minute, which caused 105 feet of drawdown in the pumped well. Transmissivity estimated from the Theis recovery method (Ferris and others, 1962, p. 100) using data from the pumped well is about 290 feet squared per day (fig. 14). About a year after conducting the aquifer test, the well was cleaned and bailed at a rate of about 20 gallons per minute with less than 5 feet of drawdown. This indicates that the well was not properly developed when the initial aquifer test was conducted. Therefore, the specific capacity value estimated from that initial test probably is less than the actual value.

Well 10.6.35.342a (Laguna Ir. 2) was drilled by the U.S. Bureau of Indian Affairs in 1977 in the Rio San Jose valley at the mouth of Encinal Creek (fig. 3). To test aquifer properties at this location, the well was pumped for 24 hours at a rate that ranged from 80 to 212 gallons per minute, which resulted in lowering the water level in the well 31 feet. Transmissivity of the aquifer was estimated to be about 15,000 feet squared per day from early-time water-level recovery data measured in well 10.6.35.342 (Pueblo Test 2) located about 130 feet from the pumped well (fig. 15). The pumping rates during each of 4 steps (80, 120, 165, and 200 gallons per minute) were used in the calculation of transmissivity by a method described by Harrill (1970, p. C212). The late-time recovery data appear to be affected by a hydrologic boundary of lesser permeability, possibly the valley wall, which is less than 1/2 mile from the pumped well.

Alluvium along the Rio Puerco--The alluvium near the Rio Puerco on Montaño Grant is reported to be as much as 250 feet thick (Gene Saucier, Continental Oil Company, oral commun., 1973). Although yields of as much as 100 gallons per minute may be possible along the Rio Puerco valley, the specific conductance value of the water probably exceeds 6,000 micromhos at most places, which indicates the water quality would be unacceptable for irrigation or public supply.

Alluvium along the Rio Paguate--The alluvium is about 60 feet thick near the two Paguate public-supply wells, 11.5.32.234a (Paguate P.S. 1) and 11.5.32.232 (Paguate P.S. 2). The wells have been pumped at rates of 90 and 75 gallons per minute, respectively. During this study, however, only the Paguate P.S. 2 well was in use. It pumped 53,000 gallons of water per day during August 1-8, 1979, and was estimated to produce about one-half that quantity during winter months when demand was less (Norm Fairbanks, Indian Health Service, written commun., 1979).

Additional development of ground water in the alluvium along the Rio Paguate is possible. Presently, as much as 250 gallons per minute of water is lost to evapotranspiration in the swamp area in the vicinity of the public-supply wells.



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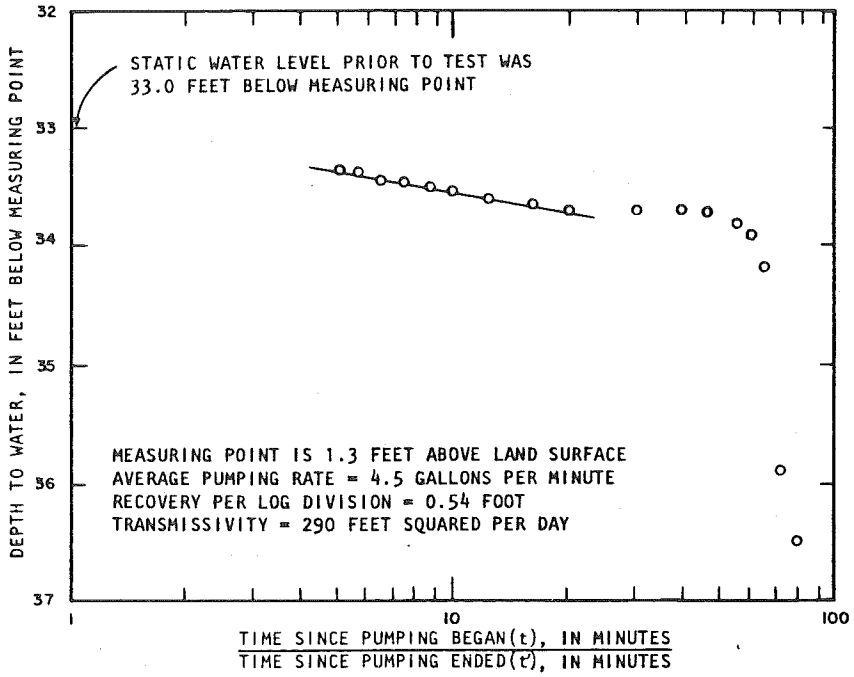


Figure 14.--Water-level recovery from test of well 9.6.2.123 (Laguna 76-7).

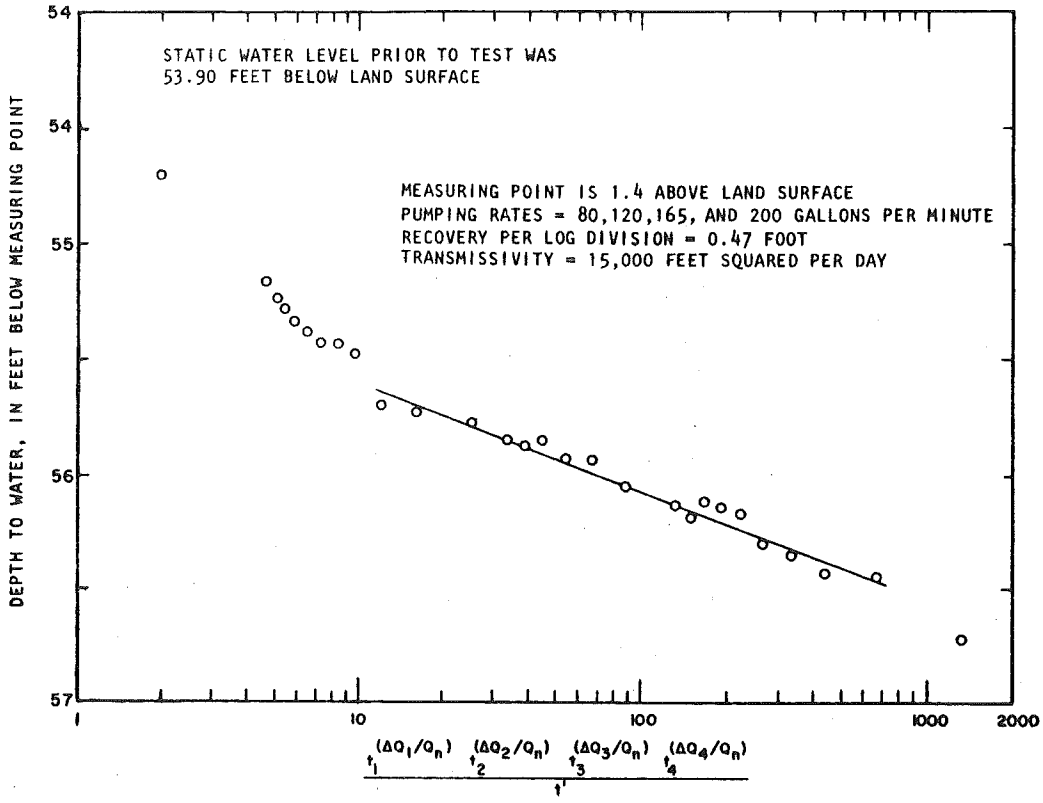


Figure 15.--Water-level recovery in observation well 10.6.35.342 (Pueblo Test 2) from test of well 10.6.35.342a (Laguna Ir. 2).



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Alluvium in Encinal Canyon--Two wells were drilled in alluvium in Encinal Canyon about 2 miles up the canyon from the village of Encinal (fig. 3 and table 3). The drilling was performed to determine if the springflow at the head of Encinal Canyon that seeps into the alluvium could be salvaged by pumpage.

Well 11.6.27.334 (Encinal Canyon 1) penetrated 35 feet of alluvium and 75 feet of Mancos Shale. The well produced water containing 1,570 milligrams per liter of dissolved solids from a 3- to 5-foot zone at the base of the alluvium. The well was dry after 100 minutes of bailing at an average rate of 5.3 gallons per minute. Of the 530 gallons of water bailed from the hole, about 300 gallons were provided from water stored in the borehole. The water level in the well rose 4.3 feet from July 1978 to June 1979, probably as a result of recharge from stormflow and snowmelt runoff in Encinal Creek.

Well 11.6.34.134 (Encinal Canyon 2) penetrated 31 feet of alluvium and 4 feet of Mancos Shale. Less than 1 foot of alluvium appeared to be saturated at the contact with the Mancos Shale. The well was bailed dry after removing only 10 to 15 gallons of water, most of which probably came from borehole storage. Specific conductance of the water was 950 micromhos.

Alluvium in Seco and Castillo Canyons--Wells were drilled in Seco and Castillo Canyons on the Mount Taylor area of Laguna lands to test the quality and yields of the unconsolidated valley fill (fig. 3). These valleys were investigated because springflow and storm runoff could provide recharge to the alluvium.

Well 10.7.10.122 (Seco Canyon 1) penetrated 35 feet of alluvium near the mouth of Seco Canyon. The well produced only 10 gallons of water in about 12 hours. The specific conductance of water from the well was 3,000 micromhos.

Well 11.7.35.243 (Castillo Canyon 1) penetrated alluvium to a depth of 40 feet, Gallup Sandstone from 40 to 60 feet, and Mancos Shale from 60 to 75 feet. The alluvium did not produce water at this site.

## Movement, recharge and discharge

Aquifers on the Pueblo of Laguna are recharged by precipitation, streamflow and leakage from adjacent geologic units. Water moves through the aquifers to discharge as springflow, evapotranspiration, leakage to adjacent units, and ground-water withdrawals. An understanding of the ground-water flow system is necessary to determine areas on the pueblo where adequate supplies of potable water may be found.



350001899

## Bedrock aquifers

The general horizontal direction of ground-water movement can be determined from potentiometric-surface maps of the Chinle Formation, Entrada Sandstone, Bluff Sandstone, and Morrison Formation shown in figures 16 through 19. It can be assumed that water flows at right angles to the potentiometric contours. Flow directions illustrated by arrows on the potentiometric maps show that the shallow water moves toward the Rio San Jose in most areas. Flow directions in the Puerco fault zone generally are eastward into the Rio Grande trough.

The flow directions shown in figures 16 through 19 illustrate only the horizontal component of ground-water movement. In the study area, the vertical component (upward or downward movement) also is important, especially as it affects water quality. Possible directions of ground-water movement in two geologic sections are shown on plate 3.

Bedrock aquifers of Permian age beneath the pueblo probably are recharged by streamflow and precipitation on outcrop areas in the Grants area, about 20 miles west of the Pueblo of Laguna. Based on water levels in that area and in wells 11.5.14.241 (L-Bar 2) and 9.5.12.442 (Mesita Test), ground water moves southeast across the pueblo with an average gradient of about 20 feet per mile. Discharge to overlying units takes place mainly in the Puerco fault zone where fractures allow upward movement of water from the Permian units. The excessively mineralized springflow in the Montaño and Sedillo Grants is due to this discharge. Ground water also is probably discharged to the Santa Fe Group, which fills the Rio Grande trough.

The Chinle Formation, of Triassic age, is recharged mainly by precipitation on outcrop areas along Arroyo Colorado. Inflow of water to the formation also occurs by upward leakage from Permian rocks. Water movement probably is mostly in the vertical direction in the Petrified Forest Member. The Correo Sandstone Bed in the Petrified Forest Member probably is recharged by precipitation on outcrops and discharges to the alluvium along the Rio San Jose.

Jurassic aquifers south of the Rio San Jose probably are recharged for the most part on and to the southwest of the pueblo where the units crop out. Ground-water flows northeast and discharges into the alluvium along the Rio San Jose. Jurassic aquifers north of the Rio San Jose probably are recharged west of Mount Taylor by precipitation on outcrops and by leakage from the overlying Cretaceous sandstones. Some discharge is to the Rio Paguate and Rio Moquino where they join in the Jackpile-Paguate Mine and to the Rio San Jose valley west of Mesita. Discharge from the Jurassic units also occurs where ground water is withdrawn by the Anaconda Company to operate the Jackpile-Paguate Mine. These withdrawals averaged about 250,000 gallons per day during 1978.



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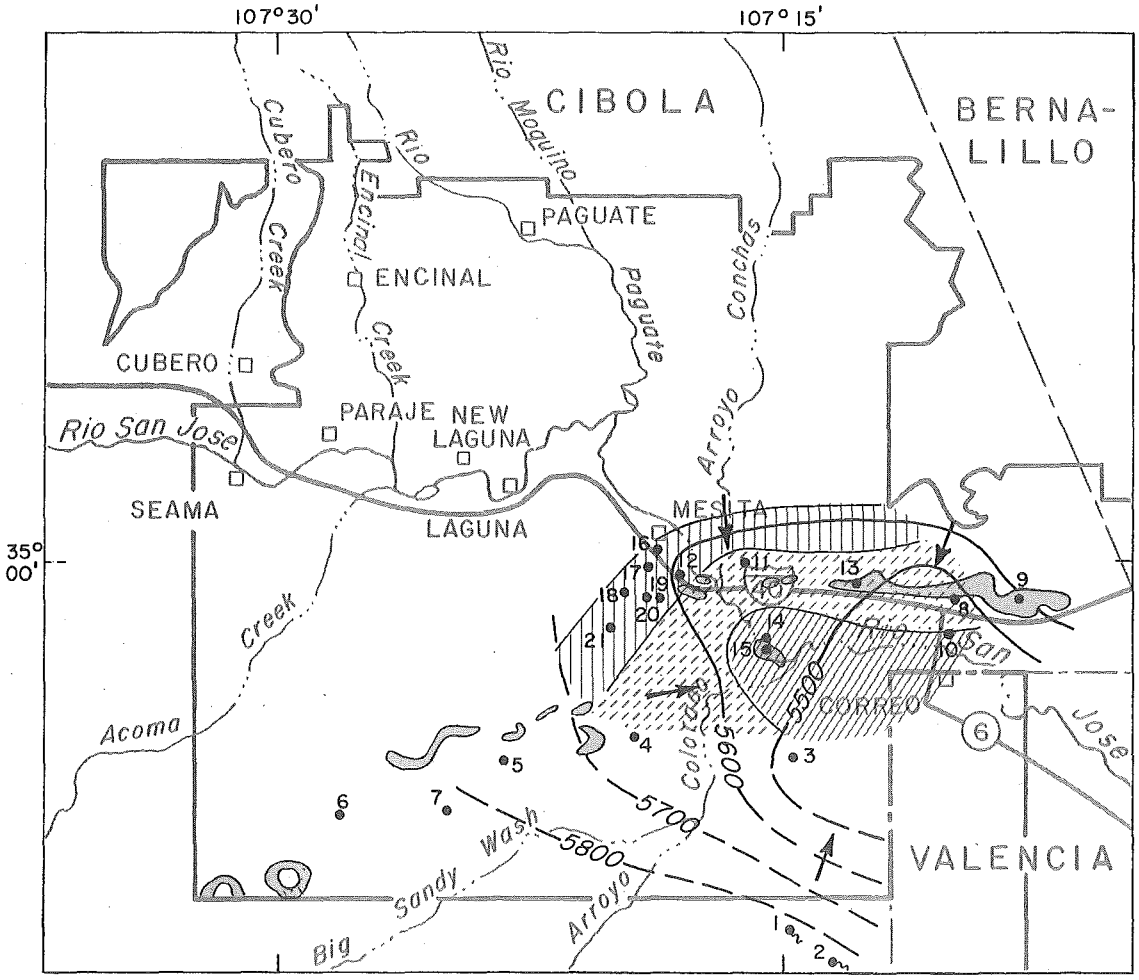



| IDENTIFIER | NAME OF WELL OR SPRING | LOCATION NUMBER |
|---|---|---|
| 1 | Salt Spring 195 | 7.4.3.344 |
| 2 | Lucero Spring | 7.4.11.431 |
| 3 | ECW-10 | 8.4.15.123 |
| 4 | RWP-21 | 8.5.12.311 |
| 5 | - | 8.5.17.213 |
| 6 | RWP-30 | 8.6.21.224 |
| 7 | RWP-22 | 8.6.24.412 |
| 8 | RWP-15 | 9.3.20.441 |
| 9 | Coyote Spring | 9.3.22.443 |
| 10 | ECW-3 | 9.3.29.414 |
| 11 | RWP-16 | 9.4.16.341 |
| 12 | El Rito | 9.4.19.124 |
| 13 | RWP-19 | 9.4.24.322 |
| 14 | Pino 1 | 9.4.33.223 |
| 15 | Pino 2 | 9.4.33.223a |
| 16 | Mesita P.S. | 9.5.13.233 |
| 17 | Burnell 2 | 9.5.13.411 |
| 18 | RWP-20 | 9.5.23.424 |
| 19 | EPNG-2 | 9.5.24.414 |
| 20 | EPNG-3 | 9.5.24.413 |
| 21 | RWP-29 | 9.5.26.411 |

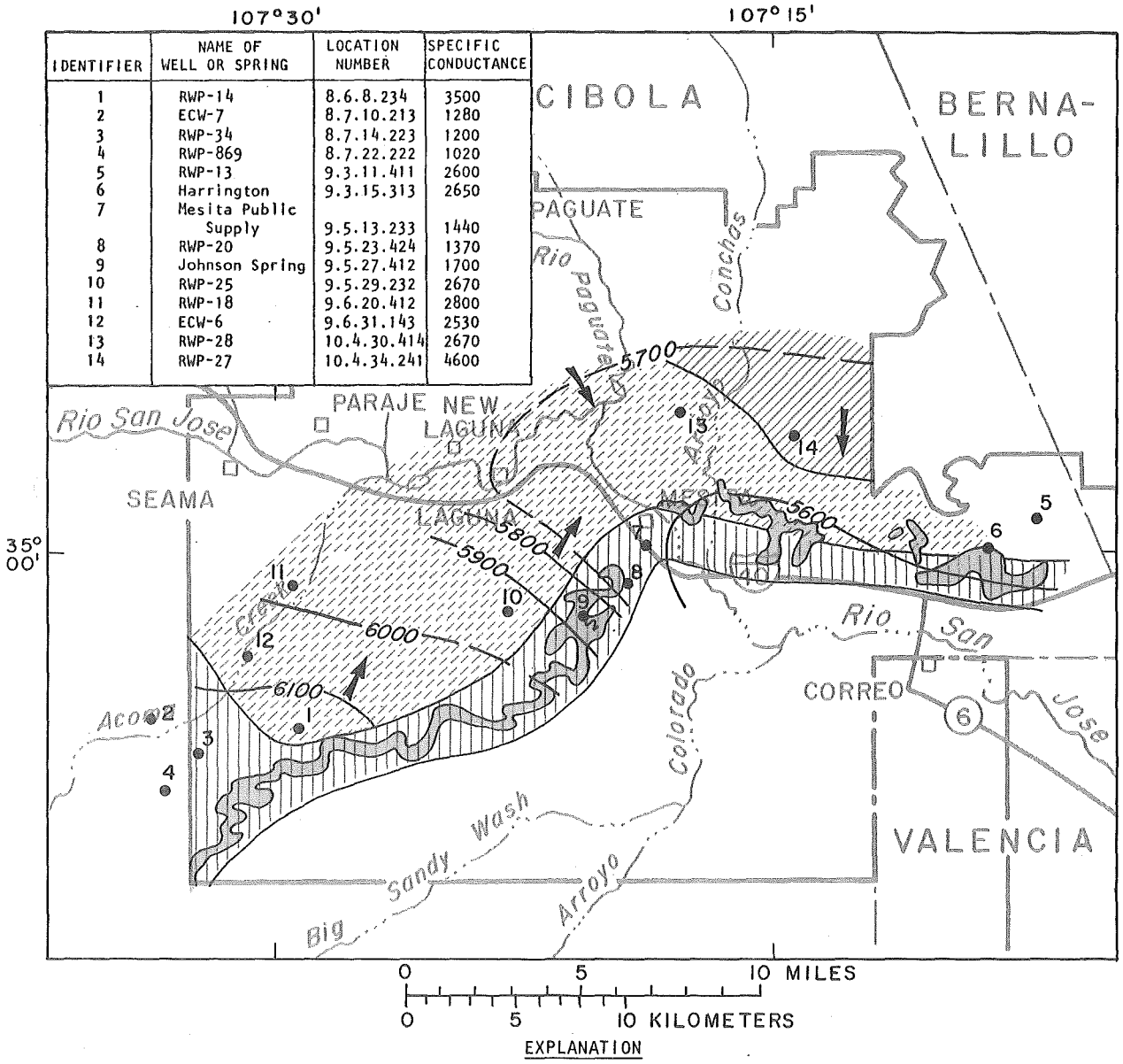
EXPLANATION

- WELL--Derives water mainly from the Chinle Formation
- SPRING--Derives water mainly from the Chinle Formation
- OUTCROP AREA OF CHINLE FORMATION, APPROXIMATELY LOCATED
- -5800- POTENTIOMETRIC CONTOUR--Shows altitude at which water level would have stood in tightly cased wells, 1973-79. Dashed where approximately located. Contour interval 100 feet. Datum is sea level.
- APPROXIMATE DIRECTION OF GROUND-WATER FLOW
- SPECIFIC CONDUCTANCE OF WATER, IN MICROMHOS PER CENTIMETER AT 25° CELSIUS
  - 1000 - 2000
  - 2000 - 4000
  - Greater than 4000

Figure 16.--Potentiometric surface and specific conductance of water in the Chinle Formation.



350001901




| IDENTIFIER | NAME OF WELL OR SPRING | LOCATION NUMBER | SPECIFIC CONDUCTANCE |
|---|---|---|---|
| 1 | RWP-14 | 8.6.8.234 | 3500 |
| 2 | ECW-7 | 8.7.10.213 | 1280 |
| 3 | RWP-34 | 8.7.14.223 | 1200 |
| 4 | RWP-869 | 8.7.22.222 | 1020 |
| 5 | RWP-13 | 9.3.11.411 | 2600 |
| 6 | Harrington | 9.3.15.313 | 2650 |
| 7 | Mesita Public Supply | 9.5.13.233 | 1440 |
| 8 | RWP-20 | 9.5.23.424 | 1370 |
| 9 | Johnson Spring | 9.5.27.412 | 1700 |
| 10 | RWP-25 | 9.5.29.232 | 2670 |
| 11 | RWP-18 | 9.6.20.412 | 2800 |
| 12 | ECW-6 | 9.6.31.143 | 2530 |
| 13 | RWP-28 | 10.4.30.414 | 2670 |
| 14 | RWP-27 | 10.4.34.241 | 4600 |

Figure 17.--Potentiometric surface and specific conductance of water in the Entrada Sandstone.



350001902

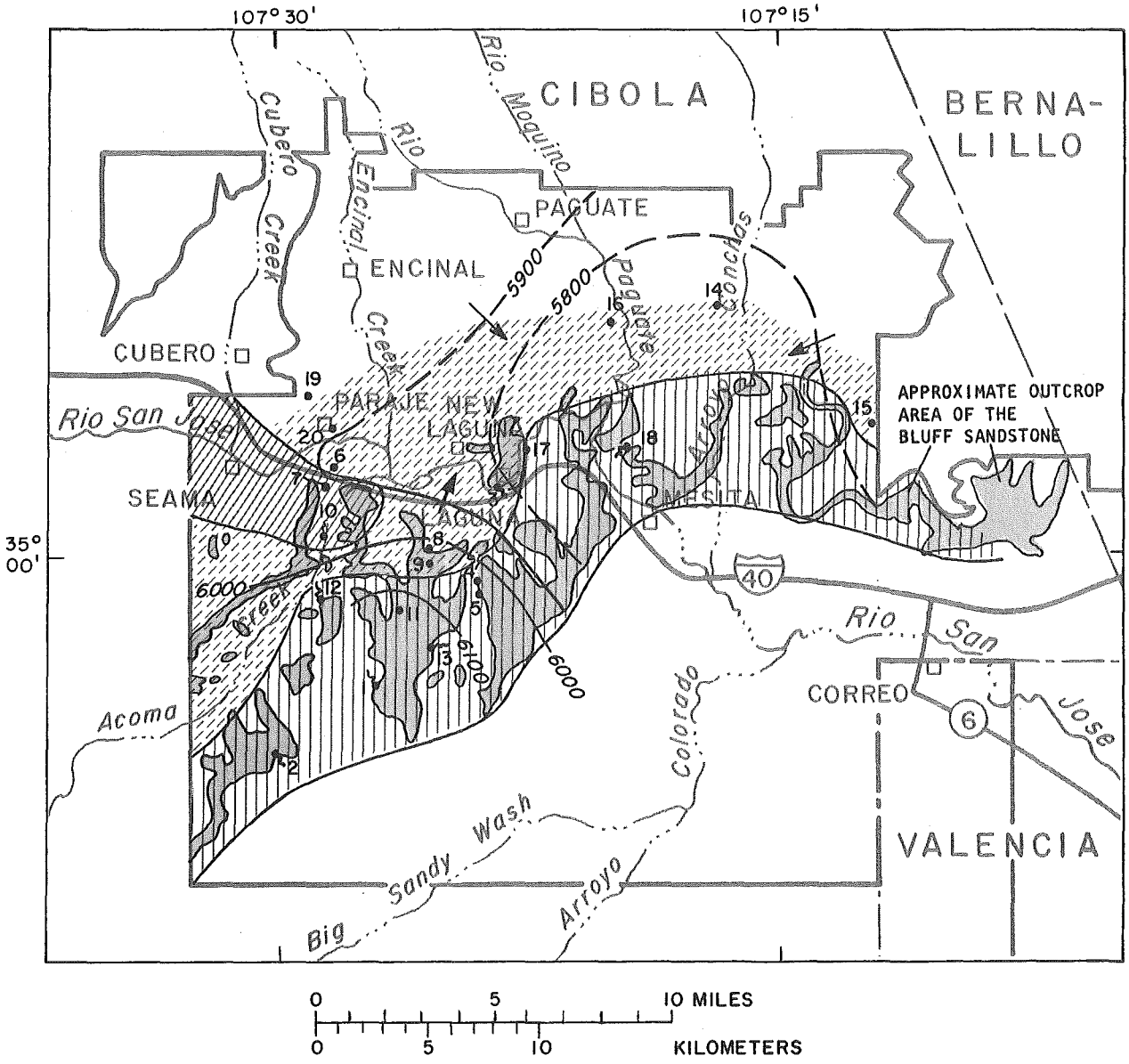



Figure 18.--Potentiometric surface and specific conductance of water in the Bluff Sandstone.



350001903

## EXPLANATION FOR FIGURE 18

- WELL--Derives water mainly from the Bluff Sandstone

- SPRING--Derives water mainly from the Bluff Sandstone

5800 POTENTIOMETRIC CONTOUR--Shows altitude at which water level would have stood in tightly cased wells, 1973-79. Dashed where approximately located. Contour interval 100 feet. Datum is sea level.

APPROXIMATE DIRECTION OF GROUND-WATER FLOW

SPECIFIC CONDUCTANCE OF WATER, IN MICROMHOS PER CENTIMETER AT 25° CELSIUS

<1000 1000-3000 >3000

| IDENTIFIER | NAME OF WELL OR SPRING | LOCATION NUMBER | SPECIFIC CONDUCTANCE IN MICROMHOS |
|---|---|---|---|
| 1 | KEMP SANTIAGO SPRING | 8.6.3.243 | 460 |
| 2 | DRIPPING SPRING | 8.6.18.232 | 340 |
| 3 | - | 9.5.8.121 | 2800 |
| 4 | TEST HOLE 2 | 9.5.19.234 | 510 |
| 5 | TEST HOLE 3 | 9.5.19.421 | 370 |
| 6 | MOONEY | 9.6.4.243 | 2590 |
| 7 | STANDARD | 9.6.4.433 | 4200 |
| 8 | TRANSWESTERN 2 | 9.6.13.322 | 1110 |
| 9 | TRANSWESTERN 1 | 9.6.13.343 | 1150 |
| 10 | - | 9.6.16.122 | 4000 |
| 11 | RWP-24 | 9.6.26.233 | 460 |
| 12 | TURQUOISE SPRING | 9.6.28.122 | 440 |
| 13 | COYOTE SPRING | 9.6.36.144 | 900 |
| 14 | ECW-3 | 9.3.29.414 | 4000 |
| 15 | RWP-32 | 10.4.36.224 | 2810 |
| 16 | SINKHOLE | 10.5.14.234 | 2310 |
| 17 | RWP-1 | 10.5.33.333 | 650 |
| 18 | GOYEA SPRING | 10.5.36.331 | 180 |
| 19 | RWP-17 | 10.6.29.244 | — |
| 20 | ECW-12 | 10.6.33.213 | 2810 |



350001904

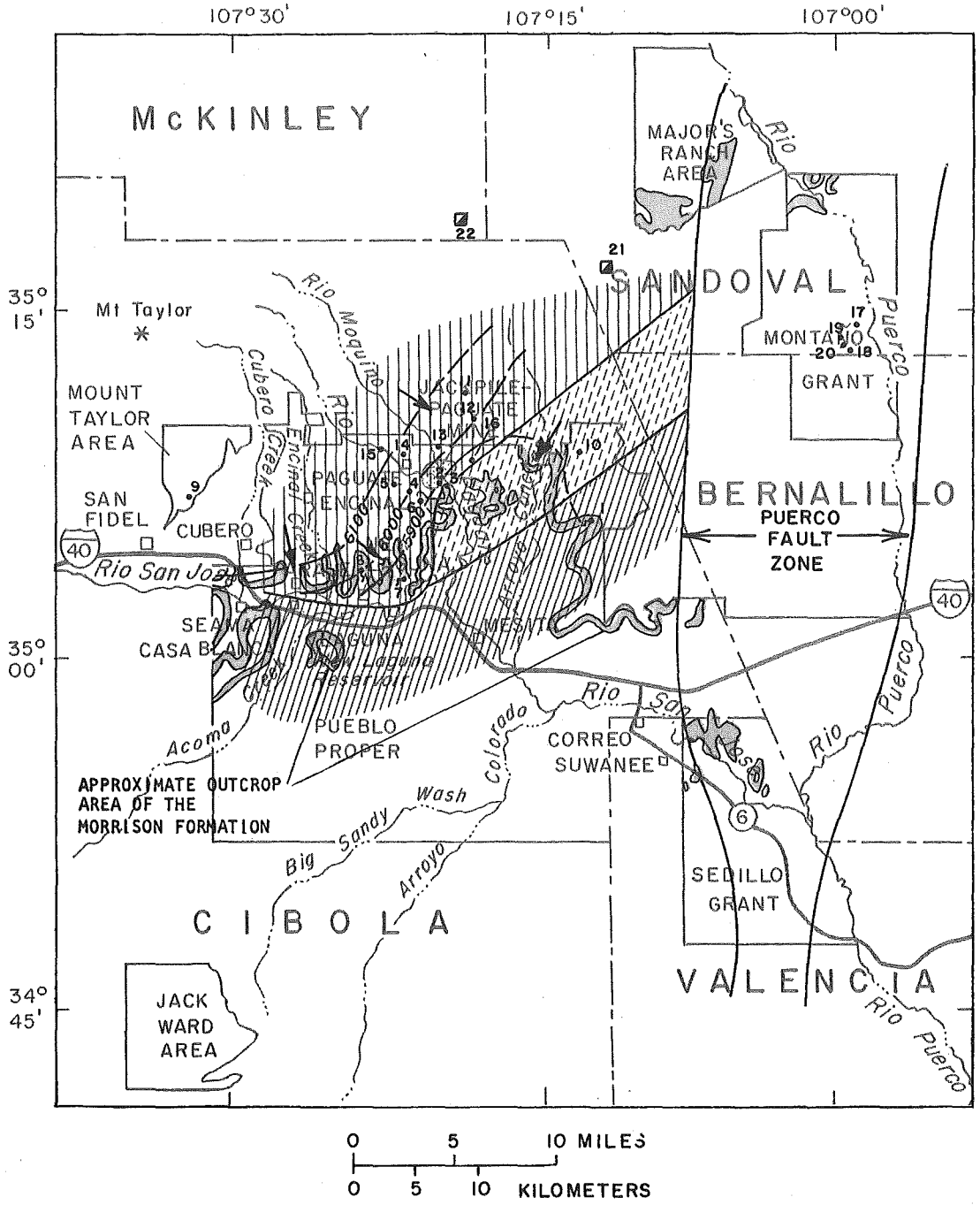



Figure 19.--Potentiometric surface and specific conductance of water in the Morrison Formation.



350001905

# EXPLANATION FOR FIGURE 19

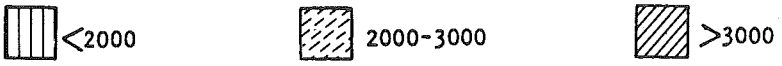
- WELL--Derives water mainly from the Morrison Formation

- SPRING--Derives water mainly from the Morrison Formation

—6000— POTENTIOMETRIC CONTOUR--Shows altitude at which water level would have stood in tightly cased wells, 1973-79. Dashed where approximately located. Contour interval 100 feet. Datum is sea level.

APPROXIMATE DIRECTION OF GROUND-WATER FLOW

SPECIFIC CONDUCTANCE OF WATER, IN MICROMHOS PER CENTIMETER AT 25° CELSIUS




| IDENTIFIER | NAME OF WELL, SPRING OR MINE | LOCATION NUMBER | SPECIFIC CONDUCTANCE IN MICROMHOS |
|---|---|---|---|
| 1 | CHEROMIAH SPRING | 10.4.12.342 | 4,000 |
| 2 | HOUSING-1 | 10.5.2.134 | 2,200 |
| 3 | HOUSING-2 | 10.5.2.143 | 2,250 |
| 4 | P-10 | 10.5.4.323 | 1,650 |
| 5 | MDH-771 | 10.5.5.142 | 1,350 |
| 6 | PAGUATE SHOP | 10.5.9.223 | 1,900 |
| 7 | SPRING 15 | 10.5.28.332 | 1,500 |
| 8 | FROG POND SPRING | 10.6.25.242 | 1,670 |
| 9 | LAGUNA 79-1 | 10.7.10.213 | 2,000 |
| 10 | ECW-4 | 11.4.26.444 | 2,500 |
| 11 | LJ-205 | 11.5.13.112 | 590 * |
| 12 | ANACONDA-1 | 11.5.24.213 | 1,750 |
| 13 | ANACONDA-4 | 11.5.27.322 | 1,200 |
| 14 | - | 11.5.29.444 | 1,900 |
| 15 | PUEBLO TEST 3 | 11.5.30.422 | 670 |
| 16 | JACKPILE SHOP | 11.5.35.442 | 1,950 |
| 17 | CONOCO 65-A | 12.1.30.324 | 12,900 |
| 18 | CONOCO WQ-7 | 12.1.31.331 | 11,800 |
| 19 | CONOCO OW-192 | 12.2.36.421 | 12,800 |
| 20 | CONOCO WW-101 | 12.2.36.442 | 11,000 |
| 21 | RIO PUERCO MINE | 12.3.18.000 | 1,770 |
| 22 | MARQUEZ MINE | 13.5.36.000 | 1,650 |

* Milligrams per liter of dissolved solids



350001906

Cretaceous units cap high mesas on the pueblo. Recharge to these units mainly is from precipitation and streamflow on outcrops and from leakage through overlying basalts. These units discharge to the Rio Moquino upstream from the Jackpile-Paguate Mine, to the Rio Paguate upstream from Paguate, as springflow around mesas, and to underlying geologic units.

## Valley-fill aquifers

Rio San Jose Valley--Movement of water in the valley-fill deposits of alluvium and basalt is predominantly down the valley. In the Rio San Jose valley, between the western boundary of the pueblo and New Laguna, ground water flows down valley at a gradient of about 18 feet per mile (fig. 20). Cross-valley components also exist where ground water is recharged from or discharged to the Rio San Jose. Flow is toward the Rio San Jose at the western end of the valley where ground water discharges to the stream. East of Casa Blanca, where the stream recharges the aquifer, ground water moves cross-valley away from the stream.

Water in the valley fill is recharged by infiltration through the streambed of the Rio San Jose, seepage from tributary streams, and to a smaller extent from irrigation return flows, upward discharge of water from bedrock units, and downward percolation of precipitation.

Recharge to the valley fill aquifer takes place along several reaches of the Rio San Jose (fig. 21). The major recharge areas are from Casa Blanca diversion to New Laguna (average loss in streamflow of 0.26 cubic foot per second per mile), Mesita diversion to Correo (average loss 0.23 cubic foot per second per mile), and from Dipping Vat Spring to the Rio Puerco (average loss 0.35 cubic foot per second per mile).

Seepage from tributary streams also is an important source of recharge to the valley fill along the Rio San Jose because of the potability of the tributary flow. Cubero Creek, for example, loses an average of 0.30 cubic foot per second of water containing 450 to 520 milligrams per liter of dissolved solids to the valley fill near New York. An unknown volume of stormflow runoff in Cubero Creek also recharges the alluvium. Average yearly runoff in Cubero Creek is estimated to be 1.0 cubic foot per second based on physical characteristics of the drainage basin as described by Borland (1970). Stormflows in Encinal Creek also recharge the valley fill at the mouth of the creek with potable water. Mean annual flow in Encinal Creek estimated from basin characteristics is about 0.89 cubic foot per second. The volume of recharge to the valley fill is not known but is expected to vary considerably from year to year.



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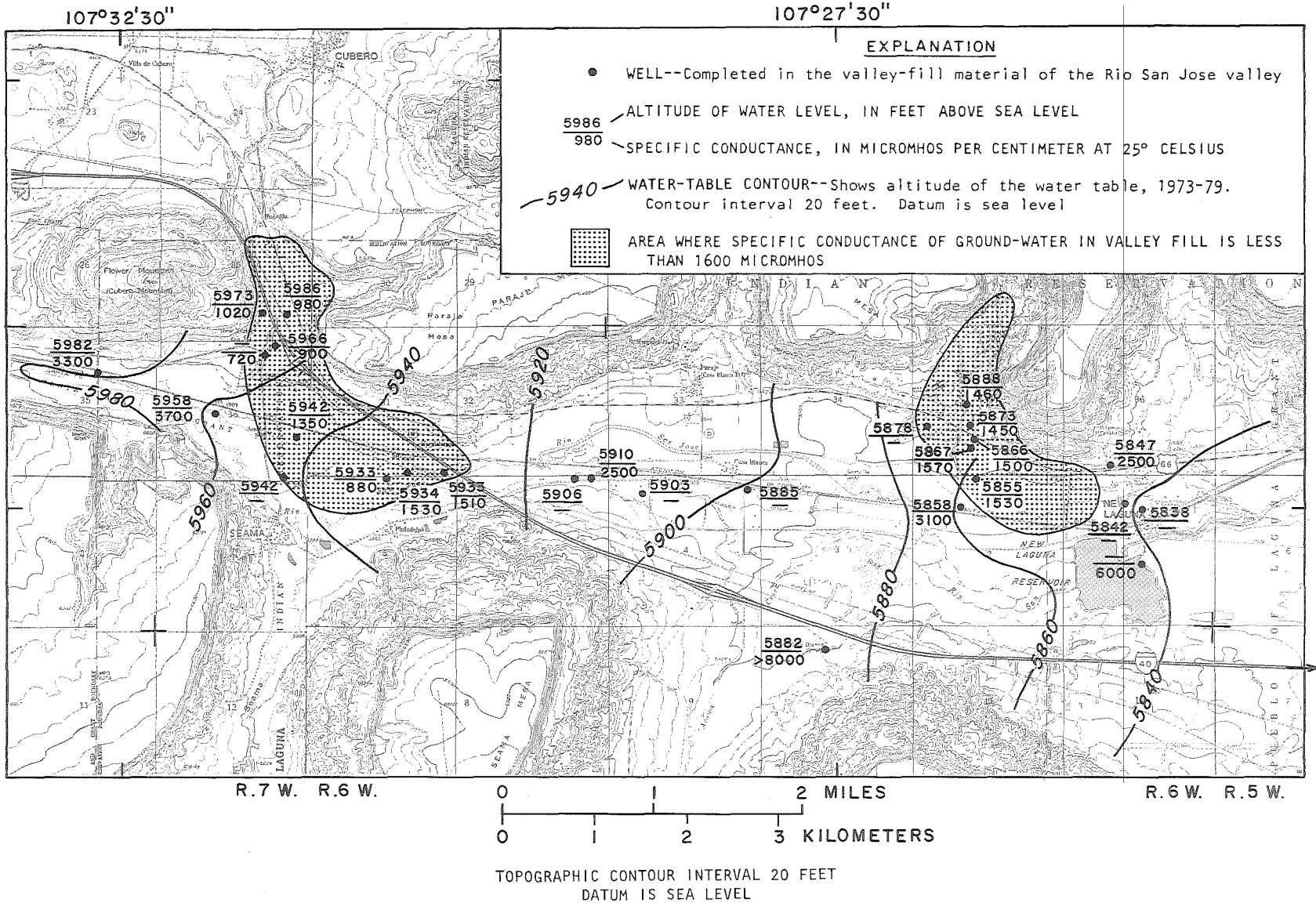


Figure 20.--Water-level altitude and specific conductance of water in the valley fill along the Rio San Jose west of Laguna.



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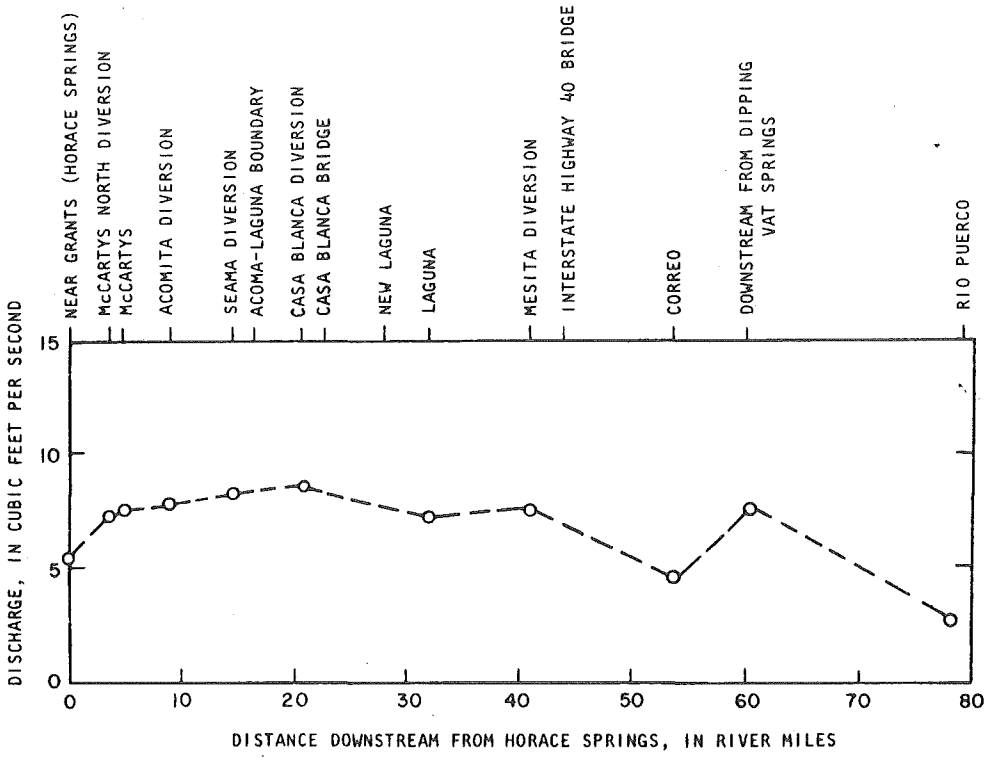


Figure 21.--Average winter discharge in the Rio San Jose calculated from miscellaneous measurements at selected sites between Horace Springs and Rio Puerco (1974-79).

Water in the valley fill discharges to the Rio San Jose and directly to the atmosphere through evapotranspiration. The gaining reaches of the Rio San Jose, between the western pueblo boundary and Casa Blanca diversion (0.02 cubic foot per second per mile) and between Correo and Dipping Vat Spring (0.52 cubic foot per second per mile), are discharge areas for the valley fill (fig. 21). Large volumes of ground water also are lost to evapotranspiraton although exact quantities are difficult to estimate. The volume of water transpired by plants probably is greatest along the channel of the Rio San Jose where phreatophytes are abundant. The annual consumptive use calculated for salt cedar for an area with climatic conditions similar to Laguna is 51.4 inches (Blaney and Hanson, 1965, p. 47). Using this rate and assuming that salt cedars cover an area about 200 feet on each side of the stream, ground-water losses to transpiration in the valley west of the village of Laguna would be about 3.4 cubic feet per second.

Large volumes of surface water also are evapotranspired from New Laguna Reservoir and the surrounding swampy area. Evapotranspiration from this 400-acre area may be as much as 2.4 cubic feet per second.

Ground-water withdrawals also account for a small volume of discharge from the valley fill. During summer months, wells near New York and Seama withdraw about 370 gallons of water per minute for public supply. During the irrigation season, two wells near New Laguna withdraw a combined total of as much as 575 gallons per minute.



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Water levels in wells completed in the valley fill fluctuate in response to recharge and discharge. Water levels in wells 10.6.35.322 (Pueblo Test 1) and 10.6.35.342 (Pueblo Test 2) rose from 1966 to 1968, probably in response to recharge from stormflows in Encinal Creek (fig. 22). The larger increase measured in Pueblo Test 1 was probably because the well is nearer the creek. The discontinuation of pumpage from well 10.6.35.324 (New Laguna P. S.) in 1974 may have stopped the water-level declines in Pueblo Test 1. Water levels in well 10.7.35.232 (Ir.Test 6), located near the western pueblo boundary, showed no apparent trend from 1960 to 1979.

Water-level fluctuations for wells in the New York-Seama area are shown in figure 22. Steady declines have been recorded in wells 10.7.36.322 (Laguna 76-2), 10.7.36.424 (Laguna 76-1), 10.7.25.432 (Abandoned New York), and 10.7.36.221 (New York 1) since 1976. The declines are probably in response to ground-water withdrawals for the Laguna public supply from wells 10.7.36.221 (New York 1), 10.7.36.212 (New York 2) and 10.6.31.434 (Seama P.S.). Water levels in well 9.6.6.211 (Seama-Mesita) show no apparent downward trend despite its location less than 1/4 mile southwest of the Seama P.S. well. Possibly, pumpage from Seama P.S. well is derived to a large extent from induced infiltration from the Rio San Jose.

Water levels in well 9.6.5.222 (Laguna 76-6), 9.6.2.123 (Laguna 76-7) and 10.7.36.322 (Laguna 76-2) illustrate the seasonal fluctuations that exist to some extent everywhere in the valley (fig. 22). The fluctuations probably are due to changes in pumping and evapotranspiraton rates, changes in the stream stages in the Rio San Jose, and changes in the amount of recharge from Encinal Creek.

Rio Paguate valley--Ground water in the alluvium along the Rio Paguate is hydraulically connected to streamflow in the Rio Paguate and the bedrock aquifers that bound the valley fill. Upstream from the village of Paguate, the stream recharges the alluvium with potable water containing between 190 and 590 milligrams per liter of dissolved solids. Measurements of winter streamflow, when irrigation withdrawals were not taking place, indicate an average streamflow loss of about 300 gallons per minute from a point about 2½ miles northwest of the village of Paguate to the State Highway 279 bridge. About 30 gallons per minute of the recharge is pumped from the alluvium near Paguate for public supply of the village.

The remainder of the recharge from the stream probably is lost to transpiration in the marshy area near the public-supply wells. Assuming a consumptive use by grasses of about 30 inches per year (Blaney and Hanson, 1965, p. 62) and a marshy area of about 160 acres, water loss to evapotranspiration is about 250 gallons per minute. In addition, ground water is withdrawn for public supply in this area at an average rate of about 30 gallons per minute. More wells withdrawing water at a combined rate of as much as 250 gallons per minute might lower the water table and decrease the water lost to transpiration. This action, however, would dry up the marshy area, which may be an important wetland habitat for wildlife. Downstream from Paguate, water quality in the alluvium becomes more mineralized as water from Jurassic sandstones discharge to the alluvium.



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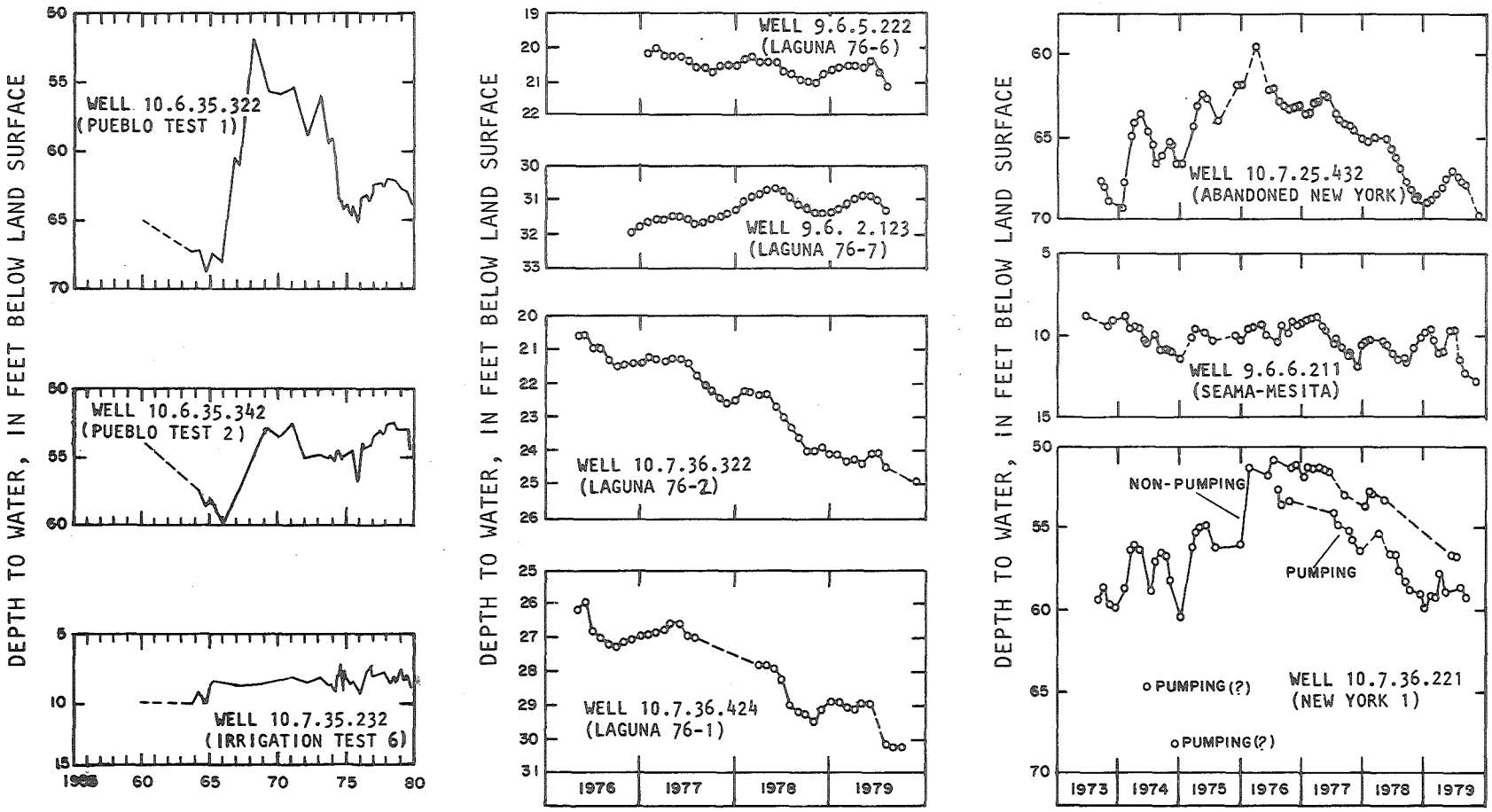


Figure 22.--Hydrographs for wells completed in the valley fill along the Rio San Jose.

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## Ground-water use

The main water system on the Pueblo of Laguna supplies the residents along the Rio San Jose from wells that derive water from the alluvium in the New York-Seama area. Production from wells 10.7.36.221 (New York 1), 10.7.36.212 (New York 2), and 10.6.31.434 (Seama P.S.) totaled about 370 gallons per minute during August 1-8, 1979 (Norm Fairbanks, Indian Health Service Field Engineer, written commun., 1979). Water consumption by the valley residents was approximately 100 gallons per day per person during this period. The water use by valley residents was estimated to be about one-half this quantity during winter months when gardens and lawns are not being watered.

The village of Encinal obtains about 100 gallons per minute of water for public supply from Encinal Spring, which issues from basalt flows near Mount Taylor. Water use at Encinal has not been measured, but based upon per capita consumption by valley residents, the residents of Encinal probably only use 15 to 30 gallons per minute of the springflow for domestic purposes. The remaining 70 to 85 gallons per minute is either used for other purposes, such as irrigation, or allowed to seep into the alluvium along Encinal Creek.

The village of Paguate obtains water from public-supply wells 11.5.32.234a (Paguate P.S. 1) and 11.5.32.232 (Paguate P.S. 2), which are completed in the alluvium along the Rio Paguate. In August 1979, the Paguate P.S. 2 well was pumped 12 hours per day at an average rate of 73 gallons per minute. Water use during August for the Paguate residents averaged 54 gallons per day per person. The Paguate P.S. 1 well was pumped only occasionally during this study.

The old village of Mesita obtains water from well 9.5.13.233 (Mesita P.S.), which produces from the Entrada Sandstone and Correo Sandstone Bed of the Petrified Forest Member of the Chinle Formation. On the average, the well is pumped for 2 days every 2 weeks at a rate of 10 gallons per minute to fill a 30,000-gallon storage tank. Per capita consumption measured during August 1-8, 1979, averaged 20 gallons per day.

The El Paso Natural Gas Company uses water for domestic and industrial purposes from wells 9.5.24.414 (El Paso Natural Gas 2) and 9.5.24.413 (El Paso Natural Gas 3), which produce from the Correo Sandstone Bed of the Chinle Formation. Pumpage from the two wells ranges from less than 1 gallon per minute during winter to as much as 25 gallons per minute during summer (Pat Adkins, El Paso Natural Gas Co., oral commun., 1979).



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Water is pumped from sandstone units of the Brushy Basin Member of the Morrison Formation for industrial and domestic uses by the Anaconda Copper Company near Paquate. Water also is pumped to dewater the P-10 underground uranium mine. Approximate total pumpage for 1978 by Anaconda is summarized below (U.S. Geological Survey, 1978; Meade Stirland, The Anaconda Company, written commun., 1978):

| Source of pumpage | Discharge rate (gallons per day) |
|---|---|
| P-10 Mine | 200,000 |
| Well (Paguate Shop) | 12,400 |
| Well (P-10 well) | 17,800 |
| Well (Jackpile Shop) | 400 |
| Well (Anaconda 4) | 15,500 |
| Total | 246,100 |

Water for irrigation is pumped during summer months from the alluvium along the Rio San Jose at wells 10.7.36.424a (Laguna Ir. 1) and 10.6.35.342a (Laguna Ir. 2). During the irrigation season, Laguna Ir. 1 pumps about 25 hours per week at 400 gallons per minute, and Laguna Ir. 2 pumps about 25 hours per week at 175 gallons per minute (Denny Fic, Pueblo of Laguna, oral commun., 1981).

## SURFACE WATER

Nearly all Laguna lands are drained by the Rio San Jose, which flows eastward through the center of the pueblo and joins the Rio Puerco about 24 miles east of Correo. Major tributaries of the Rio San Jose on the Pueblo of Laguna are Cubero Creek, Seama Creek, Encinal Creek, Acoma Creek, Rio Paguate, Arroyo Conchas, and Arroyo Colorado. Cubero Creek, Encinal Creek, and Rio Paguate, which drain the southeastern flank of Mount Taylor are sustained by spring flow and are perennial in their upper reaches. Other tributary streams flow only in response to storms or snowmelt.

Locations of water-quality and streamflow-gaging sites are shown in figure 23. Streamflow measurements and water-quality data for these sites are listed in tables 9 through 13.



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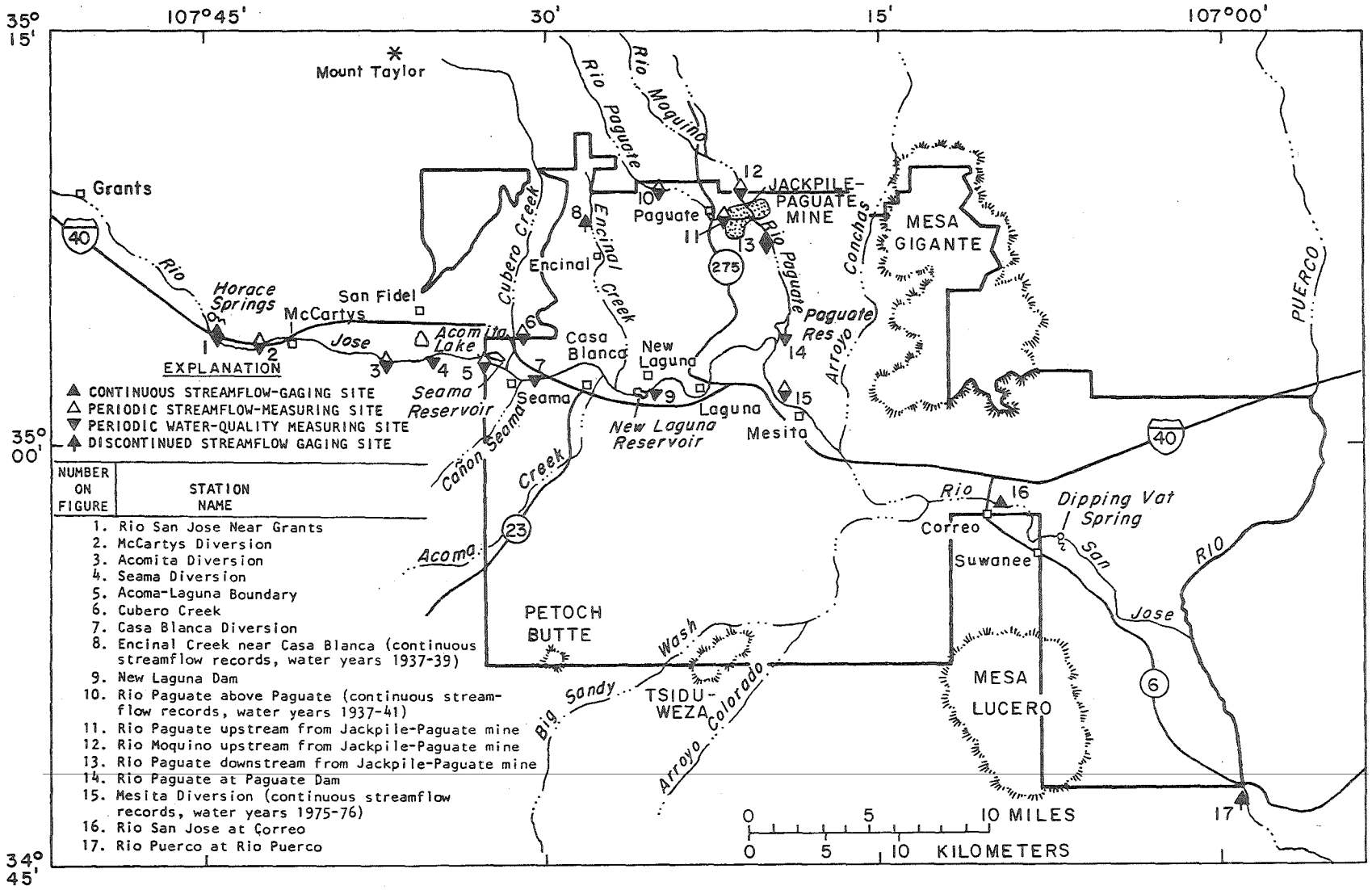


Figure 23.--Location of surface-water monitoring sites.



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## Flow in the Rio San Jose

The majority of flow in the Rio San Jose is sustained by Horace Springs, which have an average discharge of about 5 cubic feet per second from the valley fill about 16 miles west of Seama. The ephemeral runoff upstream from Horace Springs contributed about 80 acre-feet per year (or less than 2 percent of the total streamflow) from 1969 through 1978 at the gaging station near Grants (08343500). Runoff, however, may have been greater prior to surface- and ground-water use in the Grants-Bluewater area, which began in the 1870's (Risser, 1982).

An additional component of the total flow is the wastewater effluent discharged by the city of Grants into the channel of the Rio San Jose. The effluent travels about 8 miles between Grants and Horace Springs. About 1 to 2 cubic feet per second of wastewater reaches Horace Springs. The streamflow downstream from Horace Springs consists of a mixture that is about 60 to 90 percent springflow and 10 to 40 percent wastewater.

The annual streamflow of the Rio San Jose downstream from Horace Springs averaged 4,710 acre-feet during water years 1937 through 1978 (fig. 24). The constancy of the flow throughout the 52 years is due to the large springflow contribution. Downstream, the flow in the Rio San Jose becomes quite variable due to extensive use of the stream for irrigation during summer months, tributary inflow, and natural gains and losses to and from the alluvium. Gaining and losing reaches of the stream are shown for non-irrigation and non-storm periods on figure 21. Major gains in streamflow from ground-water discharge take place at Horace Springs (5.0 cubic feet per second) between Horace Springs and McCartys (2.7 cubic feet per second), between Acomita and Seama diversions (0.8 cubic foot per second), and between Correo and Dipping Vat Springs (3.4 cubic feet per second). Losing reaches occur from Casa Blanca diversion to New Laguna Dam (1.0 cubic foot per second) and from Mesita diversion to Correo (3.2 cubic feet per second).

Non-storm winter streamflow entering the pueblo in the Rio San Jose averages about 8.5 cubic feet per second. This amounts to about 3,600 acre-feet during the non-irrigation season (October through April). The volume of non-storm runoff entering the pueblo during summer months is difficult to estimate because of extensive use of the water for irrigation on the Pueblo of Acoma. However, miscellaneous streamflow measurements made where the Rio San Jose enters the Pueblo of Laguna average 2.3 cubic feet per second from May through September (table 12). These measurements include water in irrigation ditches entering the pueblo, which probably contains some water released from Acomita Lake in addition to flow diverted from the Rio San Jose. The average non-storm flow in the Rio San Jose available during the growing season from May through September is about 700 acre-feet.



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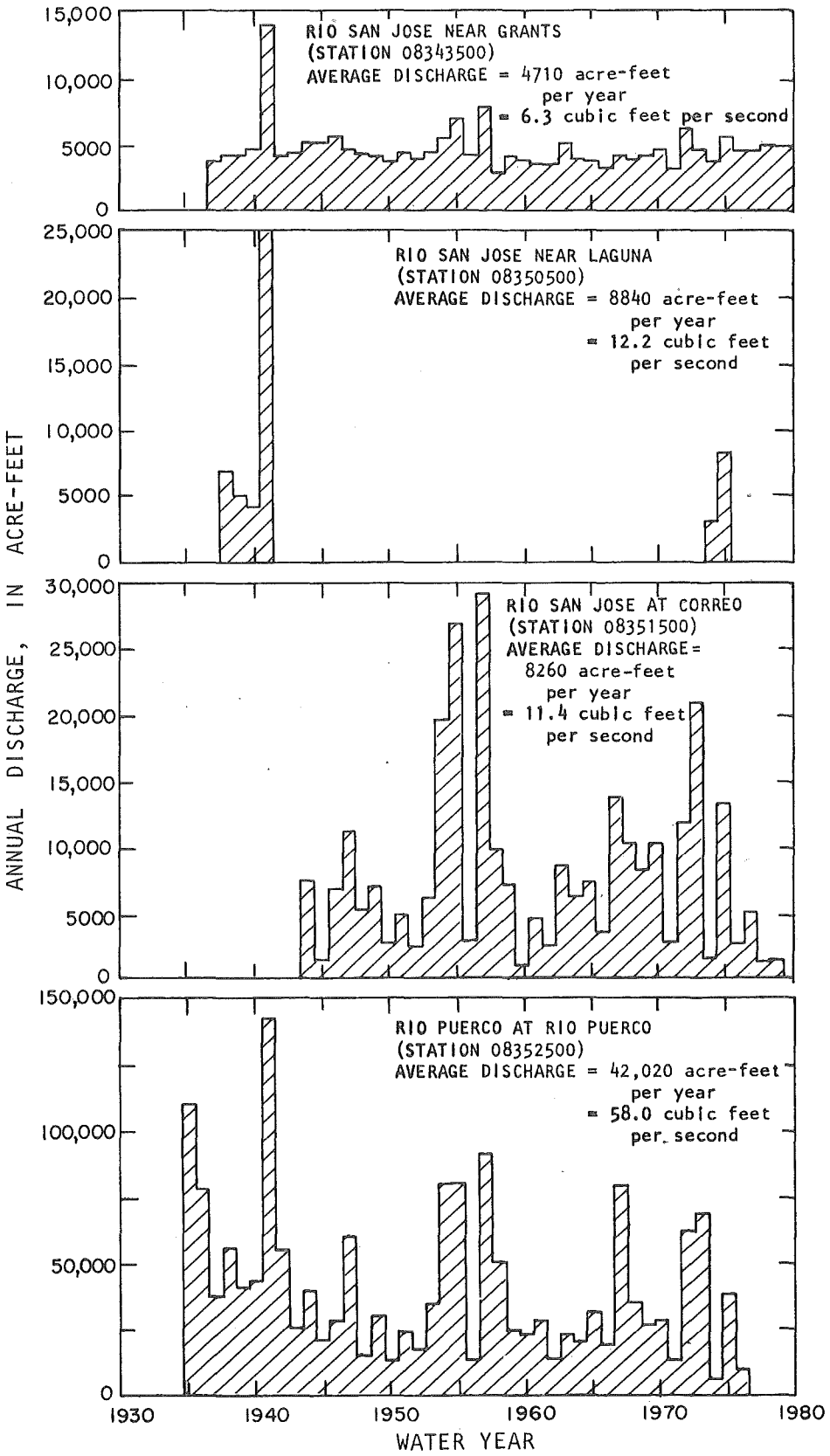


Figure 24.--Average annual discharge of the Rio San Jose and the Rio Puerco.



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Storm runoff is a large part of the total flow of the Rio San Jose on Laguna lands. The volume of storm runoff entering the pueblo is unknown but is at least as much as the 80 acre-feet per year measured at the gaging station near Grants (08343500). Records for the Rio San Jose near Casa Blanca upstream from New Laguna Dam for water years 1937 through 1941 show that storms contributed an average of about 2,000 acre-feet per year (U.S. Geological Survey, 1960, p. 472). Farther downstream, stormflows are an even greater part of the total flow. For example, about 48 percent, or 5,400 acre-feet, of the annual streamflow measured at the discountinued gaging station near Laguna (08350500) was contributed by summer stormflows (fig. 25). At Correo, about 6,400 acre-feet per year, or nearly 80 percent of the annual flow of the Rio San Jose, is contributed by storms from July through October.

Duration curves illustrate the distribution of recorded streamflow of the Rio San Jose (fig. 26). There was no flow near Laguna and at Correo as much as 28 and 60 percent of the time. The steepness of the curves for all stations except the one near Grants indicates the extreme variability of streamflow.

## Flow in tributaries of the Rio San Jose

All tributaries are ephemeral at their confluence with the Rio San Jose. However, Rio Paguate, Cubero Creek, and Encinal Creek are perennial in their upstream reaches, losing flow by seepage to streambed sands and gravels and by evapotranspiration before reaching the Rio San Jose.

### Rio Paguate

Streamflow in the upstream reaches of the Rio Paguate mainly is sustained by spring discharge from basalt and colluvium. Mean-daily streamflow gaged at the Pueblo of Laguna boundary during the 1937-41 water years ranged from 0.2 to 174 cubic feet per second and averaged 1.6 cubic feet per second (fig. 27). An average discharge of 1.0 cubic foot per second calculated by excluding the abnormally wet year of 1941 probably is a more representative value of normal streamflow. The 12 miscellaneous discharge measurements recorded from 1975 through 1979 also average 1.0 cubic foot per second (tables 9 and 12).

The flow of 1.0 cubic foot per second represents about 400 acre-feet of streamflow that could be stored during the winter (October through April). Presently two small reservoirs store about 100 acre-feet of the winter streamflow. Additional reservoir capacity could store about 300 acre-feet of winter streamflows that are not presently used.



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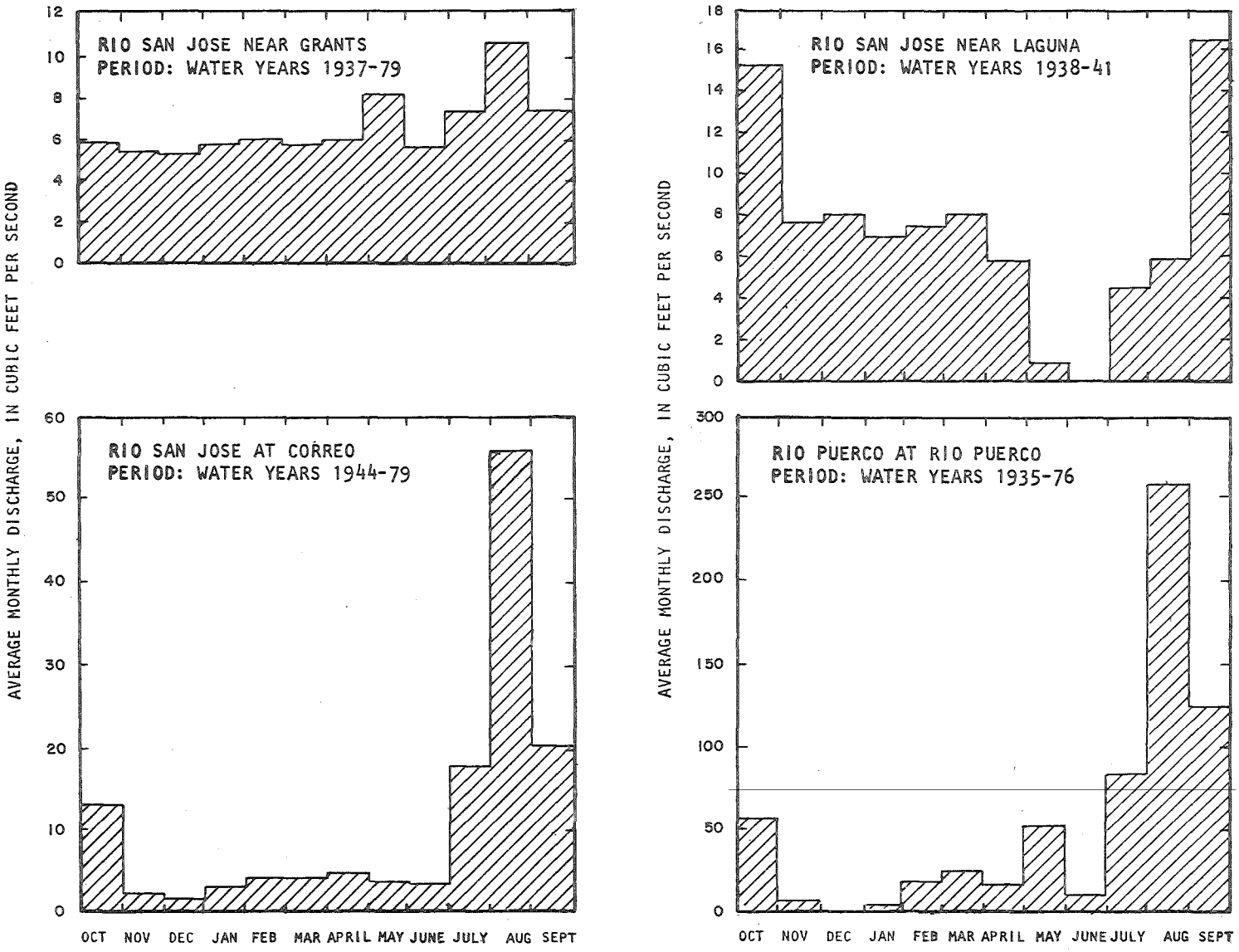


Figure 25.--Average monthly discharge of the Rio San Jose and the Rio Puerco.



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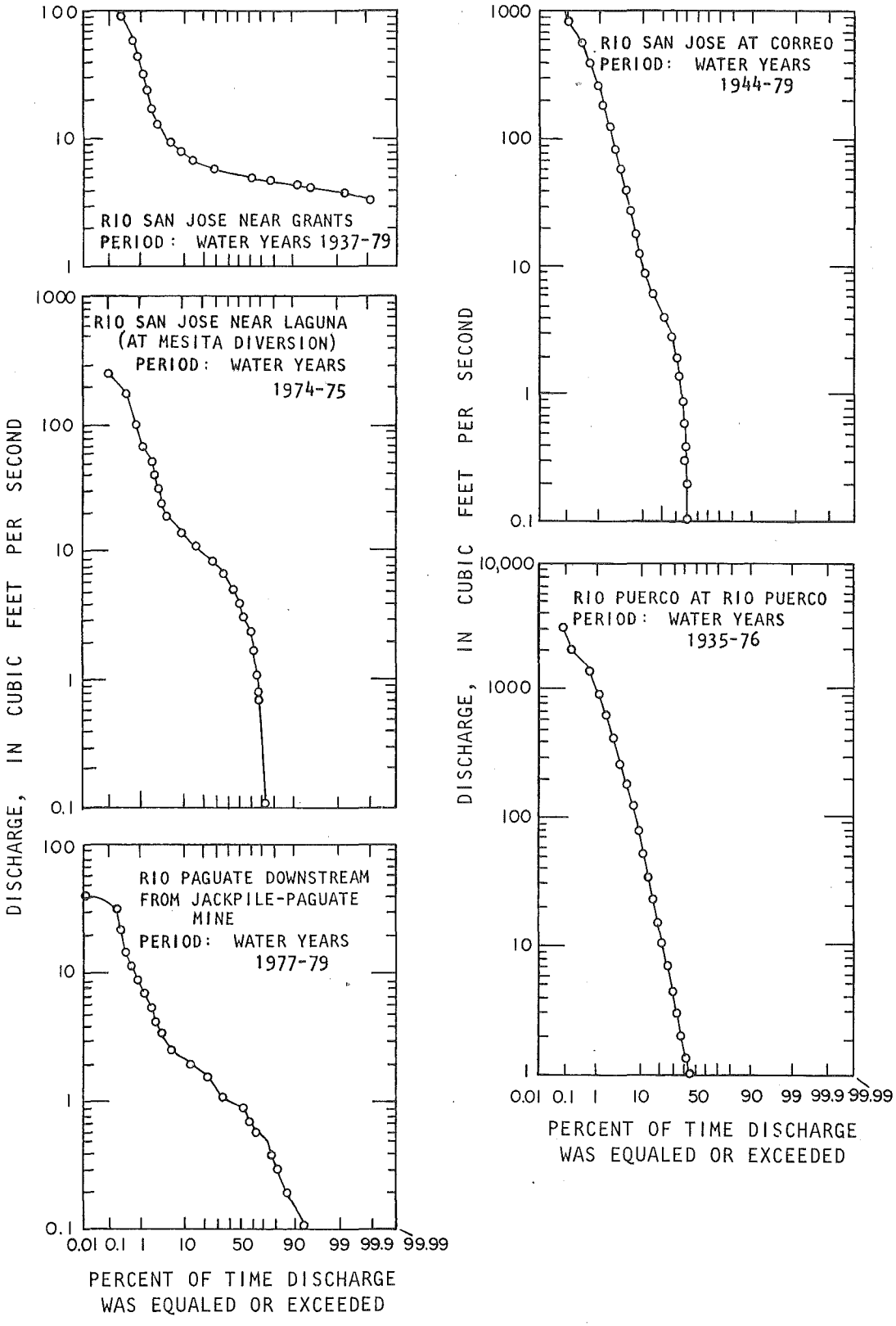


Figure 26.--Streamflow duration curves at gaging stations on Rio San Jose, Rio Puerco, and Rio Paguate.



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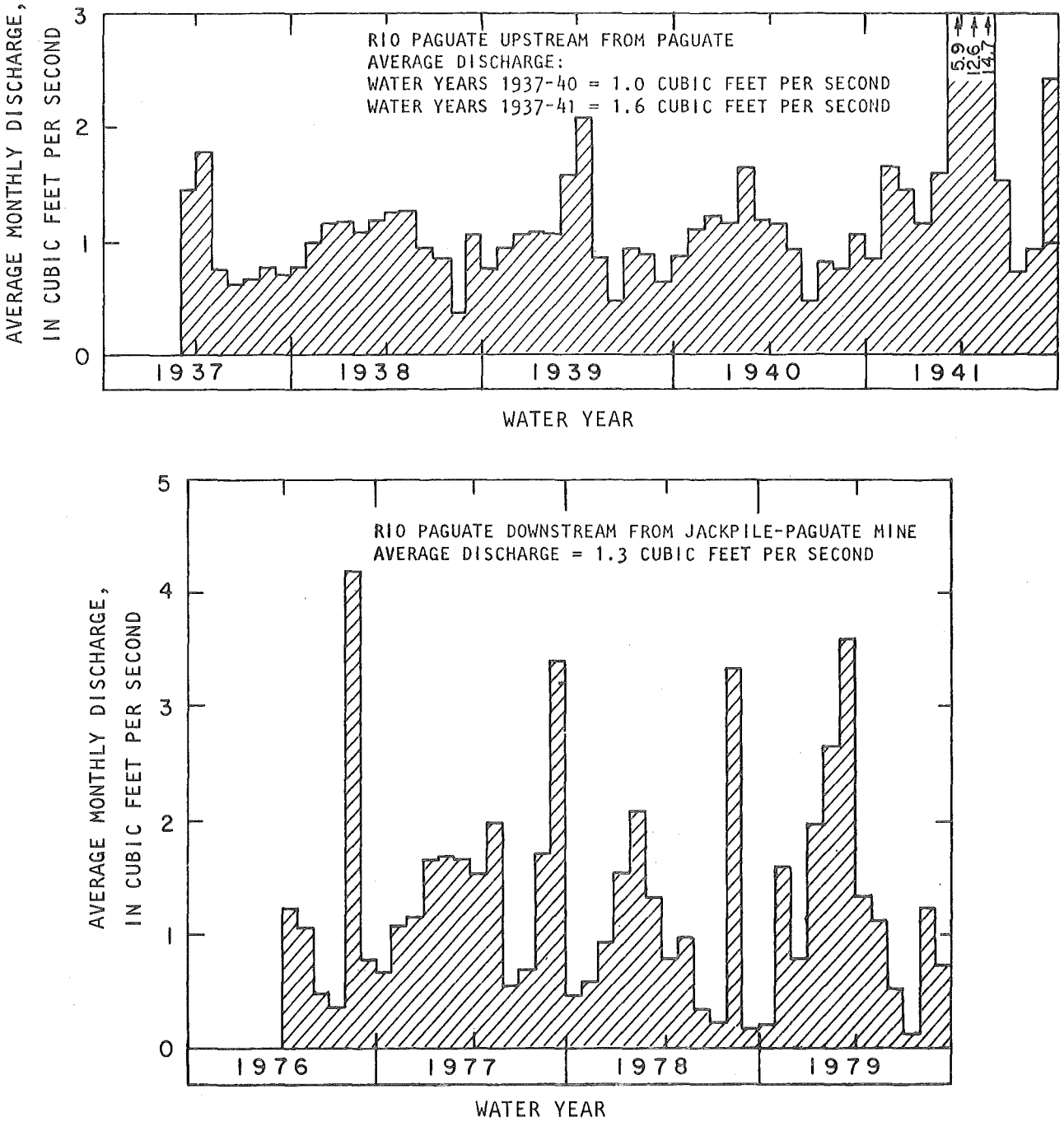


Figure 27.--Average monthly streamflow in the Rio Paguate.



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Sixteen miscellaneous streamflow measurements made downstream from the village of Paguate from 1975 through 1979 ranged from 0.1 to 1.4 cubic feet per second. Some of the apparent stream losses occurring between the reservation boundary and Paguate are caused by irrigation diversions during summer months. Comparison of non-irrigation periods at the two sites indicates net seepage losses of about 0.7 cubic foot per second.

Downstream from Paguate, the stream gains water from ground-water discharge and from the Rio Moquino. Streamflow in the Rio Moquino measured at the pueblo boundary about 1/2 mile upstream from the Jackpile-Paguate Mine ranged from 0.09 to 4.6 cubic feet per second and averaged 1.1 cubic feet per second based on 14 miscellaneous measurements made from 1975 through 1977.

Monthly flow of the Rio Paguate downstream from the Jackpile-Paguate Mine from April 1976 through September 1979 is shown in figure 27. Flow averaged 1.3 cubic feet per second and ranged from 0.04 to 2,900 cubic feet per second. In the reach downstream from the Jackpile-Paguate Mine, large quantities of water are lost through seepage and evapotranspiration in the stream channel and in Paguate Reservoir.

Stormflows in the Rio Paguate probably contribute the majority of the annual flow reaching the Rio San Jose. Annual streamflow of 4,550 acre-feet was estimated based on watershed characteristics as described in Borland (1970) and Scott (1971). The magnitude and frequency of floods estimated by the same techniques are shown in table 15.

### Cubero Creek

The perennial flow of Cubero Creek at the Pueblo of Laguna boundary is sustained mainly by a spring (10.7.24.411) that issues from the alluvium along the channel. Streamflow entering the reservation ranged from 0.22 to 0.42 cubic foot per second and averaged 0.30 cubic foot per second based on 14 miscellaneous measurements made during 1975-79. Most of this flow seeped into the alluvium in the New York-Seama area.

Stormflows of unknown quantity also added to the total flow of Cubero Creek. Total streamflow was estimated to be about 720 acre-feet per year based on the physical characteristics of the drainage basin as described in Borland (1970). The magnitude and frequency of flood discharges estimated according to techniques in Borland (1970) and Scott (1971) are shown in table 15.

### Encinal Creek

Streamflow in Encinal Creek was not measured during this study; however, during the 1937-39 water years, streamflow averaged 0.19 cubic foot per second at a gaging station (08348500) located about 1.5 miles north of Encinal. The streamflow at this point was sustained by numerous springs that issued from basalt at the head of Encinal Creek. Discharge varied seasonally



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due to winter snowmelt, stormflows, and upstream irrigation withdrawals during summer months. Discharge averaged 0.28 cubic foot per second during winter months when no withdrawals for irrigation were made. Streamflow today may have decreased since 1939 due to development of Encinal Spring as a source of public-supply water.

Stormflows contribute most of the flow in the downstream reaches of Encinal Creek. Total flow at the mouth of the stream was estimated to be 640 acre-feet per year from the physical characteristics of the watershed as described by Borland (1970). The magnitude and frequency of flood flows (table 15) were estimated according to Borland (1970) and Scott (1971).

### Ungaged tributaries

Major tributary streams of the Rio San Jose that have never been gaged include Cañon Seama, Acoma Creek, Arroyo Conchas, and Arroyo Colorado. Total annual discharge and the magnitude of certain floods were calculated based upon the physical characteristics of drainage areas (table 15) as described in Scott (1971) and Borland (1970).

### Flow in the Rio Puerco

Streamflow of the Rio Puerco at the southeast corner of the Sedillo Grant (station 08352500) averaged 58 cubic feet per second during the 1935-76 water years (fig. 24). The duration curves in figure 26 show that the Rio Puerco is dry about 50 percent of the time at this location. Summer stormflows occurring from July to October contribute 77 percent of the total flow at this station (fig. 25). Most of the flow during non-storm periods is contributed by the Rio San Jose, which flows into the Rio Puerco about 6 miles upstream from the gaging station.

### Surface-water use

Most of the non-storm flow in the Rio San Jose upstream from Mesita is used to irrigate crops on the Pueblos of Laguna and Acoma. About 700 acre-feet of water from the Rio San Jose enters Pueblo of Laguna during the growing season, which includes part of the 650 acre-feet stored in Acomita Reservoir during winter months. During 1979, the water was used to irrigate about 70 acres in the Rio San Jose valley (Daniel Carr, U.S. Bureau of Indian Affairs, written commun. 1980). Seama Reservoir, recently constructed in the valley where the Rio San Jose enters the pueblo, will store as much as 480 acre-feet of the water that presently flows through the pueblo during winter months.

Surface water from the Rio Paguate is stored in two small reservoirs that together have a capacity of about 100 acre-feet. This water and the summer flow was used to irrigate about 52 acres near Paguate. Surface water from Encinal Creek was used to irrigate about 19 acres near Encinal.



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# WATER QUALITY

Development of water resources on the Pueblo of Laguna is largely restricted by water quality. This section discusses water-quality criteria for various uses, ground-water quality, and surface-water quality. Though ground water and surface water are discussed separately, the two are closely related; most surface water, except stormflows and snowmelt runoff, is contributed from ground-water sources.

## Water-quality criteria for various uses

The suitability of water for various uses depends on the concentration of dissolved solids and the concentration of particular constituents. The U.S. Environmental Protection Agency (1976a, 1976b) and Federal Water Pollution Control Administration (1968) list water-quality standards and recommended criteria for public supply, freshwater aquatic life, livestock, and irrigation (table 17).

Waters which meet the quality standards and criteria set for public supply are limited on the Pueblo of Laguna. Surface and ground waters in the Encinal and Paguate areas meet all the standards and criteria. Ground water in the alluvium along the Rio San Jose in the New York-Seama and New Laguna areas meet most of the standards and criteria except for specific conductance, hardness, and sulfate.

The water-quality criteria for freshwater aquatic life listed on table 17 were not exceeded in samples analyzed from the Rio San Jose, Rio Paguate, Cubero Creek, Rio Moquino and Rio Puerco except for certain values of iron and cadmium.

Water suitable for consumption by livestock may be obtained almost anywhere on the pueblo except on the Sedillo Grant. Salt springs in that area commonly discharge water with specific-conductance values in excess of 17,000 micromhos.

Water-quality criteria for irrigation are difficult to evaluate because other factors such as soil characteristics, quantity of water available, and types of crops also are important. The three chemical characteristics commonly used to evaluate the suitability of water for irrigation are boron concentration, sodium concentration, and specific conductance. Most surface water and ground water on the pueblo that may be available in sufficient quantities for irrigation have boron concentrations well within the allowable range (500-1,000 micrograms per liter) for sensitive crops. For this reason, boron concentrations should not restrict development of irrigation water. However, waters with large specific-conductance values and sodium concentrations are very common on the pueblo. Large values for these characteristics are good indicators of an excessive dissolved-solids concentration and sodium hazard that may restrict use of the water for irrigation.



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## Ground-water quality

### Bedrock units

The quality of water in bedrock units is affected by many factors including the types of minerals present in the rock, the length of time the water has been in contact with the rock, ion exchange, various chemical reactions, and ground-water movement, which may cause mixing of different water types. Water in bedrock units in the study area is chemically suitable for all uses near areas of recharge but is chemically unsuitable for most uses in salt springs near the Puerco fault zone and in deep wells throughout the study area (tables 5 through 8).

Water in bedrock units can be placed in four general categories determined by the relative abundance of major ionic constituents. These categories are illustrated on the water-analysis diagram of figure 28. The water-analysis diagram may illustrate, in a general way, the chemical evolution of ground water on the pueblo. The major ions in water in or near areas of recharge are calcium, magnesium, and bicarbonate. As the water moves from recharge areas downward through the rock units gypsum is dissolved, which is disseminated in the Mancos Shale, Jurassic sandstones, and found as an identifiable unit in the Todilto Formation. Thus, water becomes enriched in calcium and sulfate. Ion-exchange processes then replace one calcium or magnesium ion in the water with two sodium ions. Ion exchange is most readily accomplished in shale units, such as those in the Mancos Shale, Chinle Formation, and Brushy Basin and Recapture Members of the Morrison Formation. The water resulting from the ion-exchange process contains sodium and sulfate as the major constituents. This is the most common type of water found on the pueblo.

Water discharging from deep units, such as the Permian and Triassic rocks, plots in the right corner of the anion triangle (fig. 28). This water has been deep in the ground-water system a very long time. Because little mixing of water occurs at depth, the water becomes enriched in sodium and chloride ions probably by coming in contact with soluble salt beds in the Permian rocks.

The quality of water is determined by the total ionic concentration as well as the type of ions in solution. Dissolved-solids concentrations for bedrock units are discussed in the following sections.

Permian System--Water in rocks of the Permian System contains excessive concentrations of dissolved solids. Well 8.5.17.213 produced water with a specific conductance of 82,800 micromhos (the specific-conductance value multiplied by 0.7 is approximately equal to the dissolved-solids concentration in milligrams per liter). Water from wells 9.5.12.442 (Mesita Test) and 9.1.8.142 (Shell Oil Test) contained 18,000 and 15,500 milligrams per liter of dissolved solids respectively. The salt springs on the Sedillo



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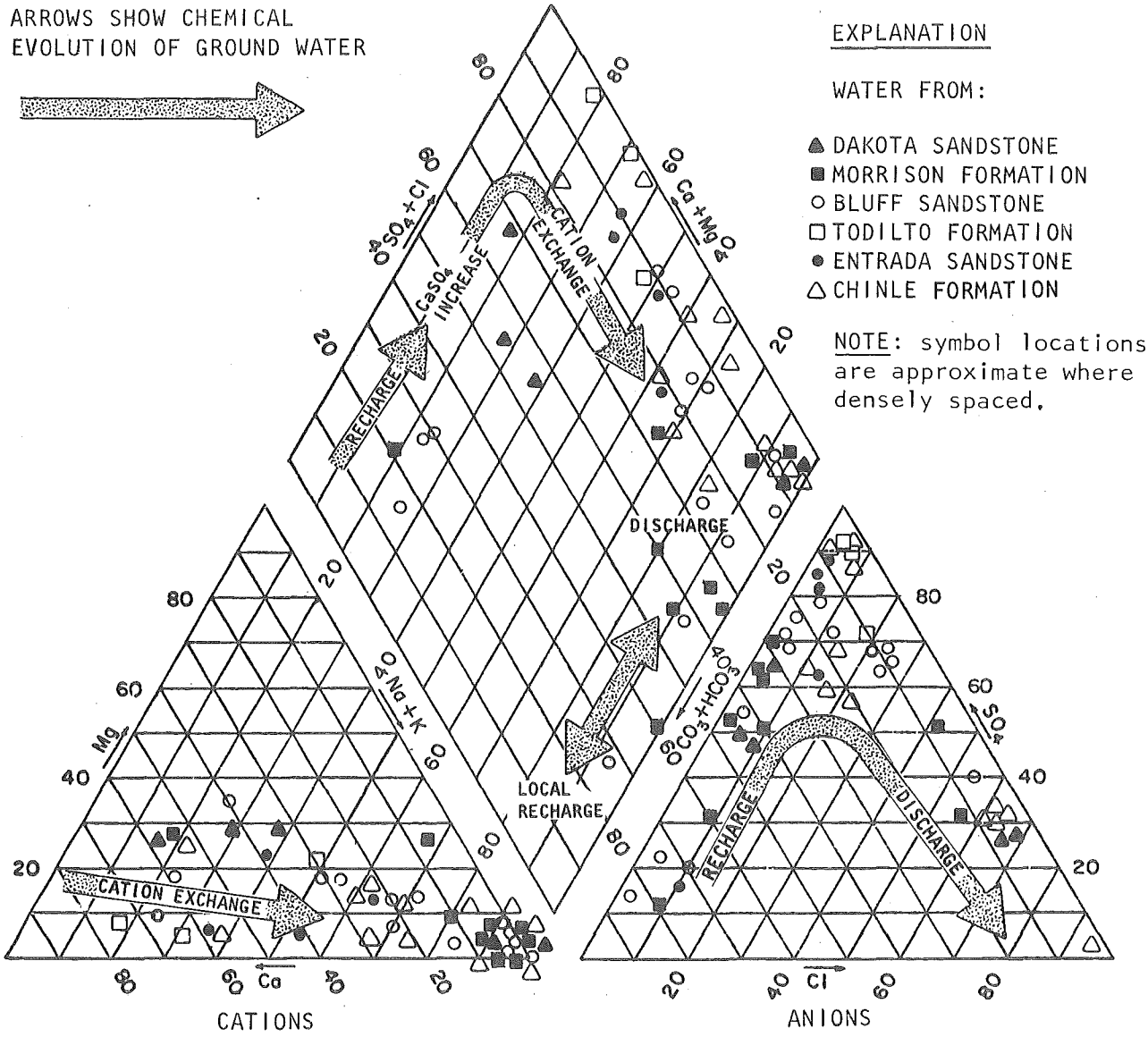


Figure 28.--Water-analysis diagram for selected wells completed in bedrock units.



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Grant are caused, in part, by upward seepage of water from Permian rocks. Specific-conductance values of the springflow mainly are in the 30,000 to 40,000 micromhos range. It is unlikely that water with dissolved-solids concentrations acceptable for stock, irrigation, or public-supply use will be found beneath the Pueblo of Laguna in Permian rocks.

Triassic System--Water quality in the Chinle Formation is least mineralized (dissolved-solids concentrations between 700 and 1,500 milligrams per liter) near Mesita along outcrops of the Correo Sandstone Bed of the Petrified Forest Member of the Chinle Formation. Dissolved-solids concentrations increase to the east in the direction of ground-water flow as shown on figure 16. Several springs in the southern part of the Sedillo Grant discharge small quantities of excessively mineralized water. These springs probably represent upward movement of water from deeper units throughout the Puerco fault zone.

Jurassic System--Water quality in the Entrada Sandstone is least mineralized in recharge areas near outcrops. A map delineating water-quality zones based upon specific-conductance measurements is shown in figure 17. Dissolved-solids concentrations are less than 1,500 milligrams per liter on outcrop areas and range from 1,500 to 4,000 milligrams per liter on the remainder of the Pueblo Proper. No water-quality data are available for the Jack Ward, Montaño, Mount Taylor, Sedillo, and Major's Ranch areas; water in the Puerco fault zone is expected to be quite mineralized due to upward movement of water from deeper units.

Specific-conductance values illustrate the distribution of dissolved-solids concentration for water in the Bluff Sandstone (fig. 18). Dissolved-solids concentrations are less than 700 milligrams per liter in outcrop areas and range from 1,000 to 3,000 milligrams per liter in other parts of the Pueblo Proper. Water is quite mineralized in eastern pueblo lands within the Puerco fault zone.

The quality of water in the Morrison Formation based on specific-conductance measurements is shown in figure 19. Dissolved-solids concentrations on the Pueblo Proper range from about 500 to 1,500 milligrams per liter and increase toward the Puerco fault zone (tables 5-8). Near Paguate, the ground water contains between 500 and 1,500 milligrams per liter of dissolved solids. Water in the Morrison Formation on Sedillo and Montaño Grants contains between 7,000 and 24,000 milligrams per liter of dissolved solids due to upward leakage of water throughout the Puerco fault zone. Radium-226 concentrations ranging from 0.95 to 38.7 picocuries per liter were present in water sampled from the Jackpile sandstone unit and Westwater Canyon Member on the Montaño Grant (U.S. Geological Survey, Conservation Division, written commun., 1978). Water quality on the Major's Ranch area is untested; but west of the Puerco fault zone, the Westwater Canyon Member and Jackpile sandstone may yield water with dissolved-solids concentrations ranging from 1,000 to 2,000 milligrams per liter.



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Cretaceous System--Dissolved-solids concentrations in the Dakota Sandstone on the Pueblo Proper and Mount Taylor areas range between about 200 and 1,100 milligrams per liter. Most wells in the Encinal area produce water containing 800 to 1,100 milligrams per liter of dissolved solids. The dissolved-solids concentration of 27,600 milligrams per liter at a spring (7.2.6.434, Spring 190) on the Sedillo Grant is due to mixing with ground water from deeper units. Water quality on most of the Jack Ward, Montaño, and Major's Ranch areas is untested but dissolved-solids concentrations probably range from 2,000 to 4,000 milligrams per liter.

The specific conductance of water in the Mesaverde Group on the Sedillo and Montaño Grants ranges from 2,700 to 2,900 micromhos, which is suitable for stock use but not human consumption. Well 11.7.35.243 (Castillo Canyon 1) on the Mount Taylor area contained water with 670 milligrams per liter of dissolved solids. Rainfall and snowmelt on Mount Taylor probably provide recharge water with little dissolved-solids concentration to Mesaverde units near Paguate, Encinal, and on the Mount Taylor area.

## Alluvium

Rio San Jose valley--The quality of water in alluvium along the Rio San Jose valley is quite variable. Specific conductance ranges from 720 to more than 8,000 micromhos. This great variation probably is due to several factors including variations in lithology of the valley fill and recharge of varying quality from different sources.

The general water-quality zones in the valley fill east of the village of Laguna are delineated on the basis of specific conductance in figure 20. Valley fill at the mouth of tributary valleys on the north (Cubero and Encinal Creeks) receives recharge from springs and runoff from Mount Taylor. Specific-conductance values of water in the valley fill range from 720 to 1,570, which represent dissolved-solids concentrations of between about 500 and 1,200 milligrams per liter. Ground water containing about 2,500 milligrams per liter of dissolved solids moving down the Rio San Jose valley from the west mixes with the less mineralized water recharged from Cubero Creek.

The geochemistry of waters in the Rio San Jose valley shows the mixing of different water types (fig. 29). Sodium and sulfate are the predominant ions in the water entering the pueblo in the valley from the west. This water mixes with recharge from Cubero Creek, which is predominantly a calcium bicarbonate water. Therefore, water in the alluvium appears to be a mixture, containing large concentrations of sodium, sulfate, calcium, and bicarbonate.

Water in the alluvium downstream from New Laguna Reservoir and in the Rio Puerco valley has a very high salinity hazard (specific conductances exceed 2,250 micromhos). The sodium hazard also may be high though sufficient chemical-quality data are not available.



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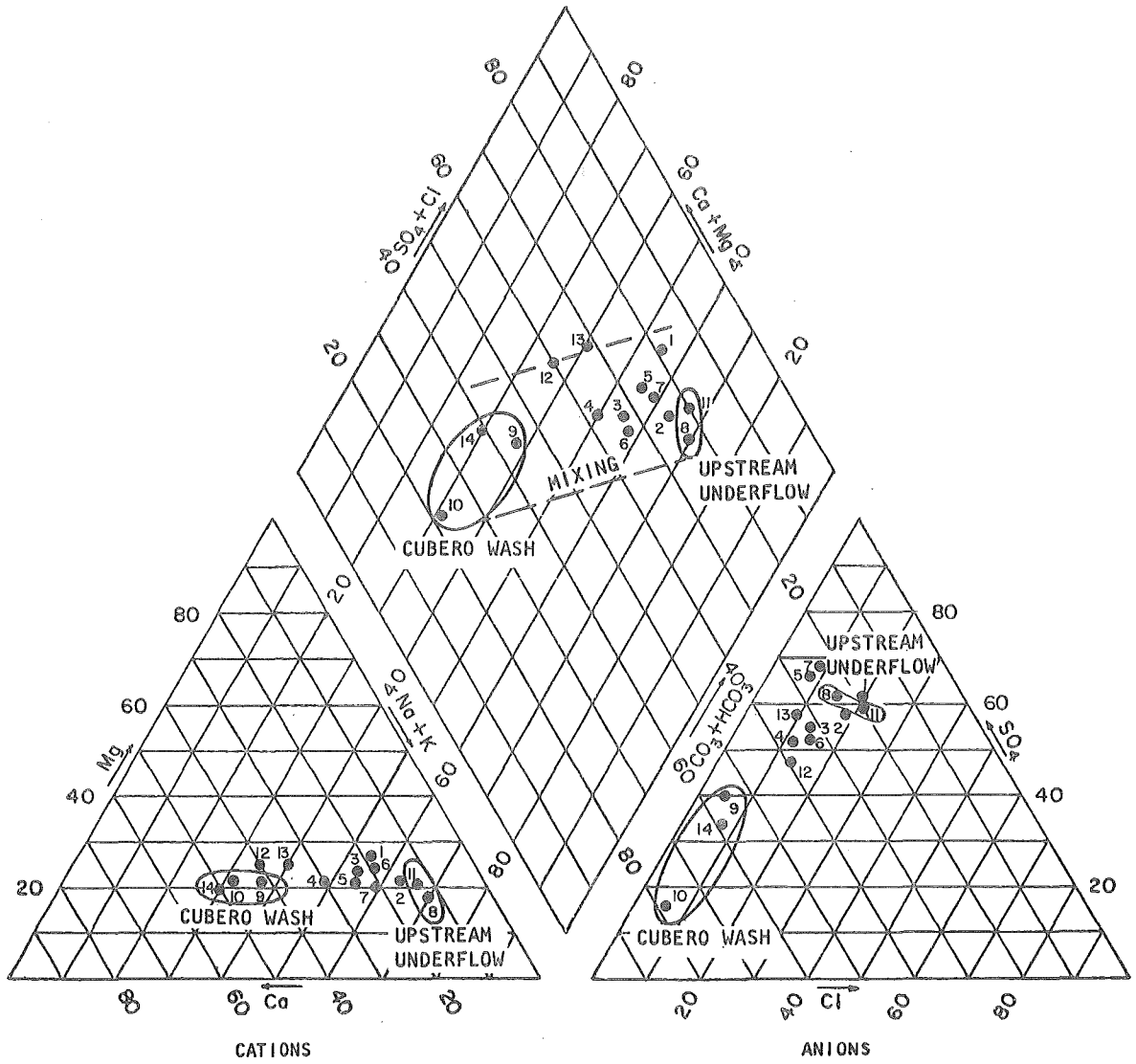


| IDENTIFIER | LOCATION NUMBER | NAME OF WELL OR SPRING | IDENTIFIER | LOCATION NUMBER | NAME OF WELL OR SPRING |
|---|---|---|---|---|---|
| 1 | 9.6.2.123 | Laguna 76-7 | 8 | 10.7.35.232 | Irrigation Test 6 |
| 2 | 9.6.5.222 | Laguna 76-6 | 9 | 10.7.36.212 | New York 2 |
| 3 | 10.6.31.434 | Seama Public Supply | 10 | 10.7.36.221 | New York 1 |
| 4 | 10.6.31.443 | Irrigation Test 7 | 11 | 10.7.36.322 | Laguna 76-2 |
| 5 | 10.6.35.322 | Pueblo Test 1 | 12 | 10.7.36.424 | Laguna 76-1 |
| 6 | 10.6.35.324 | New Laguna Public Supply | 13 | 10.7.36.424a | Laguna Irrigation 1 |
| 7 | 10.6.35.342 | Pueblo Test 2 | | | |

Figure 29.--Water-analysis diagram for wells completed in valley-fill deposits along the Rio San Jose.



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Rio Paguate valley--Water in the alluvium along the Rio Paguate upstream from the village of Paguate is recharged by streamflow generally containing between 190 and 600 milligrams per liter of dissolved solids. The dissolved-solids concentration of ground water in this area is about 300 to 500 milligrams per liter.

Downstream from Paguate, water in the alluvium becomes more mineralized as water from Jurassic sandstones discharge to the alluvium and streamflow from the Rio Moquino containing 1,040 to 3,060 milligrams per liter of dissolved solids joins the Rio Paguate. Water from well 10.5.26.223 (Ir. Test 8), drilled downstream from Paguate Reservoir, has a specific-conductance value of 10,000 micromhos, which corresponds to a dissolved-solids concentration of about 7,000 milligrams per liter.

## Surface-water quality

### Rio San Jose

The quality of water in the Rio San Jose varies with distance downstream from Horace Springs and from season to season as the volume of irrigation withdrawals, contributions from stormflow and snowmelt, and discharge of wastewater effluent change. Changes in selected water-quality characteristics are shown in figure 30. In general, the average winter concentrations of most constituents increase downstream from McCartys diversion due to ground-water contributions. Average dissolved-solids concentration of water upstream from McCartys is about 890 milligrams per liter. On the Pueblo of Laguna, the average dissolved-solids concentration of water in the Rio San Jose is 1,660 milligrams per liter at the western pueblo boundary, 1,300 milligrams per liter at the mouth of Cubero Creek, due to less mineralized ground-water contributions, and 1,800 milligrams per liter at Mesita diversion. Water with a dissolved-solids concentration between 890 and 1,800 milligrams per liter has a moderate to high salinity hazard for irrigation.

Water quality in the Rio San Jose changes from season to season in part due to changes in streamflow and upstream irrigation withdrawals. Average monthly specific-conductance values from the western pueblo boundary to Mesita were least from January through April, prior to the start of irrigation withdrawals, and peaked in the early summer months (fig. 31). Lesser values in the late summer months were caused by streamflows containing smaller concentrations of dissolved solids.

Specific conductance can be used as a tool to estimate values of other water-quality constituents (Hem, 1970, p. 96). Empirical relations between specific conductance and dissolved-solids concentration, sodium-adsorption ratio, chloride concentration, total hardness, and sulfate concentration in the Rio San Jose from Horace Springs to Mesita diversion are shown in figure 32.



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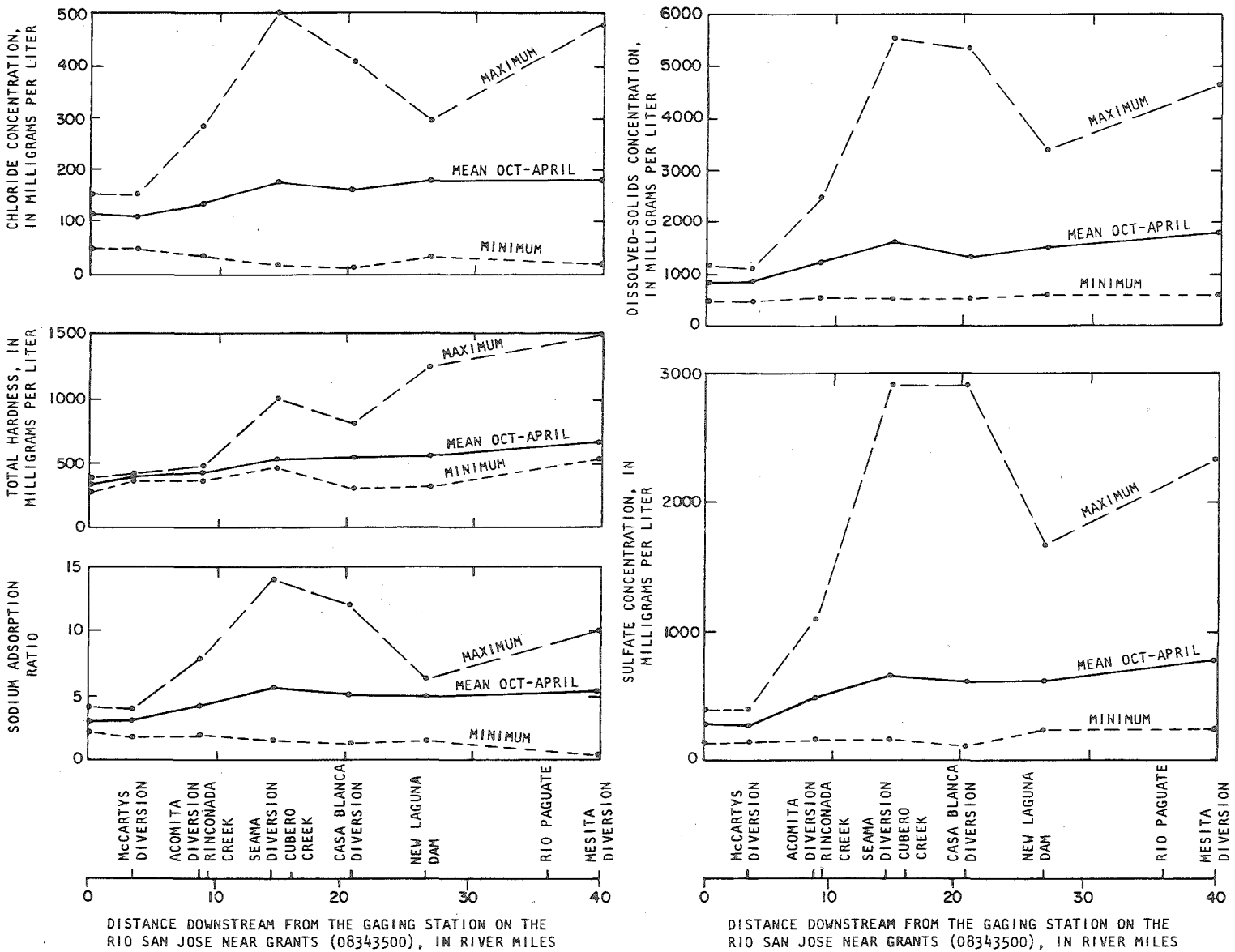


Figure 30.--Variation of selected water-quality characteristics in the Rio San Jose from the streamflow-gaging station near Grants (08343500) to Mesita diversion, 1961-79.



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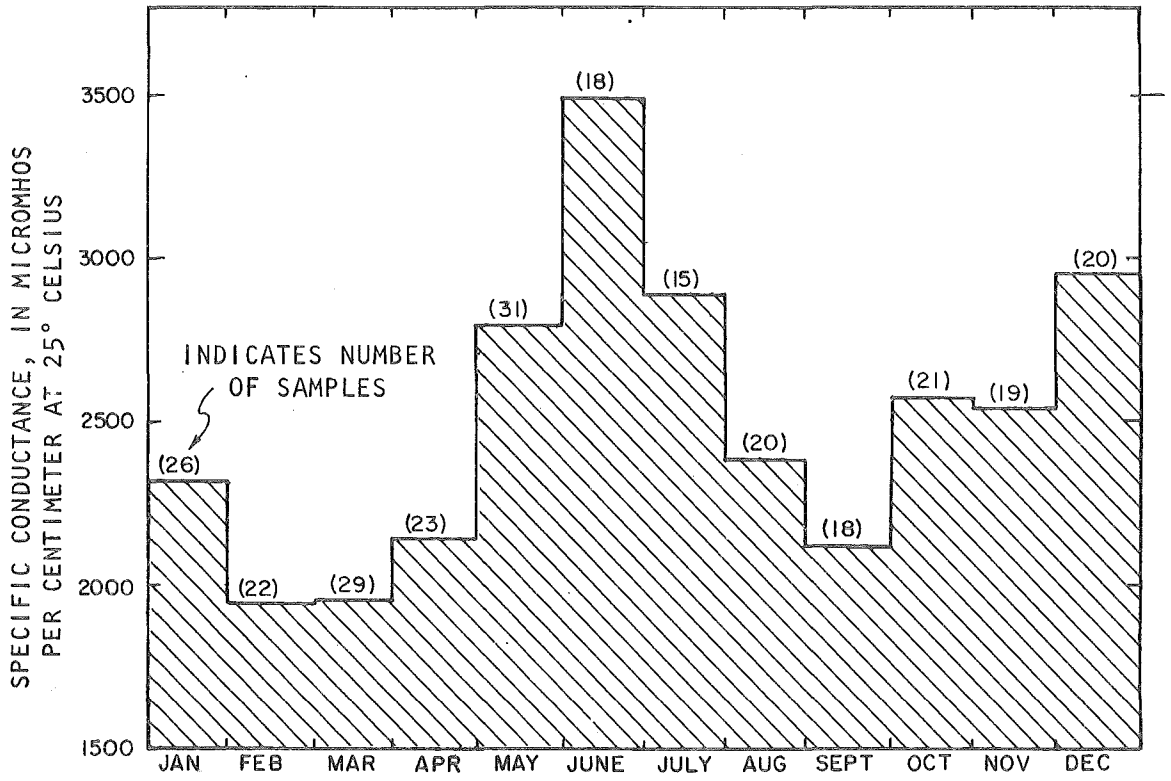


Figure 31.--Average monthly specific conductance of the Rio San Jose on the Pueblo of Laguna upstream from Mesita, 1961-79.



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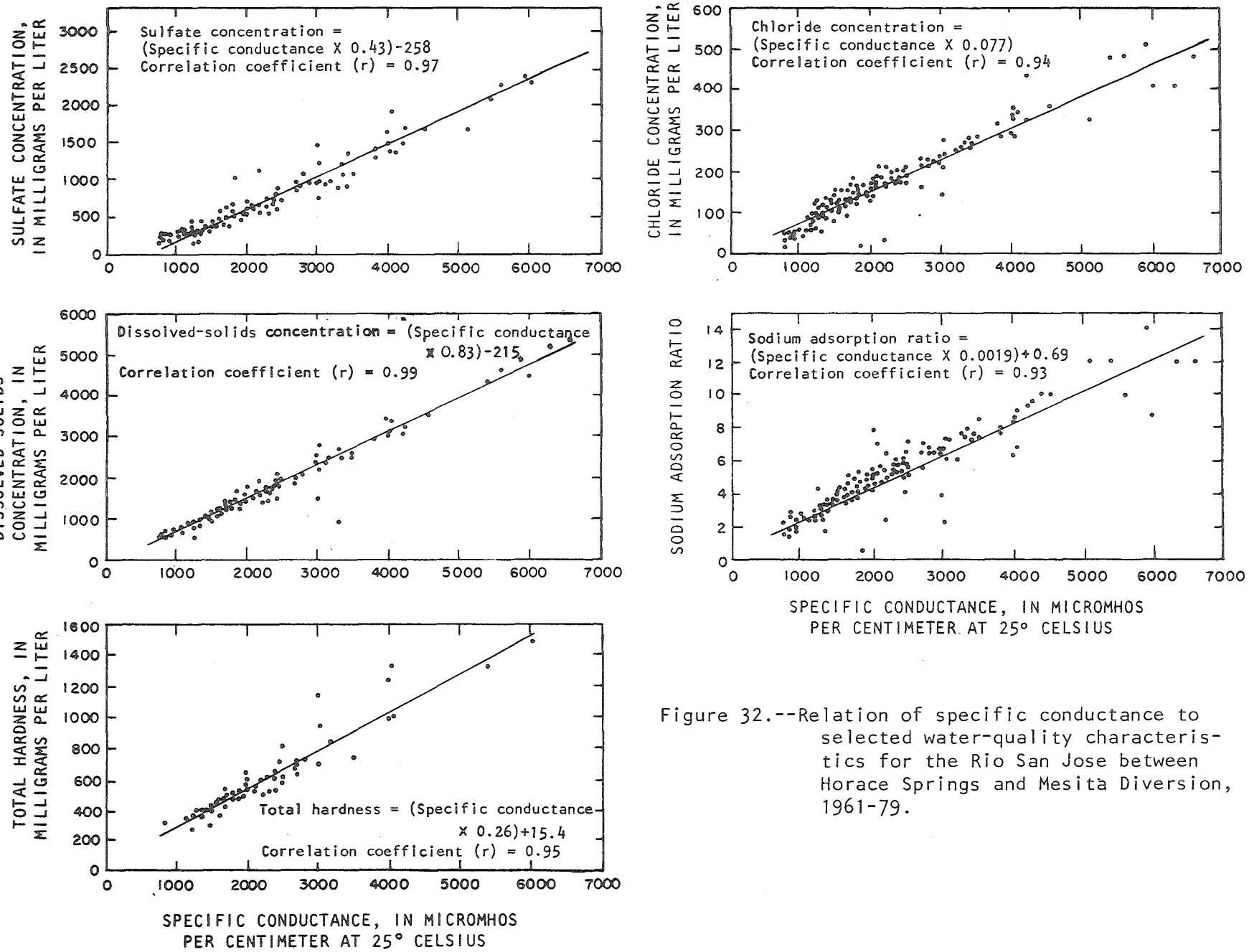


Figure 32.--Relation of specific conductance to selected water-quality characteristics for the Rio San Jose between Horace Springs and Mesita Diversion, 1961-79.



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Sodium, calcium, magnesium, sulfate, and bicarbonate are the predominant ions in water in the Rio San Jose. The chemistry changes downstream from Horace Springs by the enrichment of sodium and sulfate and relative decrease of calcium and bicarbonate. The chemical change probably is due to water discharge from Jurassic bedrock units, which typically contains greater concentrations of sodium and sulfate.

### Rio Puerco

Water quality of the Rio Puerco was sampled on August 24, 1978, during runoff from a summer storm (table 9). The dissolved-solids concentration was 1,550 milligrams per liter. Suspended-sediment concentrations exceeding 200,000 milligrams per liter have been measured in the Rio Puerco at the gaging station near Bernardo about 25 miles south of the Sedillo Grant (U.S. Geological Survey, 1947-78). The large suspended-sediment concentrations limit the use of this water.

### Tributaries of the Rio San Jose

Rio Paguate--Upstream from the Jackpile-Paguate Mine, dissolved-solids concentrations in the Rio Paguate range from 190 to 590 milligrams per liter and the water is suitable for irrigation and public supply (tables 9-13). Downstream from the mine, the dissolved-solids concentration in the river ranges from 990 to 6,420 milligrams per liter and the water is only marginally suited for irrigation. The degradation in quality partly is caused by the addition of water containing 1,040 to 3,060 milligrams per liter of dissolved solids from the Rio Moquino. Changes in quality also may occur where surface runoff comes in contact with the disturbed overburden at the Jackpile-Paguate Mine. Additional quality changes downstream from the mine probably are due to ground-water discharge to the stream and to concentration of dissolved solids by evaporation at Paguate Reservoir. Chemically, the water-quality change is represented by increased concentrations of all dissolved cations and a large increase in sulfate concentration (fig. 33).

Water from storm runoff and snowmelt at the gaging station downstream from the Jackpile-Paguate Mine usually contains lesser dissolved-solids concentrations than does base streamflow (tables 9 and 12). In general, specific conductance decreases with increasing discharge. Suspended-sediment concentrations in six high streamflows ranged from 105,000 to 811,000 milligrams per liter.

Specific conductance can be used to estimate specific water-quality characteristics of the Rio Paguate. Empirical relations between specific conductance and dissolved-solids concentration, calcium magnesium hardness, sulfate concentration, sodium-adsorption ratio, and chloride concentration for the Rio Paguate and Rio Moquino are shown in figure 34.



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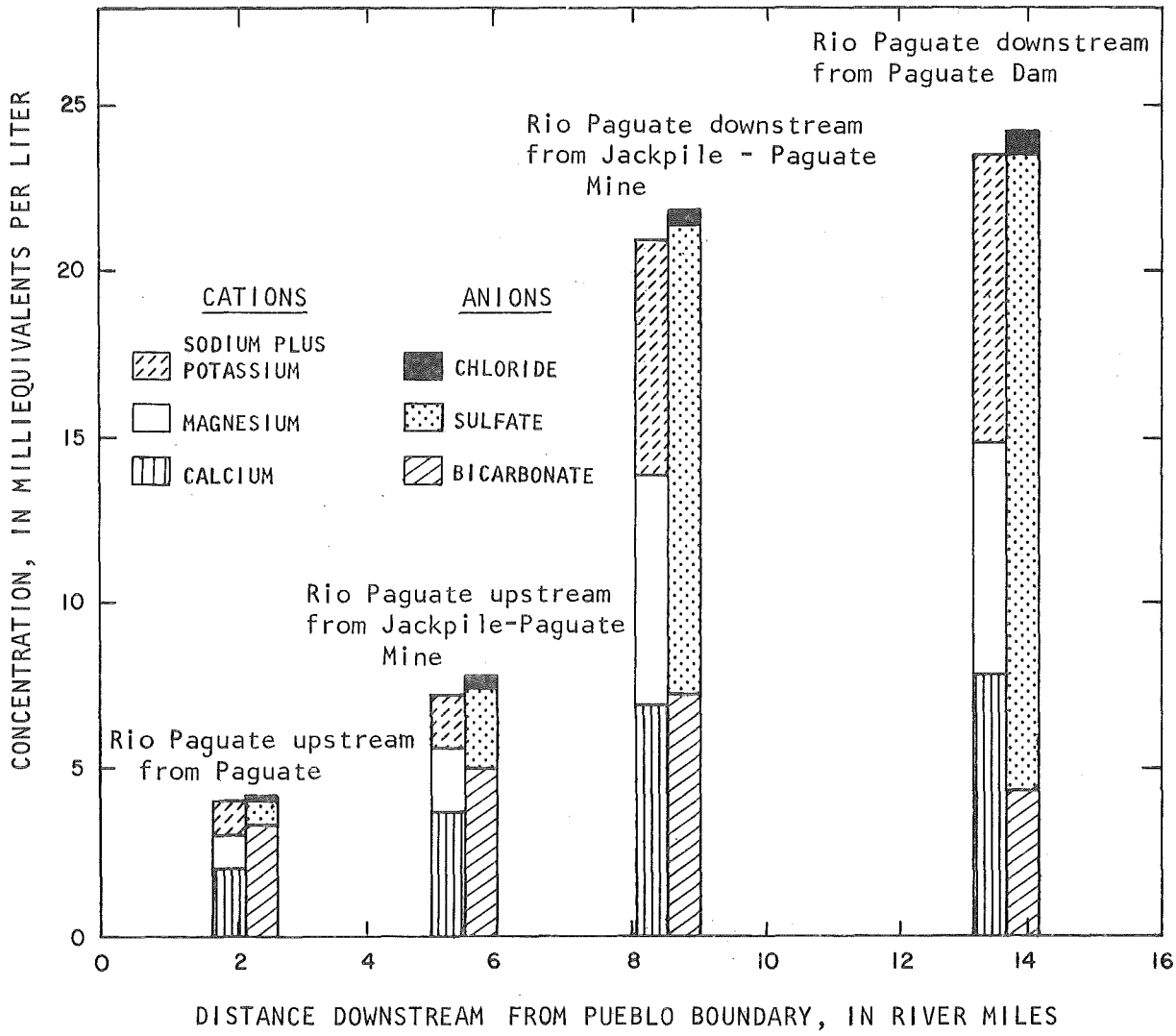


Figure 33.--Average concentrations of major ions of winter streamflow in the Rio Paguate, 1976-79.



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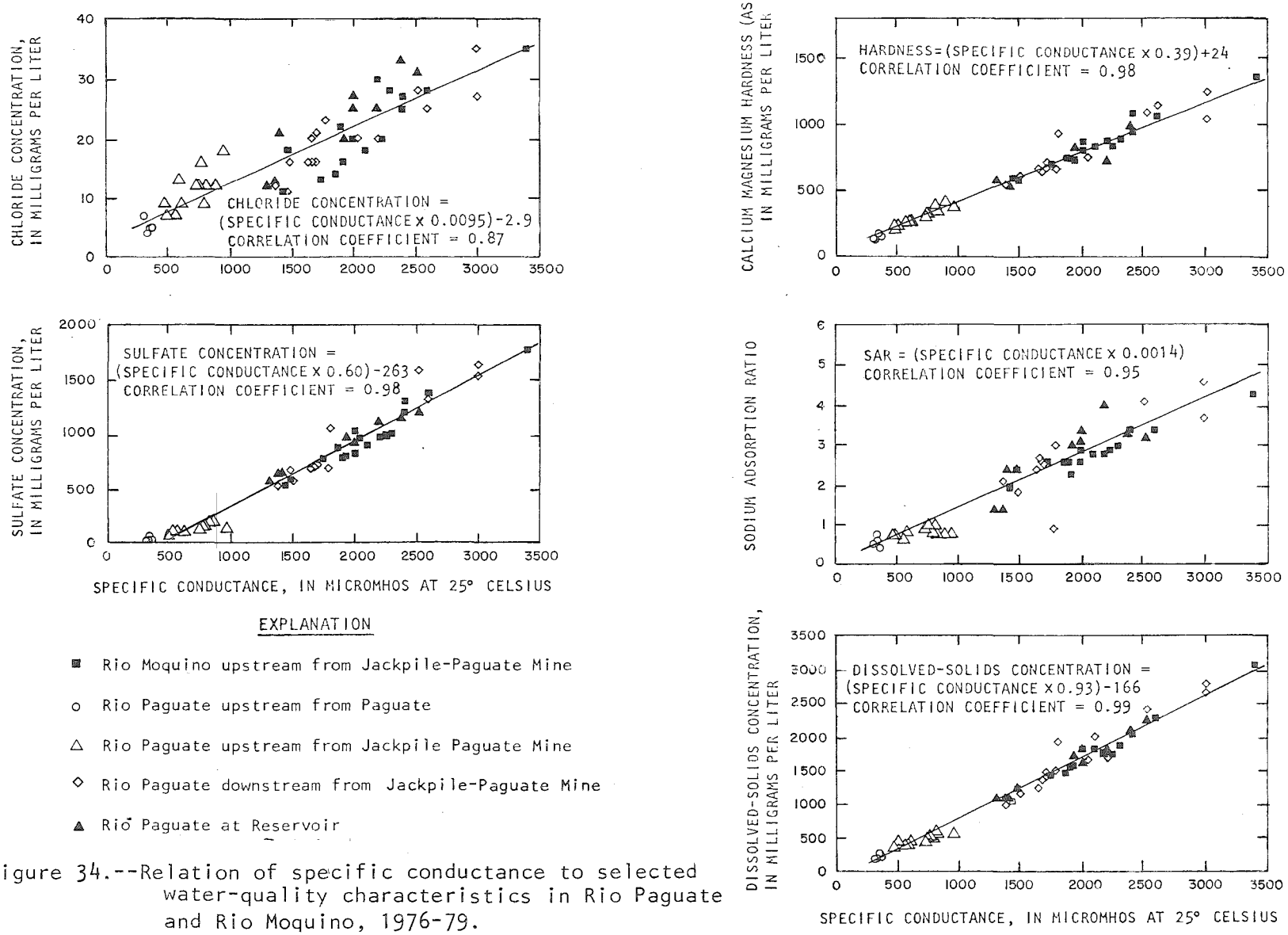


Figure 34.--Relation of specific conductance to selected water-quality characteristics in Rio Paguate and Rio Moquino, 1976-79.



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Water samples had increases in radiochemical concentrations downstream from the Jackpile-Paguate Mine. Concentrations of radium-226 and uranium collected at the streamflow-gaging station downstream from the mine ranged from 1.7 to 8.3 picocuries per liter and 73 to 330 micrograms per liter, respectively (table 13). Concentrations of radium-226 collected upstream from the mine ranged from 0.04 to 0.09 picocurie per liter for Rio Paguate and 0.08 to 0.12 picocurie per liter for Rio Moquino. Concentrations of uranium upstream from the mine ranged from 0.7 to 2.2 micrograms per liter for Rio Paguate and 4.7 to 8.3 micrograms per liter for Rio Moquino. The lesser concentrations of radium-226 and uranium in Rio Moquino and Rio Paguate upstream from the mine indicate that the increase of radiochemicals primarily takes place where the Rio Paguate and Rio Moquino flow through the Jackpile-Paguate Mine.

Sediments from the streambed of the Rio Paguate were sampled for trace elements and radiochemicals at several points upstream and downstream from the Jackpile-Paguate Mine (table 16). Sediments collected at the gaging station downstream from the mine had concentrations of trace elements and radiochemicals comparable to sites sampled on the Rio Moquino and Rio Paguate upstream from the mine. However, much greater concentrations of radiochemicals were found in sediments from 1.5 miles downstream from the mine to Paguate Reservoir. Radium-226 concentrations ranged from 121 to 153 picocuries per liter, and uranium concentrations ranged from 194 to 308 milligrams per liter in these samples. Evidently, at least a part of the sediment load in the Rio Paguate is being deposited in Paguate Reservoir and in the aggrading channel upstream from the reservoir.

Cubero Creek--The quality of water in Cubero Creek was fairly constant when sampled during the study (tables 9-13) because the streamflow was sustained by spring discharge. The dissolved-solids concentration ranged from 450 to 520 milligrams per liter, which is considerably less than the concentration in the Rio San Jose. The quality of this streamflow probably is acceptable for irrigation and for public supply if proper methods are used to filter suspended solids and remove bacterial contamination. Water quality in the alluvium around the New York-Seama area is improved considerably due to seepage from Cubero Creek.

The dissolved-solids concentration of stormflows is at least that of springflow contributions based upon three miscellaneous measurements (table 12). Measured suspended-sediment concentrations of greater than 40,000 milligrams per liter in these stormflows may render the water unsuitable for certain uses.

Encinal Creek--Analyses of water from Encinal Springs, which provide most of the base streamflow in the upstream reaches of Encinal Creek, indicate the water is acceptable for irrigation and public-supply use (table 5). Dissolved-solids concentration in two samples from the springs were 114 and 158 milligrams per liter. The quality of storm runoff is not well documented but specific conductances of 403 and 856 micromhos were measured for two



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stormflows. The large suspended-sediment concentrations of 45,000 and 151,000 milligrams per liter accompaning these flows may render the water unsuitable for certain uses.

# NUMERICAL MODEL OF GROUND-WATER FLOW IN THE VALLEY-FILL AQUIFER ALONG THE RIO SAN JOSE WEST OF LAGUNA VILLAGE

## Introduction to modeling study

The availability of water for irrigation, industry, and public supply is a major constraint on the economic growth and prosperity of the Pueblo of Laguna. Because significant new sources of water are unlikely to be discovered, the known water resources on the pueblo must be utilized as carefully as possible. A ground-water flow model of the valley-fill aquifer along the Rio San Jose was constructed to illustrate how ground water can be effectively used for the increased benefit of the tribe.

The valley of the Rio San Jose is 1/2 to 2 miles wide through the center of the Pueblo Proper. The part of the valley selected for modeling is about 11 miles in length, encompasses an area of about 25 square miles, and extends from valley wall to valley wall along the stream from about 2 miles west of the Acoma-Laguna boundary to the village of Laguna (fig. 35). The western part of the valley was chosen for modeling because the area has the greatest potential for additional ground-water development for irrigation and public supply. Because the quality of ground water in the valley fill deteriorates down the valley, it is unlikely that ground-water development in the Quaternary alluvium and basalt of the Rio San Jose valley will take place east of the village of Laguna.

The model allows predictions to be made of aquifer response to various potential stresses placed upon the hydrologic system. Some specific objectives of the study were to predict water-level declines and effects on streamflow of the Rio San Jose caused by different hypothetical amounts of ground-water withdrawals. The study also illustrates the potential use of ground-water storage to salvage unused winter streamflows for use later during the irrigation season.



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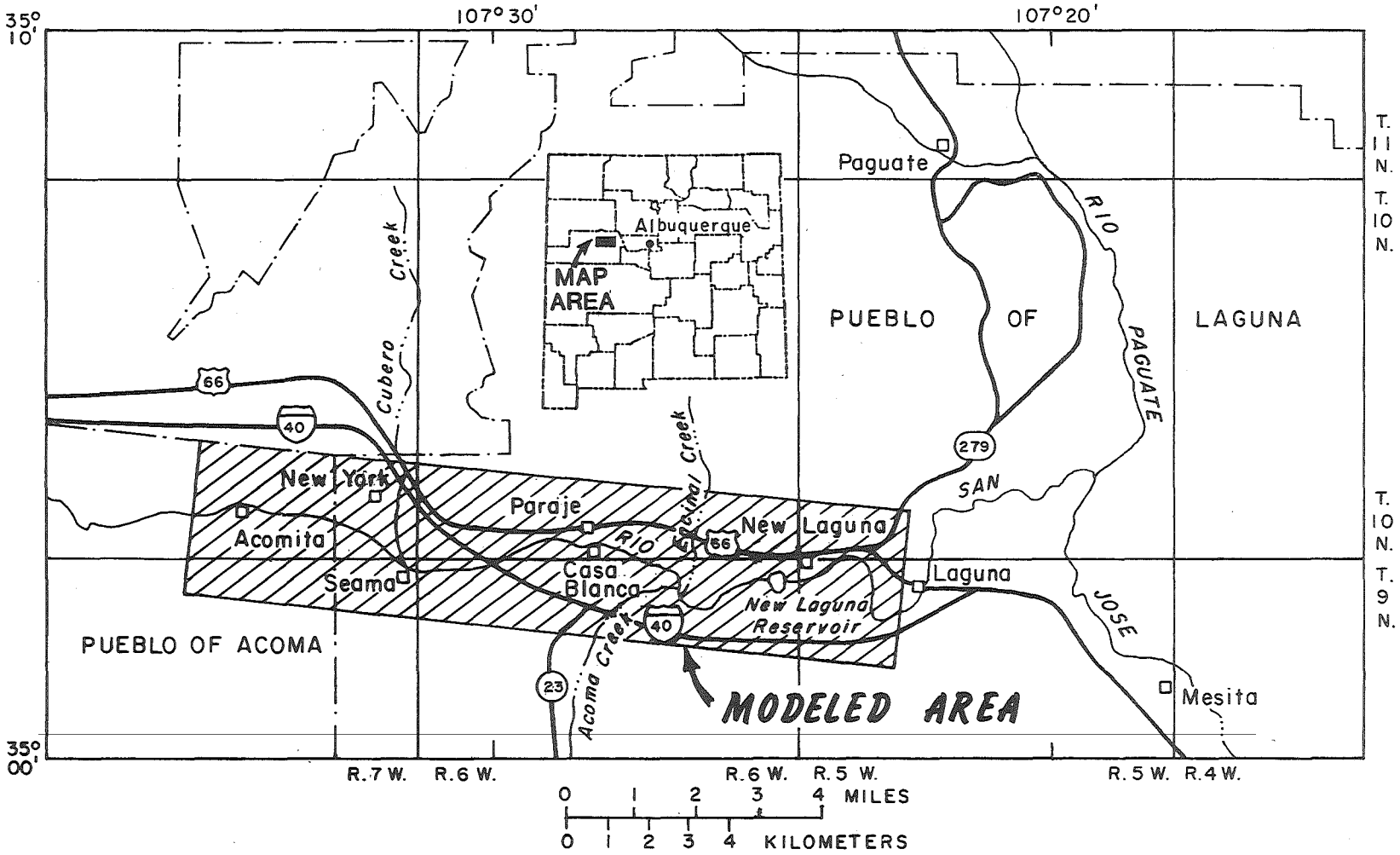


Figure 35.--Location of modeled area.



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## Description of the Model

### Model used

To solve the equation of ground-water flow, a 2-dimensional, finite-difference numerical model written and documented by Trescott, Pinder, and Larson (1976) was used. The differential, ground-water flow equation is approximated in the model by a series of algebraic, finite-difference equations. The study area was divided into a rectangular-grid system that defined a nodal point at the center of each cell. The finite-difference equations were then solved at each node on a digital computer using the strongly implicit procedure.

A 2-dimensional model was used because vertical components of ground-water flow were believed to be insignificant in the valley. Buried basalt flows do confine ground water locally, but the extent of this condition is not well known.

### Model construction

The initial setup of the model involved making a finite-difference grid, deciding on boundary conditions, and entering initial estimates of hydrologic characteristics. The initial estimates of hydrologic characteristics such as hydraulic conductivity of the aquifer, hydraulic conductivity of the leaky streambed, recharge from tributary streams, and evapotranspiration rate then were varied in a trial-and-error method until the model satisfactorily met the adjustment criteria. Model construction then was complete.

### Finite-difference grid

A rectangular, finite-difference grid consisting of 24 rows and 79 columns was superimposed on the study area (fig. 36). The grid divides the area into 1,896 separate cells for which data is entered and water levels simulated for the node at the center of the cell. The nodal locations are referenced by the row and column numbers of the grid. The data specified at a given node are the average values of these characteristics for the entire cell. The grid is aligned with one axis parallel to the principal down-valley component of ground-water flow. The grid spacing is varied throughout the valley to provide higher resolution for simulated drawdowns in areas near existing pumping centers. The grid spacing near pumping centers is 500 feet in both downstream and cross-valley directions. In other areas the grid spacing is 1,000 feet in the downstream direction and 500 feet in the cross-valley direction.



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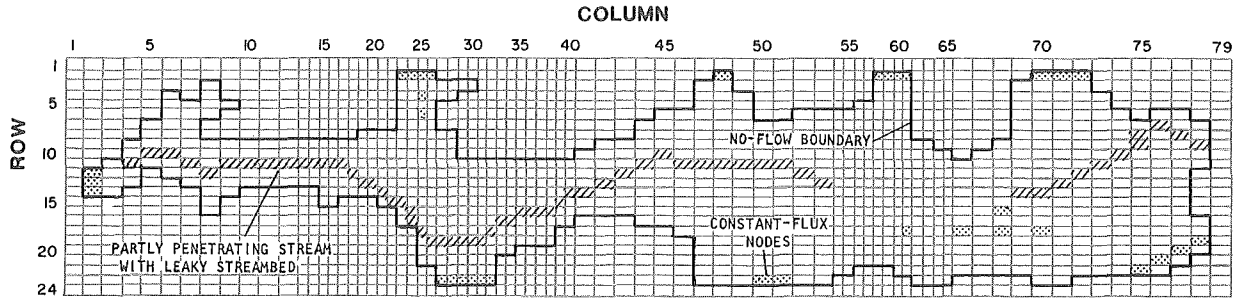


Figure 36.--Finite-difference grid and hydrologic boundaries used in the valley-fill model.

## Aquifer properties

The valley-fill aquifer along the Rio San Jose consists of alluvium and a basalt flow that is buried throughout most of the area and crops out near New Laguna. For modeling purposes, all of the valley-fill material is grouped together as a vertically homogeneous unit. Water levels measured during drilling indicate that in most areas a good hydraulic connection exists between alluvium above and below the basalt flow.

The hydraulic conductivity of an aquifer is the volume of water at the existing kinematic viscosity that will move in a unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow (Lohman and others, 1972, p. 4). Initial estimates of hydraulic conductivity used in the model were determined by aquifer tests (table 4). A map of the distribution of hydraulic conductivity values decided on after model adjustment is shown in figure 37.

The hydraulic conductivity values used in the model vary considerably. At the eastern end of the modeled area near New Laguna, hydraulic conductivity was assigned a value of 10 feet per day. This small value reflects the large amount of fine-grained silt and clay deposited by lakes that occupied this part of the valley at various times during the Quaternary. The abrupt change in hydraulic conductivity assigned at the mouth of Encinal



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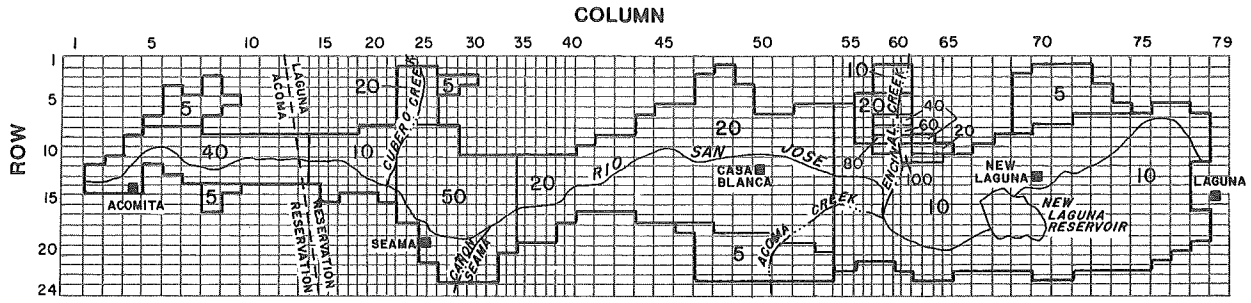


Figure 37.--Hydraulic-conductivity distribution used in the valley-fill model, in feet per day.

Creek may represent the deposition of course-grained valley-fill deposits by Encinal Creek. The variation in hydraulic conductivity from Acomita to Seama in the western part of the modeled area was needed to minimize the error between measured and simulated water levels and streamflow. The physical characteristics of the valley fill observable at this location do not clearly show why this abrupt zonation of hydraulic conductivity should be necessary. However, several single-well aquifer tests conducted in this area (fig. 10) indicate that the zonation used in the model is reasonable.

The specific yield of the valley-fill aquifer was estimated from examination of well cuttings and geophysical logs. Because the fill is composed of clay, sand, gravel, and basalt, an average specific yield of 0.15 was used for the entire valley. Specific yield was estimated using average values for various geologic materials given in Johnson (1967). Locally, the specific yield will vary greatly with clay and basalt layers as low as 0.01 and sand lenses as great as 0.32 (Johnson, 1967 p. 70), but 0.15 is probably reasonable for an average value. Aquifer-test data were not used to estimate specific yield because of the short duration of most tests.



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## Model boundaries and recharge

The boundary conditions of the model define the physical geometry and hydraulic flux of the ground-water flow system. Boundary conditions used in the model are shown in figure 36 and are described in the following paragraphs.

The Rio San Jose valley in the modeled area is incised into shales and sandstones of Jurassic age, which form a relatively impermeable barrier to ground-water flow. Therefore, the altitude of the base of the valley fill was used as the lower boundary of the model across which no flow is assumed to take place (fig. 10). The lateral model boundaries are located where the alluvium butts against the bedrock valley walls. This boundary, across which no flow is assumed to take place is shown in figure 36. In reality, ground water does flow from Jurassic bedrock units into the alluvium, but most of this recharge probably takes place west of the modeled area and is included in the ground-water flow in the alluvium entering the modeled area from the west.

Constant-flux nodes were used in simulating steady-state conditions at points of major ground-water flow entering or leaving the model. Estimates of flow initially were made by flow-net analyses and were varied within plausible limits during model adjustment. Initial estimates of recharge from tributaries were made using streamflow measurements (tables 9 and 12) and indirect estimates of annual average stormflow calculated from the physical characteristics of each watershed (table 15).

The Rio San Jose gains and loses water throughout the reach being modeled and is simulated as a partially penetrating, leaky stream except in a 2-mile stretch upstream from New Laguna Reservoir. An initial estimate of the vertical hydraulic conductivity of 0.086 foot per day for the confining bed beneath the stream was determined by analyzing seepage losses outside of the modeled area between gaging stations on the Rio San Jose near Laguna and at Correo. If this value of vertical hydraulic conductivity were present on the 13-mile reach of the Rio San Jose west of New Laguna Reservoir, the valley-fill aquifer could be recharged by 3,000 acre-feet during the non-growing season. In the model, the vertical hydraulic conductivity of the confining bed was adjusted to represent the ratio of streambed area in a cell to total area of the cell. Leakage from the stream as simulated in the model will increase until the hydraulic head in the aquifer falls 10 feet below the altitude of the streambed. The leakage is then limited to a maximum value of 0.56 cubic foot per second per mile.

In the 2-mile reach upstream from and including New Laguna Reservoir, the Rio San Jose was simulated by a constant flux from the stream to ground water in the valley fill. In this area, ground-water levels in wells about 1/2 mile from the stream are 20 to 40 feet below the altitude of the streambed. Ground-water levels adjacent to the stream and reservoir probably are also below the streambed throughout much of the year. Certainly this is



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true during summer months when upstream irrigation withdrawals cause this reach of the stream and the reservoir to be dry.

Water is lost through evaporation and transpiration where the water table is at or near the land surface. Evapotranspiration takes place from the water surface in the stream and through phreatophytes, which are abundant near the channel of the Rio San Jose. A variable-head flux boundary was used to estimate evapotranspiration. The maximum evapotranspiration rate for water at the land surface was set equal to 55 inches per year, which is the mean evaporation rate for shallow reservoirs in the area (Hale and others, 1965). Annual consumptive use of water by salt cedar calculated for Las Vegas, New Mexico, which has climatic conditions similar to Laguna, is 51.6 inches (Blaney and Hanson, 1965, p. 47). The evapotranspiration rate is extrapolated linearly from land surface to a depth of 10 feet below land surface where evapotranspiration was assumed to be negligible.

## Model adjustments

For the model to be used with confidence in predicting aquifer response to future stresses, a set of measured aquifer properties must be compared to model simulations of the same conditions. In the part of the valley chosen for modeling, significant water-level declines caused by pumping did not take place prior to 1976 (fig. 22) even though a small amount of pumping was taking place in the valley. Estimated total ground-water withdrawals for public supply in the New York-Seama area was about 75 gallons per minute in 1975. Prior to 1976, water levels in the valley probably represent a nearly steady-state condition. Because the flow system prior to 1976 was assumed to be in a steady-state condition, the simulated aquifer characteristics were adjusted by comparing the measured pre-1976 potentiometric surface in the aquifer with simulated steady-state water levels.

Adjustment of the model involved varying the values specified for certain hydrologic characteristics to achieve a "best fit" between measured and simulated steady-state water levels. The best fit was achieved by minimizing the square of the deviations between observed and simulated water levels. The adjustment process was subjective because values of most aquifer characteristics were known only within large bounds. Steady-state simulations are independent of the specific yield of the aquifer, thus for transient simulations the initial estimate of specific yield was used without any adjustment. Adjustments of both vertical and horizontal hydraulic conductivity and recharge rates were made within estimated plausible limits to match the measured water levels. The degree to which each characteristic was adjusted depended upon the uncertainty in the data base. The steady-state solution determined after numerous adjustments of the hydrologic characteristic is not a unique solution but simply a solution that matches, within acceptable error, the water-level criteria chosen for adjustment of the model.



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For the initial simulation, the average error calculated as the square root of the minimum sum of deviations squared divided by the number of nodes with measured water levels was about 8 feet. However, the absolute error at individual nodes exceeded 20 feet. To achieve a better fit, horizontal hydraulic conductivity at the mouths of Cubero and Encinal Creeks was increased by about 30 percent. Estimated recharge from Cubero and Encinal Creeks was increased by about 30 percent, and inflow from upstream throughflow was raised from 0.3 to 0.9 cubic foot per second to account for inflow from bedrock aquifers west of the modeled area.

After adjusting the horizontal hydraulic conductivity of the aquifer and recharge rates, a reasonably good fit between measured and simulated steady-state water levels was achieved (figure 38). Because the land-surface altitudes at wells were determined from topographic maps having contour intervals of 20 feet, differences between measured and simulated water-levels of 10 feet were considered satisfactory. The average least squares error between measured and simulated water levels at 26 wells was 5.6 feet.

The simulated steady-state recharge and discharge for the valley-fill aquifer is shown in the following table.

| Ground-water recharge | | Ground-water discharge | |
|---|---|---|---|
| Recharge from | Rate, in cubic feet per second | Discharge to | Rate in cubic feet per second |
| Cubero Creek | 0.42 | Rio San Jose | 0.25 |
| Encinal Creek | 0.08 | Flow from area | |
| Cañon Seama | 0.04 | to east | 0.07 |
| Acoma Creek | 0.15 | Evapotranspiration | 3.10 |
| Rio San Jose | 1.78 | | |
| Misc. small trib. | 0.05 | | |
| Flow into aquifer | 0.90 | | |
| Total | 3.42 | Total | 3.42 |



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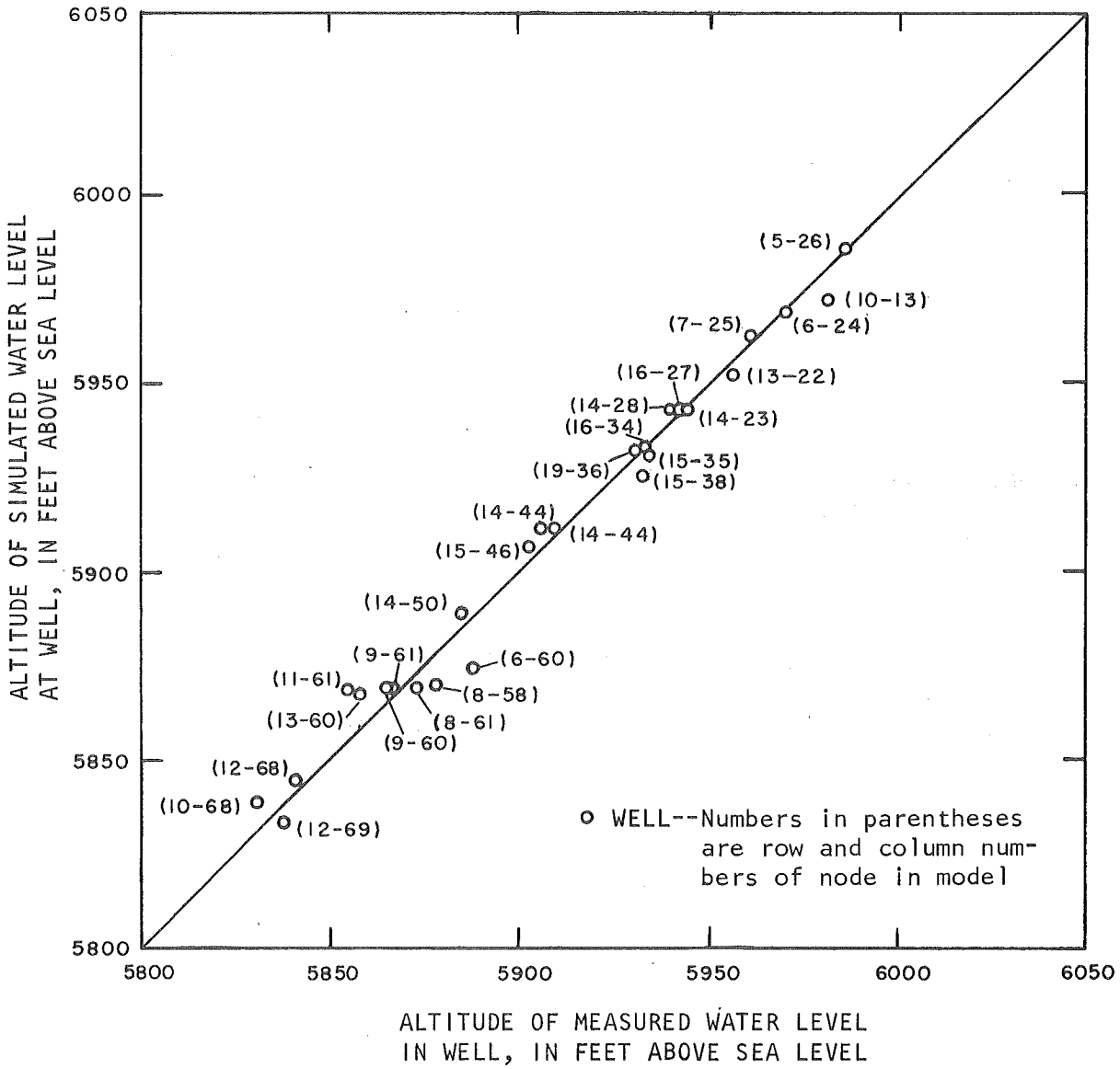


Figure 38.--Comparison of simulated and measured steady-state water levels.



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## Estimates of aquifer response to future ground-water withdrawals

The objective of the modeling study was to a simulate aquifer response to alternative methods of ground-water development in the valley-fill aquifer. The simulations represent withdrawals that, in many cases, would require pumping from several production wells at a node. Predicted drawdowns represent the average drawdown at a node rather than drawdown in a specific pumping well. The predictions must be viewed as estimates of aquifer response because the predictive capabilities of the model have not been evaluated by comparing modeled and measured aquifer response to stress over time. An idea of the possible error inherent in the predictions may be obtained from the sensitivity analysis; however, a detailed error analysis has not been made for each simulation. If an accurate record of ground-water withdrawals in the valley is kept in the future, the model could be further adjusted to become a better predictive tool.

### Ground-water withdrawals for public supply

The existing public-supply well field in the New York-Seama area has three wells: 10.7.36.221 (New York 1), 10.7.36.212 (New York 2), and 10.6.31.434 (Seama P.S.). Pumpage from the three wells varies during the year; however, the 1980 average rate of withdrawal was about 280 gallons per minute. Aquifer response to 10 years of pumping at 280 and 560 gallons per minute at nodes 7-25 ( row 7, column 25), 8-24, and 15-35 was simulated. The simulation represents year-round withdrawals of ground-water averaged over the cell area. The drawdowns predicted also are average values for the node, calculated as if the water were pumped at 100-percent efficiency over the entire cell area. Ground-water declines in the pumping nodes after 10 years of pumping at 280 and 560 gallons per minute were as much as 12 and 32 feet, respectively.

After 10 years of withdrawals, the hydrologic system nearly establishes a new equilibrium and little of the pumpage is derived from storage. Most of the withdrawals are derived from a reduction in the streamflow of the Rio San Jose and a decrease in loss of water to evapotranspiration. After 10 years of pumping at 280 and 560 gallons per minute, 50 and 48 percent of the pumpage are derived from a reduction in flow in the Rio San Jose. The remainder of the water withdrawn is derived from a reduction in the amount of water evapotranspired near the Rio San Jose due to the lowered water table.

### Ground-water withdrawals for public supply and irrigation

Seasonal ground-water withdrawal for irrigation at nodes 13-28 and 9-61 was simulated in addition to the continuous pumping in the New York-Seama area for public supply at nodes 7-25, 8-24, and 15-35. Nodes 13-28 and 9-61 are located in the area of existing Laguna irrigation wells 10.7.36.424a and 10.6.35.342a. The pumping for irrigation was assummed to take place only from May through September. At nodes 13-28 and 9-61, ground water was withdrawn at a rate of 200 gallons per minute for a 153-day pumping period



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followed by a 212-day recovery period each year. The simulated public-supply pumpage was set at the approximate present-day rate of 280 gallons per minute from nodes 7-25, 8-24, and 15-35. The predicted water-level declines were about 7 feet at node 13-28 and 14 feet at node 9-61 after the 10th pumping period. To predict aquifer response to more intensive ground-water development in the area, the simulated pumping rate at each node was doubled, resulting in a pumping rate of 400 gallons per minute for irrigation at nodes 13-28 and 9-61 and 560 gallons per minute for public supply at nodes 7-25, 8-24 and 15-35. At these pumping rates, the predicted water-level declines were about 18 feet at node 13-28 and 37 feet at node 9-61 after the 10th pumping period.

The seasonal irrigation pumping increased the simulated drawdown at the nodes representing public-supply wells. Irrigation pumping at 200 gallons per minute at nodes 13-28 and 9-61 caused an additional drawdown of as much as 3 feet at nodes 7-25, 8-24, and 15-35 when their combined pumping rate was 280 gallons per minute. For irrigation withdrawals of 400 gallons per minute at nodes 13-28 and 9-61, drawdowns were increased in the New York-Seama area by as much as 14 feet after 10 years of pumping.

During each nonirrigation period, water levels recovered. For simulations at 200 gallons per minute, water levels nearly recovered to the levels that would have existed had irrigation pumpage not taken place. The recovery of water levels during the winter nonirrigation months was due in part to recharge of the aquifer from surface water in the Rio San Jose. In the simulation, winter flows of the Rio San Jose (which are not presently being used) were stored in the aquifer for use during the following irrigation season. During the 10th nonirrigation season, for example, recharge to ground-water storage was 269 and 370 acre-feet for simulations of irrigation pumping of 270 and 540 acre-feet (withdrawals from two nodes at 200 and 400 gallons per minute for 153 days). Much of this recharge was derived from the Rio San Jose.

## Ground-water withdrawals for irrigation

A simulation based solely on intensive ground-water withdrawals for irrigation was examined because: (1) Intensive ground-water withdrawals for irrigation may cause unacceptable water-level declines in public-supply wells completed in the valley-fill aquifer; and (2) surface- and ground-water supplies of suitable quality for public supply exist in several areas of the pueblo away from the modeled area. The response of the valley-fill aquifer to 10 years of seasonal withdrawals of ground water for irrigation was simulated based on total pumping rates of 1,400 and 2,600 gallons per minute. Pumping rates at specific nodes are shown in the following table.

| Total simulated pumping rate, in gallons per minute | Pumping rate, in gallons per minute at specific node | | | | | |
|---|---|---|---|---|---|---|
| | 9-69 | 14-63 | 15-49 | 10-57 | 13-36 | 13-53 |
| Pumping rate 1,400 | 200 | 200 | 200 | 200 | 300 | 300 |
| Pumping rate 2,600 | 200 | 400 | 400 | 400 | 600 | 600 |



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Withdrawals of 1,400 gallons per minute resulted in predicted drawdowns of as much as 20 feet near pumping centers at the end of 10 years. However, after the 10th recovery period, water levels rose to within about 5 feet of initial pre-pumping levels. During the recovery period, ground-water storage was recharged by 700 acre-feet, about 73 percent of the amount of water withdrawn in the previous pumping period.

Increasing withdrawals to 2,600 gallons per minute resulted in predicted drawdowns of more than 30 feet near pumping centers after 10 years. Water levels rose to within about 10 feet of prepumping levels after the 10th recovery period. Ground-water storage was replenished by 1,000 acre-feet during the 10th recovery period, which was 58 percent of the amount of water withdrawn during the previous pumping period.

Pumping at high rates lowers the water table and may reduce the amount of water lost to evapotranspiration. The model simulation at 1,400 gallons per minute indicated that about 540 acre-feet of water per year was salvaged in this manner. For the 2,600 gallons-per-minute simulation, an even greater salvage, about 900 acre-feet, was predicted. Estimates of water salvaged by lowering the effective loss to evapotranspiration are, at best, only educated guesses. In practice, most attempts to actually salvage the predicted quantities of water have been unsuccessful.

## Sensitivity analysis

Model predictions will be in error if the hydrologic properties that were entered to the model were estimated incorrectly. To test the sensitivity of the steady-state model to variations in horizontal hydraulic conductivity, specific yield, and stream leakage, several simulations were performed, changing only one property in each simulation.

The sensitivity of the model to changes in hydraulic conductivity, specific yield, and stream leakage was evaluated based on 5 years of ground-water withdrawals at nodes 9-61, 8-24, and 12-45 (fig. 39). The three pumping centers were chosen to evaluate model sensitivity in areas of probable ground-water development and at various distances from hydrologic boundaries. Node 9-61 is located at the mouth of Encinal Canyon, where ground water is presently being withdrawn for irrigation; node 8-24 is located in the New York well field; and node 12-45 is located near the Rio San Jose south of Casa Blanca.

The sensitivity analyses were conducted over the range of plausible values for hydraulic conductivity (+100 to -50 percent of the best-fit values), vertical hydraulic conductivity of the streambed (+100 to -50 percent), and specific yield (+33 to -33 percent). The modeled aquifer response is most sensitive to changes in hydraulic conductivity. A 50-percent decrease in the estimate of hydraulic conductivity caused a 96-percent increase in simulated drawdown at node 9-61 after 5 years. A comparable 50-percent decrease in streambed leakage resulted in an increase of 45 percent at node 12-45; a 33-percent decrease in specific yield resulted in an increase of 13 percent at node 9-61.



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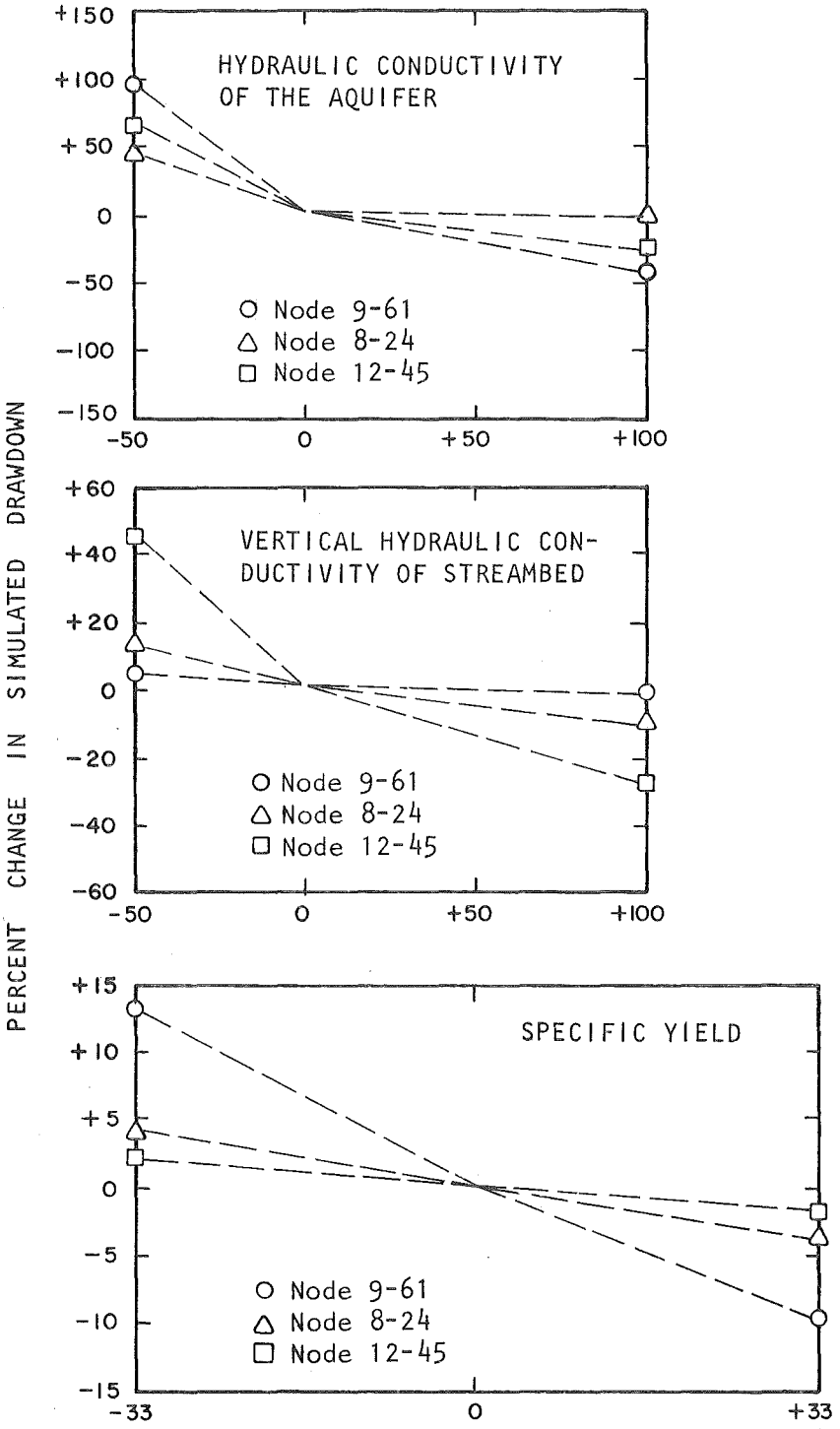


Figure 39.--Sensitivity of simulated drawdowns to changes in hydraulic conductivity, vertical hydraulic conductivity of the streambed, and specific yield after 5 years of groundwater withdrawals at nodes 9-61, 8-24, and 12-45.



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For a node, the degree of sensitivity of simulated drawdown to changes in hydrologic properties is dependent on the location of that node in the modeled area. Changes in hydraulic conductivity of the aquifer affected predicted drawdowns at node 9-61 the greatest amount. Of the three nodes, this node is farthest away from the stream. Node 12-45, closest to the Rio San Jose, was most affected by changes in the vertical hydraulic conductivity of the streambed, whereas node 9-61 was relatively insensitive. The opposite effect was observed when the specific yield was varied; the most sensitive node (9-61) was farthest away from the stream, and the least sensitive node (12-45) was closest.

Estimates of the amount of water salvaged when the water table is lowered (and evapotranspiration rates decreased) also are sensitive to changes in hydrologic parameters. The estimated salvage resulting from pumping for 5 years at nodes 9-61, 8-24, and 12-45 was about 200 acre-feet per year using the best fit hydrologic parameters. Lowering the specific-yield value used in the simulation by 33 percent resulted in a 38-percent increase in the estimated quantity of water salvaged. A 50-percent decrease in the value for the hydraulic conductivity of the streambed resulted in a 73-percent increase in the amount of water salvaged, and doubling the value of the hydraulic conductivity of the aquifer caused a 63-percent decrease in the estimated salvage.

# SUMMARY AND CONCLUSIONS

The purpose of this study was to better define the hydrology of the Pueblo of Laguna; major emphasis was placed on quantifying potential water resources available for irrigation and public supply. Areas of potential ground- and surface-water development are shown on plate 1 and summarized in the following sections.

## Possible ground-water development

### Public supply

New York-Seama area.--The alluvium and basalt that fill the valley along the Rio San Jose yield 50 to 450 gallons per minute of water to wells. Aquifer tests indicate that the transmissivity of the valley fill ranges from 290 to 17,000 feet squared per day (table 4). Although the alluvium yields adequate quantities of water throughout the valley, water quality is acceptable for public supply only where Cubero and Encinal Creeks recharge the alluvium.

Ground water in the alluvium in the New York-Seama area presently is the major source of public-supply water for valley residents (plate 1). The alluvium in this area yields ground water containing 500 to 1,200 milligrams per liter of dissolved solids. Perennial, spring-fed streamflow of Cubero



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Creek, which averages 0.30 cubic foot per second, recharges the alluvium with water of excellent quality. Modeling indicates that total recharge from Cubero Creek, which includes seepage from ungaged stormflows, is about 0.42 cubic foot per second. Modeling also indicates that present withdrawals in this area could be increased to about 560 gallons per minute if several wells were used. At this rate, drawdowns of more than 32 and 12 feet are predicted in the New York and Seama areas, respectively. However, pumping will draw water from outside of the zone of good-quality water created by recharge from Cubero Creek. The result will be a degradation of the water quality.

New Laguna area--Ground water for public supply can be obtained from the alluvium at the mouth of Encinal Canyon (plate 1). The alluvium at this location is recharged at a rate of about 0.08 cubic foot per second by stormflows of good-quality water in Encinal Creek. The alluvium yields water containing 500 to 1,200 milligrams per liter dissolved solids. However, the water quality may be expected to deteriorate if ground water is pumped from the area.

Encinal area.--Ground water for public supply can be obtained from the Dakota Sandstone near Encinal (plate 1). Wells yield about 20 to 50 gallons per minute of water containing 800 to 1,200 milligrams per liter of dissolved solids. This water could be mixed with better quality water such as that from Encinal Springs. An additional 70 to 85 gallons per minute of water containing less than 200 milligrams per liter of dissolved solids is available from springs.

Paguate area.--Ground water of excellent quality is presently obtained for public supply from the alluvium along Paguate Creek near the village of Paguate (plate 1). Additional development is possible in this area. The alluvium will sustain individual well yields of as much as 50 gallons per minute of water containing 300 to 500 milligrams per liter of dissolved solids. The alluvium is recharged by seepage of about 300 gallons per minute of water from the Rio Paguate on pueblo lands upstream from State Highway 279. Presently, the majority of this water probably is lost to evapotranspiration. Additional ground-water withdrawals of as much as 250 gallons per minute might salvage some of this water loss.

Another possible source of ground water in the Paguate area is from sandstones of the Morrison Formation. Although yields of these individual sandstones are not high, wells completed in several of the units will produce 5 to 50 gallons per minute of water containing 500 to 1,500 milligrams per liter of dissolved solids.

Caprock-Sand dune area.--An 18-square mile area south of the village of Laguna was previously believed to be an area of possible ground-water development for public supply. Two test wells drilled in Jurassic sandstones in this area produce potable water but yield, in general, less than 5 gallons per minute.



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Tributary valleys on flanks of Mount Taylor.--Test drilling for ground water in the alluvium in Seco, Castillo, and Encinal Canyons indicated that the saturated thickness of the alluvium was insufficient to yield water for public supply.

Santa Fe Group on Sedillo Grant.--The unconsolidated deposits of the Santa Fe Group probably yield 20 to 100 gallons per minute of water to wells penetrating a graben structure near Cañon de los Apaches (plate 1). The water contains 300 to 1,500 milligrams per liter dissolved solids. This area probably contains the best quality ground water available on the Sedillo Grant.

Major's Ranch area.--Obtaining ground water for public supply may be possible from sandstone units in the Brushy Basin Member and Westwater Canyon Member of the Morrison Formation on the western part of the Major's Ranch area (plate 1). Although no wells were drilled or inventoried in this area, yields and water quality from nearby uranium mines indicate that these sandstones may yield several hundred gallons of water per minute containing 1,000 to 2,000 milligrams per liter of dissolved solids.

## Irrigation

Ground-water development for irrigation is severely limited by the low yields or inadequate quality of water in the geologic units beneath the pueblo.

Valley fill along the Rio San Jose--Probably the only shallow aquifer on the pueblo capable of supplying large amounts of water to irrigation wells is the valley-fill aquifer along the Rio San Jose. Water-quality deterioration east of the village of Laguna restricts ground-water development to a section of the valley from the western pueblo boundary to New Laguna Reservoir (plate 1). Most ground water in the valley fill presents salinity and sodium hazards to various degrees. Irrigation water could be used with careful management practices to avoid salt buildup or hardpan conditions caused by sodium dispersal of clays.

Yields from the valley fill are extremely variable due to the heterogeneous composition of the fill. Aquifer tests indicate that transmissivities range from 290 to 17,000 feet squared per day and specific capacities from 0.04 to 33.9 gallons per minute per foot of drawdown. Most wells properly completed throughout the entire thickness of the aquifer probably will produce 50 to 450 gallons per minute.

Ground water withdrawals for irrigation water were simulated by a digital model of the valley-fill aquifer. Water-level declines of more than 30 feet were estimated for ground-water withdrawals of 2,600 gallons per minute in the valley west of Laguna. The model included the influences of recharge from the Rio San Jose and boundary conditions of the valley walls on drawdowns. The model illustrated that ground water in storage may be used



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during irrigation seasons and replenished during nonirrigation periods. If the water table is lowered, the aquifer becomes a reservoir for storage of previously unused winter flows of the Rio San Jose. After withdrawals during the previous irrigation period, the potential for recharge to storage during the nonirrigation season was estimated by model simulation to be as much as about 1,000 acre-feet. The model also indicated that ground water previously lost through evapotranspiration may be salvaged in amounts as much as 900 acre-feet per year.

Major's Ranch area.--Ground water from the Westwater Canyon Member of the Morrison Formation might be available in sufficient quantity on the Major's Ranch area to supply irrigation wells. Although no wells were drilled or tested in the area for this study, dewatering of nearby uranium mines indicates that the Westwater Canyon Member might yield several hundred gallons per minute of water containing 1,000 to 2,000 milligrams per liter of dissolved solids. This water probably will contain moderate to high sodium and salt hazards, but with careful management practices it may be acceptable for use.

### Stock water

Water suitable for livestock may be obtained from various aquifers beneath all parts of the pueblo. Water-quality criteria for livestock are listed in table 17 and may be compared to water-quality analyses for selected wells in this report (tables 5-8).

### Possible surface-water development

Rio San Jose.--Possible additional development of surface water for irrigation may be obtained by storing winter flows of the Rio San Jose for later use. Summer flow in the stream presently is fully utilized. After filling Acomita Lake, winter flows in the Rio San Jose totaling about 2,400 acre-feet flow unused through the pueblo. A part of this flow will be stored in Seama Reservoir, which presently is under construction on the Pueblo of Laguna. The maximum storage capacity of Seama Reservoir will be about 480 acre-feet.

Another method of salvaging unused winter streamflow that has been proposed previously (Dinwiddie and Motts, 1964) is to use ground-water storage. Lowering ground-water levels by pumping during the irrigation season will cause the Rio San Jose to recharge the valley-fill aquifer during the nonirrigation season. The maximum leakage rate of the Rio San Jose was estimated based upon gaging-station records near Laguna and at Correo. The maximum stream loss for an average flow of 7 cubic feet per second is 0.56 cubic foot per second per mile. Digital-model simulations of irrigation pumping based on this leakage rate predict possible recharge volumes of as much as 1,000 acre-feet after water levels in the aquifer were lowered by pumping. Irrigation with water from the Rio San Jose needs to be used with careful management practices due to the high dissolved-solids concentrations and moderate sodium hazards.



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Encinal Creek.--The perennial flow in the headwaters of Encinal Creek is sustained by springs that have a combined flow of about 100 gallons per minute. About 15 to 30 gallons per minute is used for the public supply of the village of Encinal and the remainder is used for irrigation or lost to seepage in the alluvium along the stream. An additional supply of 70 to 85 gallons per minute of excellent-quality water containing less than 200 milligrams per liter of dissolved solids (suitable for public supply) is available from springs in Encinal Canyon.

Rio Paguate.--The average streamflow entering the Pueblo of Laguna in the Rio Paguate is about 1 cubic foot per second. The streamflow presently is used for irrigation during summer months, although the quality is acceptable for public supply. Winter flows of as much as 100 acre-feet are stored in two small reservoirs northwest of Paguate. Additional reservoir capacity could store as much as 300 acre-feet of winter streamflows that are presently unused.

The streamflow also could be used indirectly by increasing ground-water withdrawals in the alluvium along the stream. Presently, about 250 gallons per minute of streamflow that seeps into the alluvium is lost through evapotranspiration. Increased pumpage would lower ground-water levels and salvage some of this loss while drying up the marshy surface.

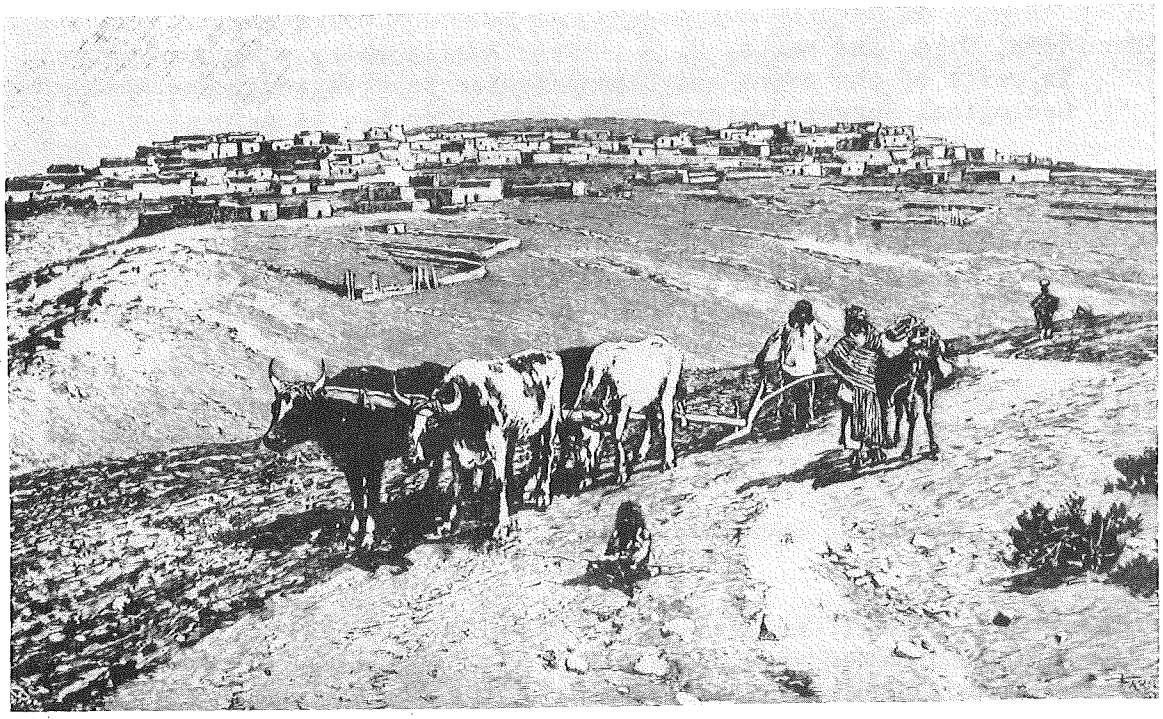



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Table 1.—Records of wells.

EXPLANATION:

Location number: See text for explanation.

Latitude-Longitude: Determined from U.S. Geological Survey 7 1/2- and 15-minute topographic quadrangle maps.

Depth: Depths followed by M were measured; all others were reported. An asterisk (*) following the depth indicates a driller's log is available for the well.

Altitude: Altitude of land surface at the well, in feet above sea level, determined from U.S. Geological Survey 7 1/2- and 15-minute topographic quadrangle maps.

Water level: Water levels followed by R were reported; all others were measured.

Principal water-bearing unit: Qal, alluvium; Qb, Quaternary basalt; QTb, Older basalt; QTs, Santa Fe Group; Kmv, Mesaverde Group; Km, Mancos Shale; Kd, Dakota Sandstone, Jm, Morrison Formation; Jb, Bluff Sandstone; Jt, Todilto Formation; Js, Summerville Formation; Je, Entrada Sandstone; Tc, Chinle Formation; Psa, San Andres Limestone; Glorieta Sandstone

Specific conductance: Specific conductances followed by an asterisk (*) were measured in a laboratory and chemical analyses are available. All other specific conductances were measured onsite; those followed by T were measured in a storage tank or trough. An asterisk alone indicates a chemical analysis is available, but specific conductance was not measured.

Use: D, domestic, Ind, industrial; I, irrigation; N, none; O, observation; P, public supply; S, stock.

Remarks: Yield data is given in gallons per minute (gal/min). The method of determining yield has been specified if known.

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6.7.18.113 Wilson | 34°45'07" 107°37'23" | Pueblo of Laguna | - | 115M | 7,248 | 26.4 | 8-14-73 | 7,222 | Km | 6,100<br>5,070* | 09-07-73<br>07-09-63 | S | -<br>- |
| 6.7.32.434 Ward | 34°41'52" 107°35'37" | do. | 1938 | 125 | 7,105 | 138.2 | 8-14-75 | 6,967 | Qal, Kd(?) | 1,100T | 05-04-73 | S | - |
| 6.7.34.341 Blue Water | 34°41'54" 107°33'58" | do. | 1965 | 155* | 7,060 | 106.6 | 8-14-73 | 6,953 | Qal, Kd(?) | 630* | 11-02-73 | S | Pumped at 6 gal/min in 1965. |
| 7.1.31.124 | 34°47'44" 107°59'06" | Huning | - | 97 | 5,048 | 74.1 | 2-10-56 | 4,974 | QTs | 8,540* | 04-26-56 | S | Reported yield gal/min. Data from Titus (1963). |



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Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.2.10.444 RWP 5 | 34°50'28" 107°01°43" | Pueblo of Laguna | 1944 | 272* | 5,211 | 212.4 | 1-17-57 | 4,999 | Kmv | 9,430T* | 6-5-75 | S | Bailed at 14 gal/min in 1944. Water level from Titus (1963). |
| 7.2.29.214 RWP 6 | 34°48'31" 107°04'03" | do | 1956 | 215M | 5,220 | 150.0 | 8-16-73 | 5,070 | QTs | 4,660* | 6-11-73 | S | - |
| 7.2.34.341 | 34°47'10" 107°02'19" | New Mexico and Arizona Land Co. | - | 137 | 5,173 | 122.6 | 2-10-56 | 5,050 | QTs | - | - | S | Data from Titus (1963). |
| 7.4.6.342 Homestead | 34°51'32" 107°17'58" | Harrington | - | 60 | 5,738 | 37.4 | 11-2-73 | 5,701 | Qal, QTb | 500 | 11-2-73 | S | Cleaned and as received 10-73. |
| 7.5.6.221 Romero | 34°52'10" 107°23'56" | - | - | - | 5,757 | - | - | - | Qal | 1,800 | 8-31-73 | S | - |
| 7.5.6.221a | 34°52'11" 107°28'55" | - | - | 61M | 5,757 | 55.4 | 8-31-73 | 5,702 | Qal | - | - | N | - |
| 7.6.10.434 Marmon | 34°50'34" 107°27'07" | H. Marmon | - | 91M | 5,852 | 71.4 | 10-5-73 | 5,781 | Qal | 1,400T | 10-5-73 | S, D | - |
| 7.6.10.434a Marmon | 34°50'33" 107°27!07" | do. | - | 78M | 5,854 | 73.4 | 10-5-73 | 5,781 | Qal | 1,600T | 10-5-73 | S | - |
| 7.6.18.424 Sarracino | 34°49'53" 107°30'03" | Sarracino | - | 58M | 5,940 | 46.2 | 10-5-73 | 5,894 | Qal | 1,200 | 10-5-73 | S, D | - |



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Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7.6.19.222 Rivera | 34°49'38" 107°30'08" | Rivera | - | 86 | 5,946 | - | - | - | Qal | 1,200T | 10-5-73 | S, D | - |
| 7.6.20.314 Rivera | 34°49'02" 107°29'54" | do. | - | 77M | 5,959 | 52.2 | 10-5-73 | 5,907 | Qal | 1,000 | 10-5-73 | S | - |
| 7.6.22.331 Alberts Homestead | 34°48'59" 107"27'53" | H. Marmon | - | 103M | 5,822 | 86.3 | 10-5-73 | 5,736 | Qal,QTb(?) | 3,000 | 10-5-73 | S | - |
| 7.6.30.222 Daily | 34°48'43" 107°30'07" | Daily | - | 68M | 5,968 | 58.0 | 10-5-73 | 5,910 | Qal | 1,350 | 10-5-73 | S | - |
| 8.2.1.333 RWP 3 | 34°56'32" 107°00'33" | Pueblo of Laguna | 1967 | 170* | 5,184 | 134.5 | 6-29-73 | 5,049 | Kmv | 5,430* | 6-5-75 | S | - |
| 8.3.6.224 RWP 37 | 34°57'15" 107°11'12" | do. | 1974 | 145* | 5,515 | 109.2 | 1-17-75 | 5,406 | Qb,Qal | 6,000 | 2-10-75 | S | - |
| 8.3.8.222 Marys | 34°56'29" 107°10'08" | Harrington | - | 108M | 5,496 | 97.7 | 4-3-74 | 5,398 | Qal,Qb | - | - | N | - |
| 8.3.10.313 | 34°55'58" 107°08°58 | do. | 1953 | - | 5,470 | 80.0 | 6-4-57 | 5,390 | Qal,Qb | - | - | S | Data from Titus (1963). |
| 8.3.11.232 CCC 1 | 34°56'14" 107°07'12" | Pueblo of Laguna | - | 79M | 5,418 | 63.7 | 8-16-73 | 5,354 | Qal,Qb | 3,940* | 4-21-75 | D, S | - |
| 8.3.15.413 | 34°55'03" 107°08'27" | United Brokers | - | 1,250 | 5,550 | Flowing | 4-3-74 | - | Psa(?) | 15,800*<br>15,800* | 11-29-63<br>5-28-75 | N | Well drilled by AT&SF Railroad. |



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Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.3.19.343 Millet | 34°53'58" 107°11'50" | Harrington | 1957 | - | 5,595 | 43.2 | 6-4-57 | 5,552 | Qal,Qb | - | - | S | Data from Titus (1963). |
| 8.3.20.211 McGaughys | 34°54'46" 107°10'32" | do. | - | - | 5,534 | - | - | - | Qal,Qb | 4,500* | 2-8-57 | S | do. |
| 8.4.15.123 ECW 10 | 34°55'30" 107°14'57" | Pueblo of Laguna | 1934 | 231* | 5,616 | 127.7 | 12-18-74 | 5,488 | Qb, Tc | 3,470* | 10-29-73 | S | Yield 1 gal/min in 1969 when well reconditioned. |
| 8.4.22.344 ECW 9 | 34°54'05" 107°14'52" | do. | 1935 | 123* | 5,656 | 92.9 | 6-25-73 | 5,563 | Qal,Qb | 3,500 | 6-25-73 | S | Bailed at 10 gal/min in 1935. |
| 8.4.29.444 Kose Sheep Camp | 34°53'11" 107°16'22" | - | - | 287M | 5,693 | 70.6 | 6-25-73 | 5,622 | Qal,Qb | - | - | N | Abandoned stock well. |
| 8.5.12.311 RWP 21 | 34°56'05" 107°19'28" | Pueblo of Laguna | 1964 | 145* | 5,685 | 34.5 | 8-17-73 | 5,650 | Tc | 3,290* | 11-16-73 | S | Yield 12 gal/min in 1964. |
| 8.5.17.213 | 34°55'31" 107°23'06" | do. | 1923 | 853* | 5,838 | Flowing | 7-19-75 | - | Tc | 65,000* | 6-12-75 | N | Flow less than 1/2 gal/min 7-19-74. Well filled with debris. Drilled by AT&SF RR. |



350001962

Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.5.22.234 RWP 23 | 34°54'28" 107°20'51" | Pueblo of Laguna | 1964 | 290* | 5,697 | - | - | - | Trc | - | - | N | Yield about 3 gal/min in 1964. Well plugged and abandoned because of bad water. |
| 8.5.34.431 ECW 11 | 34°52'20" 107°21'02" | do. | 1935 | 93* | 5,688 | 61.8 | 8-17-73 | 5,626 | Qal | 2,400T | 6-8-73 | S | Bailed at 6 gal/min in 1935. |
| 8.5.36.423 ECW 8 | 34°52'28" 107°18'37 | do. | 1935 | 69* | 5,685 | 52.2 | 5-1-73 | 5,633 | Qal | 720* | 11-2-73 | S | Bailed at 8 gal/min in 1935. |
| 8.6.8.234 RWP 14 | 34°56'14" 107°29'20" | do. | 1958 | 310* | 6,258 | 130.5 | 8-28-73 | 6,127 | Je | 3,500 | 4-1-75 | S | Pumped at 3.5 gal/min for about 2 hours with 59 feet drawdown in 1975. |
| 8.6.21.224 RWP 30 | 34°54'41" 107°28'02" | do. | 1967 | 455* | 5,950 | - | - | - | Trc | - | - | N | Reported "dry hole" Sounded 110 ft 9-21-73. |
| 8.6.24.412 RWP 22 | 34°54'24" 107°25'07" | do. | - | 420* | 5,830 | - | - | - | Trc | - | - | N | Reported "dry hole." |
| 8.6.36.432 Thompson | 34°52'26" 107°25'09" | Thompson | - | - | 5,777 | - | - | - | Qal(?) | 1,630* | 11-8-73 | S | Unable to measure water level. Casing apparently buried under sand. |



350001963

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8.7.10.213 ECW 7 | 34°56'30" 107°33'40" | Pueblo of Acoma | 1935 | 347* | 6,184 | 15.2 | 5-11-73 | 6,169 | Je | 1,280 | 2-5-74 | S | - |
| 8.7.14.223 RWP 34 | 34°55'39" 107°31'16" | Pueblo of Laguna | 1969 | 268* | 6,210 | 79.3 | 3-31-75 | 6,131 | Je | 1,200 | 5-3-73 | S | Pumped at 3 gal/min for about 2 hours with 60 feet drawdown in 1975. |
| 8.7.22.222 RWP 869 | 34°54'49" 107°33'13" | Pueblo of Acoma | 1952 | 243 | 6,228 | 32.6 | 8-3-77 | 6,195 | Je | 1,020 | 8-5-77 | S | - |
| 9.1.4.414 | 35°02'03" 106°56'36" | Everready Oil Co. | - | 450 | 5,282 | 138.2 | 1-16-75 | 5,144 | Qal,QTs | 6,000 | 1-16-75 | Ind | - |
| 9.1.4.432 | 35°01'55" 106°56'38" | Stuckys | - | 450 | 5,278 | 90 R | 1-16-75 | 5,188 | Qal,QTs | 4,360* | 6-5-75 | O | - |
| 9.1.8.142 Shell Oil test | 35°01'29" 106°58'00" | Shell Oil Co. | - | - | 5,398 | - | - | - | - | - | - | - | Water-quality data available for several depths. |
| 9.1.18.442 CCC 4 | 35°00'14" 106°58'25" | Pueblo of Laguna | - | 160 | 5,302 | 129.0 | 6-29-73 | 5,173 | QTs(?) | 3,750T | 6-29-73 | S | - |
| 9.2.2.314 | 35°01'04" 107°01'22" | Canoncito Reservation | - | - | 5,400 | - | - | - | Kmv(?) | 5,500T | 2-28-75 | S | - |
| 9.2.9.433 ECW 8 | 35°00'56" 107°03'06" | Pueblo of Laguna | 1940 | 445* | 5,585 | 98.6 | 6-29-73 | 5,486 | Kmv(?) | 6,900* | 7-3-74 | S | Bailed at 20 gal/min in 1940. |
| 9.2.24.230 BIA Sedillo | 35°59'37" 107°00'27" | do. | 1980 | 443* | 5,560 | 288 | - | 5,272 | QTs | 1,600* | 4-29-80 | S | Pumped at 12 gal/min for 24 hours with 84 feet drawdown in 1980. |



350001964

Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.2.27.422 RWP 9 | 34°58'40" 107°01'43" | Pueblo of Laguna | 1958 | 131* | 5,360 | 69.5 | 8-17-73 | 5,290 | Kmv,QTs(?) | 460* | 9-24-73 | S | Bailed at 20 gal/min in 1958. |
| 9.2.32.211 RWP 10 | 34°58'16" 107°04'12" | do. | 1962 | 720* | 5,600 | 250 R | 0-0-62 | 5,350 | Km(?)Kd(?) | - | - | N | Bad water: plugged and abandoned. |
| 9.3.11.411 RWP 13 | 35°01'15" 107°07'25" | do. | 1972 | 370* | 5,895 | 225.6 | 8-17-73 | 5,669 | Je | 2,600 | 6-11-73 | S | - |
| 9.3.13.422 CCC 2 | 35°00"27" 107°05'52" | do. | - | 160 | 5,663 | 97.0 | 6-29-73 | 5,566 | Kmv | 2,700 | 6-29-73 | S | - |
| 9.3.15.313 Harrington | 35°00'17" 107°08'54" | do. | 1969(?) | 50* | 5,707 | 16.6 | 4-26-73 | 5,690 | Qal, Je | 2,650 | 4-26-73 | S | - |
| 9.3.20.441 RWP 15 | 34°59'19" 107°10'18" | do. | 1959 | 250* | 5,580 | 125.3 | 6-26-73 | 5,455 | Tc | 4,000T | 6-26-73 | S | Yield 11 gal/min in 1959. |
| 9.3.25.233 CCC 7 | 34°58'54" 107°06'17" | do. | - | 50 | 5,519 | 22.6 | 8-17-73 | 5,496 | Qal | 3,000T | 8-17-73 | S | - |
| 9.3.29.414 ECW 3 | 34°58'35" 107°10'25" | do. | 1968 | 115* | 5,523 | 61.4 | 6-16-74 | 5,462 | Tc | 4,000 | 4-26-73 | O | Abandoned, 1973. |
| 9.3.29.414a Old ECW 3 | 34°58'36" 107°10'25" | do. | 1944 | 80* | 5,523 | 60.2 | 9-11-73 | 5,463 | Tc | - | - | N | - |
| 9.4.16.341 RWP 16 | 35°00'17" 107°16'07" | do. | 1959 | 123* | 5,620 | 54.8 | 5-3-73 | 5,565 | Qal, Tc | 3,870* | 5-1-59 | S | Yield 5 gal/min in 1959. |



350001965

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.4.19.124 El Rito | 34°59'52" 107°18'09" | Pueblo of Laguna | - | 160M | 5,650 | 61.4 | 5-1-73 | 5,589 | Tc | - | - | O | Abandoned as domestic supply because of poor quality. |
| 9.4.20.341 Weeker | 34°59'20" 107°17'09" | Sandy Weeker | 1962 | 47 | 5,601 | 26.9 | 5-8-73 | 5,574 | Qal | over 8,000T | 5-8-73 | S | - |
| 9.4.24.322 RWP 19 | 34°59'32" 107°12'50" | Pueblo of of Laguna | 1962 | 195* | 5,630 | 128.0 | 4-26-73 | 5,502 | Tc | 2,900 | 4-26-73 | S | Pumped at 12 gal/min for 12 hours in 1962. |
| 9.4.29.323 Fernando | 34°58'39" 107°17'12" | Romero Fernando | - | - | 5,596 | 17.5 | 5-1-73 | 5,578 | Qal | 3,660* | 5-1-73 | S | - |
| 9.4.33.223 Pino 1 | 34°58'12" 107°15'32" | Steven Pino | - | 90 | 5,598 | 30 R | 5-3-73 | 5,568R | Tc | 6,000 | 5-3-73 | S | Unable to measure water level. |
| 9.4.33.223a Pino 2 | 34°58'11" 107°15'31" | do. | 1972 | 100 | 5,600 | 26.7 | 5-3-73 | 5,573 | Tc | 5,640* | 5-3-73 | S | - |
| 9.4.34.214 Lente | 34°58'12" 107°14'42" | Luis Lente | 1950(?) | 56M | 5,556 | 15.7 | 5-3-73 | 5,540 | Qal | 3,600 | 5-3-73 | S | - |
| 9.5.4.133 ATSF | 35°02'21" 107°22'39" | AT&SF Railroad | - | - | 5,750 | Flowing | 5-21-72 | - | Qb | 2,390* | 9-13-73 | N | - |
| 9.5.9.231 Laguna 78-1 | 35°01'20" 107°22'13" | Pueblo of Laguna | 1978 | 510* | 5,880 | 35 | 12-20-78 | 5,845 | Jb, Je, Jt, Js | 3,500* | 12-21-78 | N | Pumped at 74 gal/min for 24 hours in 1978. Drawdown after 11 hours was 190 feet. |



350001966

Table 1.--Records of wells - Continued

| Location number and local name or number If known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.5.9.322 | 35°01'22" 107°22'22" | Pueblo of Laguna | - | 8 | 5,880 | - | - | - | Qal | - | - | N | Dug well, formerly supplied water to Laguna. |
| 9.5.12.442 Mesita test | 35°01'06" 107°18'36" | do. | 1964 | 1,729* | 5,642 | Flowing | 12-3-73 | - | Psa(?) | 13,000* | 12-3-73 | N | Flowed 15 gal/min in 1964 with a shut-in pressure of 170 psi. |
| 9.5.12.443 841 | 35°01'02" 107°18'46" | do. | 1923 | 80 | 5,670 | 59.9 | 12-3-73 | 5,610 | Qal | 5,500T | 12-3-73 | S D | - |
| 9.5.13.144 | 35°00'32" 107°19'05" | do. | - | 120M | 5,665 | 53.9 | 7-19-74 | 5,611 | Je, Trc | - | - | O | - |
| 9.5.13.233 Mesita P.S. | 35°00'36" 107°18'59" | do. | 1965 | 230* | 5,658 | 49.6 | 5-1-73 | 5,608 | Je, Trc | 1,440* | 1-19-73 | P | Pumped at 15 gal/min in 1965. Drawdown was 77 ft after 3 1/2 hours at 15 gal/min. |
| 9.5.13.411 Burnell 2 | 35°00'26" 107°18'58" | do. | 1963 | 123* | 5,658 | 42.9 | 5-8-73 | 5,615 | Trc | 1,850* | 5-2-63 | N | Pumped at 22 gal/min 1963. Drawdown was 51 ft after 24 hours at 22 gal/min. |
| 9.5.14.244 Burnell 1 | 35°00'35" 107°19'38" | do. | 1963 | 430* | 5,700 | - | - | - | Je(?) | 2,340* | 1963 | N | Bailed at 13 gal/min. |
| 9.5.17.141 Test hole 1 | 35°00'42" 107°23'30" | Transwestern Pipeline Co. | 1966 | 655* | 5,980 | - | - | - | Jb, Je | - | - | N | Yielded two bailers after 2 days. |



350001967

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.5.19.234 Test hole 2 | 34°59'40" 107°24'10" | Trans-western Pipeline Co. | 1966 | 355* | 6,050 | - | - | - | Jb | 510* | 8-23-66 | N | Bailed hole dry. recovered 10 ft. in 1 hr 10 min. |
| 9.5.19.241 Test hole 3 | 34°59'50" 107°24'00" | do. | 1966 | 172* | 6,080 | - | - | - | Jb | - | - | N | - |
| 9.5.19.421 Test hole 5 | 34°59'32" 107°24'10" | do. | 1966 | 320* | 6,100 | - | - | - | Jb | 370* | 8-23-66 | N | - |
| 9.5.23.424 RWP 20 | 34°59'29" 107°19'42" | Pueblo of Laguna | 1963 | 400* | 5,750 | 105.3 | 5-11-73 | 5,645 | Je, Tkc | 1,370T | 5-11-73 | S | Yield 8 gal/min. Plugged back to 143 ft. Originally Burnell 3. |
| 9.5.24.413 EPNG 3 | 34°59'27" 107°19'02" | El Paso Nat. Gas | 1957 | 285* | 5,686 | 55 R | 2-17-57 | 5,631 | Tkc | -* | - | Ind | Pumped at 40 gal/min in 1957. Drawdown was 205 ft at 40 gal/min. |
| 9.5.24.414 EPNG 2 | 34°59'28" 107°18'54" | do. | 1957 | 125* | 5,677 | 54 R | 1-27-57 | 5,623 | Tkc | - | - | Ind | - |
| 9.5.26.411 RWP 29 | 34°58'46" 107°20'00" | Pueblo of Laguna | 1967 | 145 | 5,740 | 76.2 | 5-11-73 | 5,664 | Tkc | 1,070T | 5-11-73 | S | Yield 7 gal/min in 1967. |
| 9.5.29.232 RWP 25 | 34°59'00" 107°23'06" | do. | 1965 | 413* | 6,238 | 271.5 | 5-21-73 | 5,966 | Je | 2,670* | 12-11-73 | | S Yield 4 1/2 gal/min in 1965. Plugged back to 360 ft. |
| 9.6.1.121 Johnson | 35°02'37" 107°25'33" | Johnson | - | - | 5,885 | 54.4 | 5-24-73 | 5,831 | Qal,Qb | - | - | N | Reported good water. |



350001968

Table 1.--Records of wells - Continued

| Location number and local name or number If known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.6.1.124 Gunn | 35°02'32" 107°25'29" | Wally Gunn | 1944(?) | 70 | 5,875 | 33 R | 5-24-73 | 5,842 | Qal,Qb | - | - | I | Yield 70 gal/min; well unused when visited. |
| 9.6.1.124a Gunn | 35°02'30" 107°25'26" | do. | 1923 | 70 | 5,875 | 34.0 | 5-24-73 | 5,841 | Qal,Qb | - | - | N | Renovated in 1973. |
| 9.6.1.213 Gunn | 35°02'29" 107°25°21" | do. | 1933 | 70 | 5,870 | 32.3 | 5-24-73 | 5,838 | Qal,Qb | - | - | N | - |
| 9.6.1.411 Test hole 4 | 35°02'12" 107°25'20" | Trans-western Pipeline Co. | 1966 | 74* | 5,860 | - | - | - | Qal | 6,000 | 8-3-66 | N | - |
| 9.6.2.122 Mariano | 35°02'32" 107°62'32" | L. Mariano | - | 60 | 5,898 | 43.4 N | 11-16-73 | 5,855 | Qal,Qb | 1,550 | | N | Conductance reported by Dinwiddie and Motts (1964) |
| 9.6.2.123 Laguna 76-7 | 35°02'32" 107°26'37" | Pueblo of Laguna | 1976 | 170* | 5,890 | 31.7 | 1-25-77 | 5,858 | Qal | 3,100* | 8-24-78 | O | Bailed at 20 gal/min for 1/2 hour in 1978 with less than 5 feet drawdown. |
| 9.6.2.241 Marmon | 35°02'27" 107°26'08" | Walter Marmon | - | - | 5,884 | - | - | - | Qal,Qb | - | - | - | Well blocked at 16 ft. |
| 9.6.4.112 Touchin | 35°02'35" 107°28'49" | Touchin | - | 57M | 5,935 | 31.9 | 10-19-73 | 5,903 | Qal,Qb | - | - | N | Windmill on well. |
| 9.6.4.222 Lucero | 35°02'36" 107°28'06" | S. Lucero | - | 70M | 5,910 | 25.4 | 11-16-73 | 5,885 | Qal | - | - | N | Reported salty. |



350001969

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.6.4.243 Mooney | 35°02'17" 107°28'12" | Mooney | 1971(?) | 183M | 5,910 | 30.1 | 9-10-73 | 5,880 | Jb | 2,590* | 10-21-74 | O | - |
| 9.6.4.433 Standard | 35°01'54" 107°28'32" | Standard Oil | - | 357 | 5,938 | Flowing | 11-30-73 | - | Jb,Je | 4,200* | 6-12-75 | N | Flowed 3 gal/min on 7-19-74. Pressure prior to flowing was 5 1/2 psi. |
| 9.6.5.221 Acoya | 35°02'40" 107°29'18" | Acoya | - | 71M | 5,934 | 27.8 | 7-19-74 | 5,906 | Qal | - | - | N | Windmill on well. |
| 9.6.5.222 Laguna 76-6 | 35°02'40" 107°29'12" | Pueblo of Laguna | 1976 | 120* | 5,930 | 20.4 | 1-24.77 | 5,910 | Qal,Qb | 2,500* | 1-25-77 | O | Pumped at 124 gal/min for 24 hours in 1977 with 11.4 feet drawdown. |
| 9.6.6.211 Seama-Mesita | 35°02'40" 107°30'36" | do. | - | 150 | 5,942 | 8.8 | 6-22-73 | 5,933 | Qal | 880 | 12-3-73 | P, O | Well reportedly pumped sand; presently unused. |
| 9.6.6.233 Philadelphia | 35°02'21" 107°30'35" | do. | - | 37M | 5,958 | 26.7 | 12-3-73 | 5,931 | Qal | - | - | N | - |
| 9.6.9.223 ECW 16 | 35°01'36" 107°28'14" | do. | 1941 | 45* | 5,906 | 24.9 | 9-13-73 | 5,881 | Qal, Jb | Over 8,000 | 11-30-73 | N | Yield 2 1/2 gal/min in 1941. |
| 9.6.10.124 Casa Blanca | 35°01'42" 107°27'34" | do. | - | 21M | 5,898 | 15.9 | 9-25-73 | 5,882 | Qal | 520* | 11-16-73 | N | Western well of three; other two are dry. |



350001970

Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.6.13.322 Trans-western 2 | 35°00'27" 107°25'29" | Trans-western Pipeline Co. | 1966 | - | 6,045 | 35.2 | 11-18-73 | 6,010 | Jb(?) | 1,110* | 5-12-67 | N | - |
| 9.6.13.343 Trans-western 1 | 35°00'07" 107°25'37" | do. | 1967 | 480 | 6,138 | 141.9 | 11-18-73 | 5,996 | Jb, Je | 1,150* | 5-12-67 | N | Yield 1/2 gal/min in 1967. Drawdown was 87 ft. after 1 1/2 hrs at 1/2 gal/min. |
| 9.6.20.412 RWP 18 | 34°59'36" 107°29'29" | Pueblo of Laguna | 1958 | 172 | 6,030 | 53.6 | 8-28-73 | 5,976 | Je | 2,800T | 8-28-73 | S | Yield 20 gal/min in 1962. Drawdown 12 ft at 20 gal/min. |
| 9.6.26.233 RWP 24 | 34°58'51" 107°26'23" | do. | 1964 | 115* | 6,185 | 71.5 | 8-28-73 | 6,113 | Jb | 460* | 10-11-73 | S | Pumped at 5.1 gal/min for 8 hours in 1978 with 1.1 ft of drawdown. |
| 9.6.26.443 Timia | 34°58'21" 107°26'07" | do. | 1978 | 530* | 6,230 | 69 | 10-31-78 | 6,161 | Jb, Je | 450* | 10-18-78 | N | Bailed dry in 1978. |
| 9.6.31.143 ECW 6 | 34°57'56" 107°30'49" | do. | 1934 | 41* | 6,078 | 30.8 | 8-28-73 | 6,047 | Je | 2,530* | 5-13-57 | S | Bailed at 10 gal/min 1934. |
| 10.2.25.444 Cañoncito P.S. 2 | 35°03'36" 106°59'34" | Cañoncito | 1974 | 1,000 | 5,380 | 136R | 9-25-74 | 5,244 | QTs | 2,180* | 9-26-74 | - | Pumped at 41 gal/min for 24 hours with 114 ft of drawdown. |
| 10.3.17.111 RWP 38 | 35°05'06" 107°11'08" | do. | 1975 | - | 6,460 | - | - | - | - | - | - | - | - |



350001971

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.4.4.114 Analla | 35°07'42" 107°16'13" | Analla | - | 21M | 5,920 | 18.3 | 10-5-73 | 5,902 | Qal | 1,400 | 10-5-73 | N | - |
| 10.4.8.344 ECW 3 | 35°06'14" 107°17'06" | Pueblo of Laguna | 1935 | 388* | 5,899 | 127.1 | 5-21-73 | 5,772 | Jb | 2,090* | 4-4-74 | S | Yield 5 gal/min in 1935. |
| 10.4.30.414 RWP 28 | 35°03'52" 107°17'48" | do. | 1966 | 355* | 5,875 | 185.8 | 5-21-73 | 5,689 | Je | 2,670* | 3-15-74 | S | Yield 16 gal/min in 1966. |
| 10.4.34.241 RWP 27 | 35°03'16" 107°14'27" | do. | 1965 | 505* | 5,820 | 143.2 | 5-23-73 | 5,677 | Je | 4,600 | 5-23-73 | S | Bailed at 6 gal/min in 1965. Plugged back to 412 ft. |
| 10.4.36.224 RWP 32 | 35°03'25" 107°12'18" | do. | 1968 | 650* | 6,440 | 594.3 | 9-13-73 | 5,846 | Jb | 2,810* | 3-27-68 | S | Yield 10 gal/min for 7 hours in 1968. |
| 10.5.2.134 Housing 1 | 35°07'34" 107°20'25" | Anaconda Co. | - | 180 | 5,915 | 53.4 | 11-5-74 | 5,862 | Jm | 2,200 | 9-20-65 | N | Yield 8 gal/min. Former domestic supply. |
| 10.5.2.143 Housing 2 | 35°07'31" 107°20'21" | do. | 1955 | 415 | 5,905 | 42.2 | 11-5-74 | 5,863 | Jm | 2,250 | 5-19-71 | D | Yield 15 gal/min. |
| 10.5.3.224 Jackpile 5 | 35°07'44" 107°20'40" | do. | 1959 | 415 | 5,920 | - | - | - | Jm,Jb | - | - | N | Yield 5 gal/min. Former domestic supply. |
| 10.5.4.323 P-10 | 35°07'20" 107°22'31" | do. | 1974 | - | 6,175 | - | - | - | Jm | 1,650* | 11-25-74 | | - |



350001972

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.5.5.142 MDH 771 | 35°07'38" 107°23'20" | Anaconda Co. | 1959 | 329 | 6,220 | 193.7 | 12-3-74 | 6,027 | Jm | 1,350 | 9- -62 | O | Yield 8 gal/min in in 1963. Drilled to supply water for exploration drilling. |
| 10.5.9.223 Paquate Shop | 35°06'53" 107°21'58" | do. | - | 605 | 6,100 | - | - | - | Jm | 1,900 | 11-11-74 | Ind | Yield 25 gal/min. |
| 10.5.14.234 Sinkhole | 35°05'48" 107°19'58" | Pueblo of Laguna | - | about 51 | 5,820 | 51 | 9-27-73 | 5,769 | Jb | 2,310* | 10-19-74 | N | Sinkhole, Unable to measure water level exactly. |
| 10.5.26.223 Ir. test 8 | 35°03'13" 107°19'50" | do. | 1960 | 35* | 5,730 | 7.0 | 2-5-60 | 5,723 | Qal,Jb | 10,000 | 2-5-60 | | Well plugged and abandoned. Data from Dinwiddie and Motts (1964). |
| 10.5.33.333 RWP 1 | 35°02'45" 107°22'45" | do. | 1957 | 77 | 5,790 | 27.8 | 5-21-73 | 5,762 | Jb | 650T | 5-21-73 | D | - |
| 10.5.34.231 RWP 36 | 35°03'19" 107°21'07" | do. | 1970 | 131* | 5,790 | 100.5 | 5-11-73 | 5,689 | Qal | 3,000T | 5-11-73 | S | Bailed at 15 gal/min for 30 minutes in 1970. |
| 10.6.3.111 Encinal 1 | 35°07'50" 107°27'59" | do. | 1964 | 415* | 6,485 | 30.0 | 11-16-78 | 6,455 | Kd | 1,130* | 11-17-78 | P | Pumped at 10.6 gal/min for 24 hours with 190 ft drawdown. Driller's bail test indicated yield of at least 25 gal/min. |



350001973

Table 1.--Records of wells - Continued

| Location number and local name or number If known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.6.3.132 RWP 5 | 35°07'37" 107°27'52" | Pueblo of Laguna | 1952 | 360* | 6,450 | 307.5 | 9-11-73 | 6,142 | Kd | - | - | N | Yield 12 gal/min in 1952. Mill removed in 1968. |
| 10.6.3.313 | 35°07'18" 107°27'56" | do. | - | 13M | 6,395 | 3.8 | 8-2-74 | 6,391 | Kd | - | - | N | - |
| 10.6.3.331 | 35°07'15" 107°27'56" | do. | - | 15M | 6,385 | 5.1 | 8-2-74 | 6,380 | Kd | - | - | N | - |
| 10.6.3.334 871 | 35°07'06" 107°27'06" | do. | 1933 | 45* | 6,375 | 9.0 | 9-7-73 | 6,366 | Kd | 1,350<br>1,650* | 9-7-73<br>2-20-51 | D, S | Well rehabilitated and deepened in 1962. |
| 10.6.9.121 Encinal 2 | 35°07'02" 107°28'49" | do. | 1964 | 205* | 6,350 | 145.6 | 9-11-73 | 6,204 | Kd | 1,300* | 11-7-78 | N | Pumped at average rate of 54 gal/min in 1978 for 24 hrs with 14.7 ft drawdown. |
| 10.6.29.244 RWP 17 | 35°04'05" 107°29'12" | Pueblo of Laguna | 1959 | 650 | 6,390 | 424.2 | 9-27-73 | 5,966 | Jb | - | - | N | - |
| 10.6.31.144 Analla | 35°03'08" 107°30'42" | R. Analla | 1969 | 168 | 6,040 | 107.6 | 12-11-73 | 5,932 | Jb(?) | - | - | N | - |
| 10.6.31.434 Seama P.S. | 35°02'41" 107°30'28" | Pueblo of Laguna | 1963 | 150* | 5,942 | 8.2 | 6-22-73 | 5,934 | Qal,Qb | 1,530*<br>1,760* | 3-18-65<br>1-19-73 | P | Pumped at 450 gal/min in 1963. Drawdown was 23.5 ft after 45 minutes at 450 gal/min. |



350001974

Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.6.31.443 Ir. test 7 | 35°02'42" 107°30'12" | Pueblo of Laguna | 1960 | 145* | 5,940 | 6.8 | 5-24-60 | 5,933 | Qal | 1,510* | 5-25-60 | N | Pumped at 115 gal/min in 1960. Drawdown was 8.5 ft after 24 hours. Data from Dinwiddie and Motts (1964). |
| 10.6.32.313 Leeds well | 35°02'55" 107°30'07" | Leeds | - | 115 | 5,980 | 53.1 | 8-2-74 | 5,927 | Qal | - | - | N | Former domestic supply equipped with submersible pump. |
| 10.6.32.313a Hinshaw | 35°02'55" 107°30'04" | Hinshaw | - | 140M | 5,980 | 55.1 | 8-2-74 | 5,925 | Qal | - | - | N | Former domestic supply. Water quality reportedly poor. |
| 10.6.33.122 Paraje deep test | 35°03'29" 107°28'35" | Pueblo of Laguna | 1953 | 780* | 5,990 | - | - | - | Jb,Je | 3,250* | 12-9-52 | N | Well bailed dry. Plugged and abandoned. |
| 10.6.33.213 ECW 12 | 35°03'26" 107°28'35" | do. | 1936 | 581* | 5,975 | 62.2 | 2-4-74 | 5,913 | Jb,Js | 2,810* | 10-20-52 | O | Pumped at 8 gal/min for 6 hours in 1936. |
| 10.6.35.313 Dalley | 35°02'58" 107°26'51" | Tom Dalley | 1965 | 105 | 5,935 | 57.0 | 5-25-73 | 5,878 | Qal | - | - | O | Reported good well. |
| 10.6.35.322 Pueblo Test 1 | 35°03'06" 107°26'34" | Pueblo of Laguna | 1960 | 120* | 5,945 | 57.2 | 5-24-73 | 5,888 | Qal | 1,460* | 2-12-60 | O | Pumped at 23 gal/min in 1960. Drawdown was 23 ft after 12 hours at 23 gal/min. |



350001975

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.6.35.324 New Laguna P.S. | 35°02'57" 107°26'35" | Pueblo of Laguna | 1960 | 98 | 5,930 | 56.8 | 5-24-73 | 5,873 | Qal | 1,450* | 1-19-73 | D | Pumped at 75 gal/min in 1960. Drawdown was 32 ft. after 24 hours at 75 gal/min. |
| 10.6.35.342 Pueblo Test 2 | 35°02'53" 107°26'32" | do. | 1960 | 122* | 5,922 | 55.2 | 9-11-73 | 5,867 | Qal | 1,570* | 3-8-60 | O | Pumped at 90 gal/min in 1960. Drawdown was 4 ft after 12 hours at at 90 gal/min. |
| 10.6.35.342a Laguna Ir.2 | 35°02'52" 107°26'35" | do. | 1977 | 160* | 5,920 | 54 | 1-16-77 | 5,866 | Qal | 1,500 | 11-14-77 | I | Pumped at average rate of 184 gal/min for 24 hours with 31 feet drawdown in 1977. |
| 10.6.36.343 Gillstrep | 35°02'45" 107°25'34" | Jim Gillstrep | - | 74M | 5,905 | 58.4 | 5-24-73 | 5,847 | Qal | 2,500 | 5-24-73 | D | - |
| 10.7.10.122 Seco Canyon 1 | 35°07'00" 107°33'50" | Pueblo of Laguna | 1978 | 40* | 6,500 | - | - | - | Qal | 3,000 | 8-8-78 | N | Well produced 10 gallons of water overnight. |
| 10.7.10.213 Laguna 79-1 | 35°06'54" 107°33'46" | do. | 1979 | 1330* | 6,470 | 297.6 | 1-10-80 | 6,172 | Jm,Kd | 2,000* | 1-16-80 | O | Pumped at 10 gal/min for 24 hours with 128 feet drawdown in 1980. |
| 10.7.10.233 | 35°06'37" 107°33'47" | - | 1962(?) | 123M | 6,410 | 52.7 | 6-28-73 | 6,357 | Qal,Km(?) | - | - | N | - |



350001976

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.7.25.432 Abandoned New York | 35°03'37" 107°31'30" | Pueblo of Laguna | 1953 | 117* | 6,038 | 67.5 | 9-10-73 | 5,970 | Qal | 1,020 | 4-1-53 | O | Pumped at 17 gal/min in 1953. Drawdown was 30 ft. |
| 10.7.25.441 | 35°03'37" 107°31'19" | do. | - | 61M | 6,025 | 39.1 | 11-16-73 | 5,986 | Qal | 980* | 3-27-53 | N | - |
| 10.7.35.232 Ir. Test 6 | 35°03'19" 107°32'36" | do. | 1960 | 132* | 5,990 | 8.8 | 10-19-73 | 5,981 | Qal | 3,300* | 8-14-75 | O | Pumped at 100 gal/min in 1960. Drawdown was 17.5 ft after 20 hours pumping at 100 gal/min. |
| 10.7.36.212 New York 2 | 30°03'24" 107°31'28" | do. | 1966 | 158 | 6,002 | - | - | - | Qal | 720* | 1-18-73 | P | Pumped at 295 gal/min Drawdown was 8.7 ft after 40 hours at 295 gal/min. |
| 10.7.36.221 New York 1 | 35°03'26" 107°31'22" | do. | 1966 | 150* | 6,020 | 59.4 | 9-10-73 | 5,961 | Qal | 920* | 10-29-70 | P O | Pumped at 290 gal/min in 1970. Drawdown was 37 ft after 20 hours pumping at 290 gal/min. |
| 10.7.36.242 Joe Day | 30°03'12" 107°31'18" | do. | - | 100 | - | - | - | - | Qal | - | - | N | Unable to measure water level. Former stock and domestic well. |



350001977

Table 1.—Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10.7.36.322 Laguna 76-2 | 35°03'02" 107°31'45" | Pueblo of Laguna | 1976 | 154* | 5,980 | 21.9 | 7-12-76 | 5,958 | Qal,Qb | 3,700* | 7-14-76 | O | Pumped at 80 gal/min for 24 hours with 45 ft drawdown in 1976. |
| 10.7.36.424 Laguna 76-1 | 35°02'53" 107°31'12" | do. | 1976 | 157* | 5,970 | 26.4 | 7-6-76 | 5,944 | Qal,Qb | 1,350* | 7-8-76 | O | Pumped at 140 gal/min for 20 hrs. with 8.5 ft drawdown in 1976. |
| 10.7.36.424a Laguna Ir.1 | 35°02'53" 107°31'12" | do. | 1977 | 155* | 5,970 | 27.1 | 9-26-77 | 5,943 | Qal,Qb | 1,350* | 9-27-77 | Ind | Step-pumped 250 to 490 gal/min for 24 hrs with 86 ft. drawdown in 1977. |
| 10.7.36.443 858 | 35°02'40" 107°31'21" | do. | 1931 | 20M | 5,961 | 18.9 | 12-3-73 | 5,942 | Qal | - | - | N | Dug well. Former windmill. |
| 11.1.4.343 RWP 9 | 35°12'15" 106°57'00" | do. | 1958 | 158* | 5,450 | 107.2 | 6-21-73 | 5,343 | Qal | Over 8,000 | 6-21-73 | S | - |
| 11.1.18.234 ECW 1 | 35°10'56" 106°58'48" | do. | 1936 | 147* | 5,511 | - | - | - | Kmv | 3,250 | 9-27-73 | S | Bailed at 30 gal/min in 1936. No drawdown after 3 hrs at 30 gal/min. |
| 11.2.1.124 ECW 8 | 35°12'55" 107°00'08" | do. | - | 130 | 5,560 | 45.0 | 8-21-73 | 5,515 | Qal,Kmv | 2,400 | 8-21-73 | S | Bailed at 15 gal/min in 1964. Drawdown was 45 ft at 15 gal/min. Well cleaned in 1964. |
| 11.2.13.333 RWP 10 | 35°10'31" 107°00'32" | do. | 1961 | 265* | 5,670 | 222.0 | 8-21-73 | 5,448 | Kmv | 3,500 | 8-21-73 | S | Pumped at 8 gal/min for 8 hours in 1961. |



350001978

Table 1.--Records of wells - Continued

| Location number and local name or number If known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.2.27.211 ECW 2 | 35°09'34" 107°02'09" | Pueblo of Laguna | 1938 | 168 205M | 5,771 | 180.1 | 8-21-73 | 5,591 | Kmv(?) | 3,000 | 8-21-73 | S | - |
| 11.4.18.334 | 35°10'34" 107°18'18" | L-Bar Ranch | - | 65M | 6,085 | 61.6 | 5-10-74 | 6,023 | Qal | - | - | N | Former stock well. |
| 11.4.26.444 ECW 4 | 35°08'48" 107°13'20" | Pueblo of Laguna | 1935 | 640* | 6,420 | 488.2 | 5-18-73 | 5,932 | Jm,Jb(?) | 2,500T | 5-18-73 | S | Bailed at 20 gal/min in 1935. |
| 11.5.13.112 LJ 205 | 35°11'23" 107°19'28" | Sohio | 1971 | 522 | 6,159 | 92.8 | 10-14-71 | 6,066 | Jm | -* | - | S | Pumped at 34 gal/min in 1971. Drawdown was 154 ft after 15 hrs at 34 gal/min. |
| 11.5.14.241 L-Bar 2 | 35°11'05" 107°19'48" | do. | 1974 | 3,390 | 6,233 | 10R | ?-3-75 | 6,223 | Psa,Pg | - | - | I | Data supplied by Standard Oil of Ohio. |
| 11.5.24.213 Anaconda 1 | 35°10'23" 107°19'06" | do. | 1971 | 390 | 6,162 | 161.8 | 5-10-74 | 6,000 | Jm | 1,750* | 5-14-71 | N | Pumped at 30 gal/min in 1971. Drawdown was 152 ft after 8 hours at 30 gal/min. |
| 11.5.27.322 Anaconda 4 | 35°09'11" 107°21'12" | Anaconda Co. | - | 610 | 6,002 | 80R | 12-6-60 | 5,922 | Jm | 1,200 | 11-11-74 | D | Pumped at 100 gal/min in 1963. Principal domestic supply for Jackpile Mine. |



350001979

Table 1.—Records of wells - Continued

| Location number and local name or number If known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.5.29.444 | 35°08'48" 107°22'50" | Pueblo of Laguna | 1955 | 384* | 6,220 | 166.3 | 2-4-74 | 6,054 | Jm | 1,900* | 4-16-55 | N | Bailed at 18 gal/min in 1955. Some drawdown after 20 min at 18 gal/min. |
| 11.5.30.422 Pueblo test 3 | 35°09'11" 107°23'53" | do. | 1960 | 466* | 6,260 | 75.3 | 10-17-73 | 6,185 | Jm | 670* | 3-31-60 | O | Pumped at 10 gal/min in 1960. Drawdown was 192 ft after 12 hours at 10 gal/min. |
| 11.5.32.232 Paquate P.S. 2 | 35°08'33" 107°23'07" | do. | 1974 | 63 | 6,160 | + 1.1 | 7-19-74 | 6,161 | Qal | - | - | P, O | Pumped at 75 gal/min in 1974. Drawdown was 43 ft after 3 hours at 75 gal/min. |
| 11.5.32.234 Pueblo test 5 | 35°08'28" 107°23'06" | do. | 1960 | 79* | 6,150 | Flowing | 4-22-60 | - | Qal | 580* | 4-22-60 | N | Pumped at 35 gal/min in 1969. Drawdown was 25 ft after 12 hours. |
| 11.5.32.234a Paquate P.S. 1 | 35°08'28" 107°23'06" | do. | 1963 | 75 | 6,155 | Flowing | 6-22-73 | - | Qal | 630* | 1-18-73 | P | Pumped at 90 gal/min in 1963. Drawdown was 23 ft after 12 hours at 90 gal/min. |
| 11.5.35.442 Jackpile Shop | 35°08'06" 107°19'37" | Anaconda Co. | - | 309 | 5,890 | - | - | - | Jm(?) | 1,950 | 5-14-74 | Ind, D | Yield 10-20 gal/min. |



350001980

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11.6.9.441 | 35°11'36" 107°28'13" | Elkins | - | 100M | 7,747 | 88.4 | 10-18-73 | 7,659 | QTb | - | - | S | - |
| 11.6.27.334 Encinal Canyon 1 | 35°08'52" 107°27'51" | Pueblo of Laguna | 1978 | 110* | 6,765 | 31.7 | 7-5-78 | 6,733 | Qal | 1,900* | 7-5-78 | O | Bailed dry in 1978 after 100 min bailing at average rate of 5.3 gal/min. |
| 11.6.34.134 Encinal Canyon 2 | 35°08'35" 107°27'57" | do. | 1978 | 35* | 6,660 | - | - | - | Qal | 950 | 7-31-78 | N | Small seep of water into well. Bails dry after 10-15 gallons. |
| 11.7.35.243 Castillo Canyon 1 | 35°08'25" 107°32'29" | do. | 1978 | 75* | 6,720 | 41.3 | 10-5-78 | 6,679 | Kmv | 950* | 8-11-78 | N | Bailed in 1978 at 5 gal/min for 25 min with about 25 ft drawdown. |
| 12.1.8.132 ECW 6 | 35°17'08" 106°58'15" | do. | 1944 | 312* | 5,534 | 52.5 | 6-21-73 | 5,481 | Qal,Kd | - | - | N | Bailed at 20 gal/min in 1944. No drawdown at 20 gal/min. |
| 12.1.20.123 Conoco 5 | 35°15'30" 106°58'07" | Conoco | - | - | 5,495 | - | - | - | Jm | - | - | - | Flowed 75 gal/min. Plugged and abandoned |
| 12.1.29.113 Conoco 17-10 | 35°14'40" 106°58'22" | do. | 1971 | 1,080 | 5,475 | - | - | - | Jm | -* | - | N | Hole filled with cement and abandoned Hole flowed prior to plugging. |
| 12.1.30.233 Conoco 64 | 35°14'13" 106°58'58" | do. | - | - | 5,470 | - | - | - | Jm | - | - | - | Flowed 100 gal/min. Plugged and abandoned. |



350001981

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.1.30.324 Conoco 65A | 34°14'14" 106°58'58" | Conoco | 1971 | 1,100 | 5,490 | Flowing | 5-31-74 | - | Jm | 12,900* | 6-5-75 | Ind | Flowed at average rate of 80 gal/min for 3 hrs. on 5-31-74. Pressure prior to flowing was 26 psi. |
| 12.1.31.331 Conoco WQ7 | 35°13'16" 106°59'22" | do. | 1976 | 1,860 | 5,560 | Flowing | 5-12-76 | - | Jm | 11,800 | 1976 | Ind | Flowed 38 gal/min on 5-12-76 shut-in pressure was 30 psi. |
| 12.1.31.431 Conoco 6 | 35°13'12" 106°58'58" | do. | - | - | 5,510 | - | - | - | Jm | - | - | N | Flowed 4 gal/min. Plugged and abandoned. |
| 12.1.32.131 Conoco 72 | 35°13'40" 106°58'25" | do. | - | - | 5,475 | - | - | - | Jm | - | - | N | Flowed 3-5 gal/min. Abandoned. |
| 12.1.33.132 Conoco 22-10 | 35°13'40" 106°57'09" | do. | - | - | 5,490 | - | - | - | Jm | -* | - | N | Flowed 5 gal/min the day after completion but ceased after one week. Plugged and abandoned. |
| 12.2.1.134 ECW 4 | 35°18'00" 107°00'20" | Pueblo of Laguna | 1936 | 220* | 5,559 | 44.4 | 8-21-73 | 5,515 | Kd,Km | 5,000 | 8-21-73 | S | Pumped at 14 gal/min in 1936. Drawdown was 20 ft after 3 1/2 hours at 14 gal/min. |
| 12.2.10.122 RWP 11 | 35°17'23" 107°02'17" | do. | 1962 | 320* | 5,718 | 197.9 | 8-21-73 | 5,520 | Kd,Km | 2,000 | 8-21-73 | S | Bailed at 3 gal/min for 2 hours in 1962. Plugged back to 270 ft. |



350001982

Table 1.--Records of wells - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12.2.15.341 ECW 7 | 35°15'56" 107°02'20" | Pueblo of Laguna | 1944 | 383* | 5,685 | 146.7 | 8-21-73 | 5,538 | Kd,Km | 3,500 | 8-21-73 | S | Bailed at 4-5 gal/min in 1944. |
| 12.2.24.243 ECW 3 | 35°15'15" 106°59'36" | do. | 1960 | 120* | 5,505 | 34.3 | 8-21-73 | 5,471 | Kd,Km | - | - | N | Bailed at 12 gal/min for 5 hours in 1960. Reportedly abandoned because stock would not drink water. |
| 12.2.24.323 Conoco 55 | 35°15'10" 107°00'10" | Conoco | - | - | 5,545 | - | - | - | Jm | - | - | N | Flowed 8 gal/min. Plugged and abandoned. |
| 12.2.24.442 Conoco 15-9 | 35°14'59" 106°59'34" | do. | - | 1,200 | 5,505 | - | - | - | Jm | * | - | N | Flowed 20 gal/min. Reported pressure 12-15 psi. Plugged and abandoned. |
| 12.2.28.333 RWP 14 | 35°14'02" 107°03'44" | Pueblo of Laguna | 1972 | 575* | 5,840 | 314.8 | 6-25-74 | 5,525 | Kd,Km | - | - | N | Yield 7 gal/min in 1972. |
| 12.2.36.421 Conoco OW-192 | 35°13'28" 106°59'37" | Conoco | 1976 | 1620 | 5,620 | - | - | - | Jm | 12,800 | ?-?-76 | O | - |
| 12.2.36.442 Conoco WW-101 | 35°13'17" 106°59'32" | do. | 1976 | 1,686 | 5,560 | Flowing | - | - | Jm | 11,000* | 5-29-76 | I | Pumped at 1212 gal/min for about 14 days with 470 feet drawdown. |



350001983

Table 1.--Records of wells - Concluded

| Location number and local name or number if known | Latitude and longitude | Owner | Year completed | Depth (feet) | Altitude (feet) | Water level: Depth to water (feet) | Water level: Date | Water level: Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.1.19.323 RWP 13 | 35°20'19" 106°59'06" | Pueblo of Laguna | 1967 | 150* | 5,660 | 79.5 | 6-21-73 | 5,580 | Kd,Km | 4,000T | 6-21-73 | S | Pumped at 10 gal/min for 1 1/2 hours in 1967. |
| 13.1.29.242 Navajo | 35°19'48" 106°57'22" | do. | - | 190 | 5,673 | 99.7 | 6-21-73 | 5,573 | Km(?) | 5,000 | 6-21-73 | S | - |
| 13.2.26.133 RWP 12 | 35°19'40" 107°01'34" | do. | 1967 | 142* | 5,681 | 123.1 | 8-21-73 | 5,558 | Qal(?) | 4,000 | 8-21-73 | S | Yield 12 gal/min in 1967. |
| 13.2.26.434 Conoco 9-8 | 35°19'16" 107°00'51" | Conoco | - | 710 | 5,600 | - | - | - | Jm(?) | -* | - | N | Flowed 5 gal/min. Plugged and abandoned. |



350001984

## Table 2.—Records of springs.

EXPLANATION:

**Location number:** See text for explanation.

**Latitude and longitude:** Determined from U.S. Geological Survey 7 1/2- and 15-minute topographic quadrangle maps.

**Altitude:** Altitude of land surface at the spring, in feet above sea level, determined from U.S. Geological Survey 7 1/2- and 15-minute topographic quadrangle maps.

**Principal water-bearing unit:** Qal, alluvium; Qb, Quaternary basalt; QTb, Older basalt; Kmv, Mesaverde Group: Km, Mancos Shale; Kd, Dakota Sandstone; Jm, Morrison Formation; Jb, Bluff Sandstone; Jt, Todilto Formation; Je, Entrada Sandstone, Trc, Chinle Formation; Psa, San Andres Limestone: Py, Yeso Formation; Pa, Abo Formation.

**Specific conductance:** Specific conductances followed by an asterisk (*) were measured in a laboratory and chemical analyses are available. All other specific conductances were measured onsite. An asterisk alone indicates a chemical analysis is available but specific conductance was not measured.

**Yield:** E, estimated; all others were measured. The symbol (<) means the yield was less than that given.

**Use:** D, domestic; I, irrigation; N, none; P, public supply; S, stock.

**Remarks:** mg/L, milligrams per liter; gal/min, gallons per minute.

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 6.2.6.431 Salt Spring 173 | 34°46'12" 107°05'15" | - | 5,420 | Py | * | 0.1 | 08-07-41 | N | Data from Wright (1946). Dissolved solids 13,700 mg/L. |
| 7.2.6.214 Salt Spring 192 | 34°52'01" 107°05'07" | Pueblo of Laguna | 5,350 | Km | * 37,000* | .3 | 09-03-41 04-21-75 | N | Data from Wright (1946). Dissolved solids 33,100 mg/L. |
| 7.2.6.434 Salt Spring 190 | 34°51'22" 107°05'10" | do. | 5,350 | Km | * 41,500* | .5 | 09-03-41 04-22-75 | N | Data from Wright (1946). Dissolved solids 27,600 mg/L. |
| 7.2.6.442 Railroad Spring | 34°51'40" 107°04'55" | do. | 5,300 | Trc | 36,500* | - | 04-22-75 | N | - |



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Table 2.--Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 7.2.7.123 Salt Spring 186 | 34°51'10" 107°05'30" | Pueblo of Laguna | 5,600 | Tkc (?) | * | .5 | 8-25-41 | N | Data from Wright (1946). Dissolved solids 28,400 mg/L. |
| 7.2.7.241 Pipeline Spring | 34°51'08" 107°05'15" | do. | 5,360 | Tkc | 34,100* | - | 4-22-75 | - | - |
| 7.2.7.343 Salt Spring 185 | 34°30'32" 107°05'27" | do. | 5,520 | Tkc | * 36,800* | .05 | 8-25-41 4-22-75 | N | Data from Wright (1946). Dissolved solids 27,100 mg/L. |
| 7.2.18.134 Salt Spring 184b | 34°49'58" 107°05'36" | do. | 5,560 | Tkc | * | .05 | 8-25-41 | N | Data from Wright (1946). Dissolved solids 28,300 mg/L. |
| 7.2.18.144 Salt Spring 184c | 34°50'02" 107°05'23" | do. | 5,440 | Tkc | * | .2 | 8-25-41 | N | Data from Wright (1946). Dissolved solids 30,600 mg/L. |
| 7.2.18.313 Salt Spring 184a | 34°49'52" 107°05'47" | do. | 5,620 | Psa | * 45,000* | 1 | 4-22-75 | N | Data from Wright (1946). Dissolved solids 34,700 mg/l. |
| 7.2.18.431 Mammoth Mound | 34°49'36" 107°05'06" | do. | 5,440 | Psa | 34,300* | - | 4-22-75 | N | - |



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Table 2.--Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 7.2.30.124 Salt Spring 189 | 34°48'30" 107°05'25" | Pueblo of Laguna | 5,600 | Psa | * 37,000* | .35 | 9-2-41 5-16-75 | N | Data from Wright (1946). Dissolved solids 21,200 mg/L. |
| 7.2.30.411 Salt Spring 188 | 34°48'14" 107°05'18" | do. | 5,540 | Py | * | .05 | 9-2-41 | N | Data from Wright (1946). Dissolved solids 26,100 mg/L. |
| 7.2.31.144 Salt Spring 187 | 34°47'28" 107°05'22" | do. | 5,520 | Pa | * | .05 | 9-2-41 | N | Data from Wright (1946). Dissolved solids 17,700 mg/L. |
| 7.3.1.432 | 34°51'32" 107°06'10" | do. | 5,580 | Psa | 10,000 | 1E | 2-12-75 | S | - |
| 7.3.1.432a Indian Ruins Spring | 34°51'28" 107°06'14" | do. | 5,580 | Psa | 8,530* | 5E | 4-21-75 | S | - |
| 7.4.2.144 Lower water Spring | 34°51'50" 107°13'47" | Harrington | 5,720 | Qb,Qal | 3,500 | 10E | 5-6-74 | S | Spring issues from gravel in stream channel. Stream gains for 1/4 mile or more below spring. |
| 7.4.3.344 Salt Spring 195 | 34°51'22" 107°14'48" | do. | 5,820 | Tkc | * 7,950 | .01 | 9-4-41 5-28-75 | S | Data from Wright (1946). Dissolved solids 4,000 mg/L. |
| 7.4.11.431 Lucero Spring | 34°50'38" 107°13'38" | do. | 5,820 | Tkc | * 4,370* | 20 | 9-4-41 5-28-75 | S | Data from Wright (1946). Dissolved solids 4,000 mg/L. |



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**Table 2.--Records of springs - Continued**

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 8.2.7.314 Miranda Spring | 34°55'56" 107°05'49" | Pueblo of Laguna | 5,240 | Jb | 30,100* | - | 4-21-75 | N | - |
| 8.2.19.421 El Ojo Escondido | 34°54'14" 107°05'01" | Pueblo of Laguna | 5,203 | Jb | 4,230* 10 | E | 9-24-73 | N | - |
| 8.2.20.332 Ojo Escondido | 34°54'04" 107°04'37" | do. | 5,200 | Jb | 490* | .5 E | 9-24-73 | S | - |
| 8.2.20.423 Salt Spring | 34°54'12" 107°03'58" | do. | 5,180 | Jm | 32,300*<br>32,600 | 0.5 E | 9-24-73<br>4-21-75 | N | Salt spring at top of travertine mound. Odories gas bubbling from spring. |
| 8.2.30.342 Salt Spring 193 | 34°53'12" 107°05'25" | do. | 5,320 | Jb | *<br>41,400* | .3<br>- | 9-3-41<br>4-21-75 | N | Data from Wright (1946).<br>Dissolved solids 21,200 mg/L. |
| 8.3.10.214 | 34°56'22" 107°08'14" | Talavera Corp. | 5,400 | Qb | 3,800 30 | E | 10-4-73 | N | Many seeps and springs flow from fracture zone in basalt. Combined flow about 30 gal/min. |
| 8.3.10.222 Suwanee Spring | 34°56'28" 107°07'56" | do. | 5,355 | Qb | 3,810*<br>3,930* | -<br>100 | 10-12-48<br>09-24-73 | N | - |



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Table 2.—Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 8.3.12.413 Dipping Vat Spring | 34°55'49" 107°06'24" | Pueblo of Laguna | 5,320 | Jb,Jt(?) | 4,150* 4,030* | 420 | 9-14-73 4-21-75 | S | Flow at confluence with Rio San Jose about 0.2 mile from spring on 2-12-74 was 507 gal/min measured with a pygmy current meter. |
| 8.3.35.114 Spring 194 | 34°52'52" 107°07'43" | do. | 5,720 | TRc ,Qal | * 900 | 1.0 0 | 9-3-41 2-12-75 | S | Data from Wright (1946). Dissolved solids 350 mg/l. Small pools in channel on 2-12-75. No flow observed. |
| 8.6.3.243 Kemp Santiago Spring | 34°57'04" 107°27'04" | do. | 6,300 | Jb | 460 | < .5 E | 10-11-73 | S | Spring developed with concrete collection system for stock watering. |
| 8.6.16.142 Alamo Spring | 34°55'32" 107°28'35" | U.G. Palsano | 6,090 | Je | 650 | < 1 E | 9-21-73 | S | Specific conductance as measured in pool may be affected by previous storm flows. |
| 8.6.18.232 Dripping Springs | 34°55'26" 107°30'20" | Fred Marmon | 6,220 | Jb | 340 | < .5 E | 10-11-73 | N | Collection system of several seeps was once used as a domestic supply. |
| 9.3.22.443 Coyote Spring | 34°59'15" 107°08'12" | Pueblo of Laguna | 5,600 | TRc | 4,400* | - | 4-26-73 | S | - |
| 9.5.2.434 | 35°02'53" 107°19'57" | do. | 5,662 | Qal | 5,000 | - | 9-24-73 | I | Conductance measured in small reservoir near river. Several seeps apparent in river bed. Conductance of river on 9-24-73 was 5,000. |



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Table 2.--Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 9.5.8.113 | 35°01'41" 107°23'43" | Pueblo of Laguna | 5,800 | Qb | 2,600 | 2 E | 5-29-74 | N | Water drips from the contact between basalt and Bluff Sandstone. |
| 9.5.8.121 | 35°01'43" 107°23'33" | do. | 5,800 | Jb,Qb | 2,800 | < 1 E | 5-29-74 | N | - |
| 9.5.27.412 Johnson | 34°58'42" 107°21'00" | do. | 5,860 | Je | 1,700 | < .5 E | 6-19-73 | S | - |
| 9.6.13.321 Yellow Rock Spring | 35°00'27" 107°25'33" | do. | 6,035 | Jb | - | - | - | S | No flow observed 10-11-73. Reportedly always has water. |
| 9.6.16.122 | 35°00'53" 107°28'35" | do. | 5,918 | Jb | 4,000 | - | 10-19-73 | N | Small pool nearby had salt crystals floating on top. Conductance was greater than 8,000 on 10-19-73. No flow observed. |
| 9.6.28.122 Turquoise Spring | 34°59'07" 107°28'35" | do. | 6,060 | Jb | 440* | < .5 E | 2-4-74 | N | - |
| 9.6.36.144 Coyote Spring | 34°57'57" 107°25'30" | do. | 6,195 | Jb | 900 | do. | 10-11-73 | S | Spring developed for stock use-with concrete collection system. |
| 10.4.12.342 Cheromiah Spring | 35°06'17" 107°12'45" | Joe Cheromiah | 6,100 | Jm | 4,000 | 1 | 10-15-73 | S, D | Water piped from spring for domestic and stock use. |



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Table 2.--Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 10.4.21.223 Arroyo Conchas Spring | 35°05'01" 107°15'29" | Pueblo of Laguna | 5,773 | Qal, Jb | 5,000 | 2-3 E | 3-3-75 | S | Many seeps from the alluvium. Bluff Sandstone contact contributes to flow. |
| 10.5.10.113 Oak Canyon Spring | 35°06'53" 107°21'42" | do. | 5.950 | Jm | 3,500 | 1 E | 12-4-73 | N | Flow and conductance affected by effluent discharged into canyon from shop lagoon. |
| 10.5.26.241 | 35°03'11" 107°19'47" | do. | 5,722 | Qal | 6,000 | 1 E | 2-10-75 | N | Below Paguate dam. |
| 10.5.28.332 Spring 15 | 35°03'47" 107°22'34" | do. | 5,820 | Jm | 1,500 | < .5 E | 9-27-73 | S | Conductance measured in concrete catchment. |
| 10.5.36.331 Goyea Spring | 35°02'48" 107°19'32" | do. | 5,740 | Jb | 180 | do. | 10-15-73 | S | Several pools in canyon. This one trickling slightly. |
| 10.6.15.312 | 35°05'42" 107°27'48" | do. | 6,170 | Kd | 1,500 | - | 10-17-73 | S | Many seeps give a combined flow of 15 gal/min measured. Seeps also evident downstream from measuring point. |
| 10.6.15.322 Kose Spring | 35°05'42" 107°27'38" | Kose | 6,175 | Kd | 1,400 | < .5 E | 10-18-73 | S | Was once used for irrigation but reportedly dried up. |
| 10.6.18.331 | 35°05'24" 107°31'07" | - | 6,208 | Qal | 950 | 1-2 E | 4-3-74 | N | Seepage in roadside ditch. |



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Table 2.—Records of springs - Continued

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 10.6.25.242 Frog Pond Spring | 35°04'08" 107°24'54" | Pueblo of Laguna | 6,100 | Jm | 1,670* | do. | 6-6-73 | S | Has collection system with tank; system not maintained |
| 10.7.24.411 | 35°04'42" 107°31'36" | - | 6,110 | Qal | 700 | 100+ E | 11-4-74 | S | Contributes much of flow in Cubero wash. |
| 11.3.30.343 Hanging Grape Spring | 35°08'50" 107°11'52" | Pueblo of Laguna | 6,260 | Kd | 560 | < .5 E | 10-15-73 | N | Was once developed for domestic and stock use. |
| 11.6.10.412 Paquate Canyon Spring | 35°11'45" 107°27'19" | - | 7,665 | QTb | 280 | - | 10-18-73 | S | Very little flow at point of measurement. Flow downstream at Laguna boundary was 250 to 300 gal/min estimated on 10-17-73. |
| 11.6.16.422 Head Spring | 35°10'56" 107°28'03" | Pueblo of Laguna | 7,620 | QTb | 240 | - | 10-18-73 | S | Many seeps give a combined flow of 60 gal/min 0.6 mile downstream. |
| 11.6.21.312 | 35°10'04" 107°28'52" | do. | 7,440 | QTb | 190 | 15 | 7-12-74 | S | Stream gains to a maximum of 15 gpm; little to no flow at Laguna boundary downstream. |
| 11.6.21.414 | 35°09'58" 107°28'20" | do. | 7,460 | QTb | 275 | 8 | 10-18-73 | S | Flow is from several seeps. |
| 11.6.22.333 Encinal Public Supply Spring | 35°09'45" 107°28'00" | do. | 7,380 | QTb | 190* | 101 | 1-18-73 | P | Collection system of several springs for Encinal public supply. |



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Table 2.--Records of springs - Concluded

| Location number and local name or number if known | Latitude and longitude | Owner | Altitude (feet) | Principal water-bearing unit | Specific conductance (micromhos per centimeter at 25° Celsius) | Yield (gallons per minute) | Date | Use | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| 11.7.15.133 DeArmand Spring | 35°10'53" 107°34'12" | U.S. Forest Service | 8,190 | Qal | 170 | 5 | 5-16-74 | S | Collection system for stock and wildlife. |
| 11.7.16.444 Seco Spring | 35°10'28" 107°34'22" | do. | 7,990 | Qal | 190 | 2 | 5-16-74 | S | Flow is from pipe apparently driven. |
| 11.7.24.143 Leeds Spring | 35°10'04" 107°31'55" | Pueblo of Laguna | 7,280 | Qal | 560 | < .5 E | 10-12-73 | N | Former domestic supply. |
| 11.7.26.144 Eagle Nest Springs | 35°09'17" 107°32'52" | do. | 7,500 | QTb | 280 | - | 10-12-73 | N | Combined flow of several springs is 30 gal/min estimated. |
| 11.7.27.114 Kose Spring | 35°09'30" 107°34'08" | do. | 7,600 | Kmv | 260 | 2 | 10-12-73 | N | Former domestic supply. |
| 11.7.27.314 Turkey Spring | 35°09'04" 107°34'06" | do. | 7,360 | Qal | 280 | < 1 E | 10-12-73 | N | Had larger discharge during spring. 1973. |
| 11.7.33.224 Hiyi Spring | 35°08'37" 107°34'25" | do. | 7,100 | Km | 310 | 2 | 10-12-73 | S | Spring developed for stock use. |
| 11.7.35.421 - | 35°08'18" 107°32'26" | do. | 6,700 | Kmv | 650 | < 1/2 E | 8-8-78 | N | - |
| 12.1.18.134 Ojito Spring | 35°16'12" 106°59'13" | do. | 5,515 | Qal | .600* | - | 6-17-74 | D, | Not able to observe flow. |



350001993

## Table 3. Description of formation cuttings for selected wells

**Location number:** 9.5.9.23I (see text for explanation)
**Local well name:** Laguna 78-1 test well
**Samples described by** E. T. Padgett
**Formation determinations by** D. W. Risser

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Sand dune:** |
| 0-10 | Sand, 50 percent, grayish-orange-pink (5YR 7/2 1/), fine- to medium-sized, fair sorting, mostly quartz, subangular; Silt, 50 percent, grayish-orange-pink (5YR 7/2). |
| 10-20 | Sand, 90 percent, light-brown (5Yr 6/4), medium- to coarse, fair sorting, mostly quartz, subrounded, frosted grains, minor dark minerals, poorly-consolidated, non-calcareous cement. Rock and mineral fragments, 10 percent, various colors and types, very coarse-grained to pebble size, angular to subangular. |
| | **Jurassic:** |
| | **Bluff Sandstone:** |
| 20-30 | Sandstone, 95 percent, same as interval 10-20 except grains are medium grained and subangular. Calcareous cement. Rock and mineral fragments same as 10-20 except very coarse grained. |
| 30-60 | Sandstone, 100 percent, light-brown (5YR 6/4), fine-grained, mostly quartz, minor dark minerals, subangular, some rounded frosted grains, poorly consolidated, non-calcareous cement. |
| 60-75 | Sandstone, 100 percent, same as interval 40-50 except very fine to fine-grained. |
| 75-80 | Sandstone, 100 percent, light-brown (5YR 5/6) very fine-grained, well-sorted, mostly quartz, subangular. Poorly cemented, noncalcareous cement. |
| 80-85 | Sandstone, 100 percent, same as 75-80, except has calcareous cement. |
| 85-90 | Sandstone, 100 percent, light-brown (5YR 5/6), fine- to medium-grained, moderately sorted, subrounded to well-rounded, mostly quartz, poorly cemented, calcareous. |

1/ Refers to color designation in Goddard (1948)



350001994

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Bluff Sandstone - continued:** |
| 90-95 | Sandstone, 100 percent, light-brown (5YR 5/6), fine-grained, mostly quartz, well-sorted, subangular to subrounded, very poorly cemented, calcareous cement. |
| 95-100 | Sandstone, 100 percent, light-brown (5YR 6/4) fine-grained, well-sorted, angular grains, mostly quartz, poorly cemented, non-calcareous cement. |
| 100-110 | Sandstone, 45 percent, moderate-brown (5YR 4/4), fine-grained, some medium grains, fair sorting, mostly quartz, subrounded grains, well-cemented, noncalcareous cement. Sand, 50 percent, light-brown (5YR 6/4), medium- to fine-grained, fair sorting, mostly quartz, angular to subangular, poor consolidation. Black minerals, 5 percent. |
| 110-115 | Sandstone, 100 percent, light-brown (5YR 6/4), fine-to medium-grained, some coarse grains, fair sorting, mostly quartz, some dark minerals, subangular to angular, poorly consolidated, slightly effervescent. |
| 115-120 | Sandstone, 50 percent, light-brown (5YR 6/4), fine-grained, well-sorted, mostly quartz, very minor black minerals, angular to subangular, poorly consolidated, calcareous. Sandstone, 50 percent, moderate-brown, (5YR 4/4), very fine-grained to fine-grained, fair sorting, thin streaks of white sandstone, good consolidation, noncalcareous cement. |
| 120-125 | Sandstone, 100 percent, light-brown (5YR 5/6) fine- to coarse-grained, poorly sorted, mostly quartz; coarse grains are rounded; medium to fine grains are subangular, poorly consolidated. |
| 125-130 | Sandstone, 95 percent, same as 120-125. Sandstone, 5 percent, moderate-brown (5YR 4/4), fine to medium-grained, fair sorting, mostly quartz, subrounded, good consolidation, calcareous cement. |
| 130-135 | Sandstone, 95 percent, same as 120-125. Sandstone, 5 percent, same as 125-130. |
| 135-140 | Sandstone, light-brown (5YR 6/4), fine- to medium-grained, fair sorting, mostly quartz, subangular, some frosted graine, poorly consolidated, calcareous cement. |



350001995

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Bluff Sandstone - concluded:** |
| 140-145 | Sandstone, 90 percent, same as 135-140. Sandstone, 10 percent, moderate-brown, (5YR 4/4), very fine-grained, well-sorted, mostly quartz, sub-angular, fairly well consolidated, calcareous cement. |
| | **Summerville Formation:** |
| 145-150 | Siltstone, 100 percent, moderate brown (5YR 4/4), sandy. Fairly well consolidated, calcareous cement. |
| 150-155 | Siltstone, 100 percent, light-brown (5YR 6/4), very sandy, very fine-grained very well-consolidated, calcareous cement. |
| 155-160 | Sandstone, 100 percent, light-brown (5YR 6/4), very fine to silty, well-sorted, friable poorly consolidated, calcareous cement. |
| 160-165 | Siltstone, 100 percent, same as 145-150. |
| 165-170 | Sandstone, 100 percent, same as 155-160. |
| 170-180 | Siltstone, 100 percent, light-brown (5YR 6/4). Very sandy; very fine-grained sand. Very well consolidated, calcareous cement. |
| 180-190 | Sandstone, 100 percent, light-brown (5YR 6/4). Very silty; very fine-grained. Well sorted. Fairly well consolidated, friable, calcareous cement. |
| 190-200 | Sandstone, 85 percent, light-brown (5YR 6/4), very fine to fine-grained. Fair sorting, mostly quartz, subangular, poorly consolidated, calcareous cement. Sandstone, 10 percent, very pale-orange (10YR 8/2), appears white in sample, fine-grained, well-sorted, mostly quartz, subrounded, only slightly effervescent, Sandstone, 5 percent, same as 140-145 (second constituent). |
| 200-210 | Sandstone, 90 percent, light brown (5YR 6/4), very fine-grained, fairly well-sorted, mostly quartz, minor black minerals, subangular, some frosted grains, poorly consolidated. Sand, 5 percent, same as 190-200 (second constituent). Sand, 5 percent, same as 140-145, (second constituent). |
| 210-220 | Sandstone, 100 percent, light brown (5YR 6/4), very fine-grained to silt, well-sorted, mostly quartz, minor black minerals, sub-angular, well-consolidated, calcareous cement. |



350001996

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Summerville Formation - Concluded:** |
| 220-230 | Sandstone, 80 percent, moderate-brown (5YR 4/4), very fine-grained and silty, fair sorting, mostly quartz, subangular, subrounded, well-consolidated, calcareous cement. Streaks of white sandstone (20 percent) same as 190-200 (second constituent) except effervescent. |
| 230-240 | Sandstone, 80 percent, light-brown (5YR 6/4), same as 210-220. Sandstone streaks, 20 percent, same as 190-200, (second constituent), except effervescent. |
| 240-250 | No sample. |
| 250-260 | Sandstone, 90 percent, same as 210-220, Sandstone streaks, 5 percent, same as 190-200 (second constituent) except pinkish-gray (5YR 8/1) and effervescent. Sandstone, 5 percent, same as 140-145 (second constituent), minor white streaks. |
| 260-270 | Sandstone, 90 percent, grayish-orange-pink (5YR 7/2) very fine-grained, well-sorted, mostly quartz, minor dark minerals, subangular to subrounded, very poorly consolidated. Sandstone, 5 percent, same as 140-145. Sandstone, 5 percent, same as 190-200 except very light-gray (N8). |
| 270-280 | Sandstone, 90 percent, very-light-gray (N8), very fine-grained, well-sorted, mostly quartz, minor black minerals, subangular, well-consolidated, calcareous cement. Sandstone, 10 percent, grayish-orange-pink (5YR 7/2) fine-grained, well-sorted, mostly quartz, some minor black minerals, fair consolidation, calcareous cement. Appears to have sharp contact with above sandstone. |
| | **Tertiary:** |
| | **Diabase:** |
| 280-290 | Porphyritic plagioclase sandstone, 45 percent, porphyritic plagioclase same as 270-280 (first constituent). Diabase, 55 percent, greenish-black (5G 2/1), finely crystalline, porphyritic plagioclase. |
| 290-300 | Diabase, 90 percent, same as 280-290, Sand, 10 percent, color undefinable due to the basalt, very-fine to fine-grained, sorting undefinable, mostly quartz, subangular to subrounded, poorly consolidated. Very few fragments of sandstone, same as 270-280, (first constituent). |



350001997

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Summerville Formation:** |
| 300-310 | Sandstone, 30 percent, grayish-orange-pink (5YR 7/2), very-fine-grained to silty, fair to good sortine, mostly quartz, minor black minerals, subangular, fair consolidation, calcareous cement. Sandstone, 60 percent, light-gray (N7), very-fine-grained to silty, fair to good sorting, mostly quartz, minor black minerals, subangular, good consolidation, calcareous cement. |
| | Note: Both of these sandstones have incorporated medium to coarse grained pieces of a black material, possibly diabase. The material may or may not be a true part of the sample. Diabase, 10 percent same as 280-290. |
| | **Todilto Limestone:** |
| 310-320 | Gypsum, 70 percent, light-gray to white (N7, N8, N9), micro-crystalline. Limestone, 10 percent, medium-dark gray (N4), micro-crystalline. Silt, 10 percent, white to very light-gray (N9, N8), possible gypsum. Sand, 10 percent, grains of various colors, fine to very-fine, mostly quartz, unconsolidated. |
| 320-330 | Sample same in all respect to 320-330, except gypsum, 60 percent; limestone, 20 percent. |
| 330-340 | Sample same in all respect to 320-330, except gypsum, 50 percent; limestone, 30 percent. |
| 340-350 | Gypsum, 50 percent, white. Limestone, 30 percent, medium gray (5, N4). Sand, 10 percent, various colors, very-fine and fine-grained to silty, cannot determine sorting, mostly quartz, sub-angular, poor consolidation. |
| 350-355 | Same as above in all respects. |
| 355-360 | Sandstone, 50 percent, pinkish gray (5YR 8/1), fine and very fine-grained to silty, fair to poor sorting, mostly quartz, fine grains subangular, poor consolidation. Gypsum, 25 percent, white. Limestone, 25 percent, medium-gray to dark-medium-gray (N5, N4). |
| 360-370 | Same as above. |
| 370-380 | Limestone, 75 percent; medium-gray to medium-dark-gray to dark-gray (N5, N4, N3). Gypsum, white, 10 percent. Sand, 15 percent, very-light-gray (N8), very fine-grained to silty, good sorting, mostly quartz, subangular, poor consolidation. |



350001998

**Table 3. Description of formation cuttings for selected wells - Continued**

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Entrada Formation:** |
| 380-390 | Sandstone, 90 percent, pinkish-gray (5YR 8/1) very fine-grained, well sorted, mostly quartz, subangular. Limestone, 10 percent, same as above. Included in sample are two pieces of a black unidentified mineral. |
| 390-400 | Sandstone, 98 percent, yellowish-gray (5Y 8/1) fine-grained, well-sorted, mostly quartz, angular to subangular, poor consolidation, $CaCo_3$ cement, minor dark minerals. Limestone, 2 percent, same as above. |
| 400-410 | Sandstone, 100 percent, grayish-orange-pink (5YR 7/2), very fine-grained, well-sorted, mostly quartz, minor dark minerals, sub-angular, poorly consolidated, calcareous cement. |
| 410-420 | Sandstone, 100 percent, light-brown, (5YR 6/4), fine-grained, some medium grains, well sorted, mostly quartz, minor dark minerals, subangular, poor consolidation, calcareous cement. |
| 420-430 | Sandstone, 70 percent, light-brown (5YR 6/4), fine to very fine-grained, fair sorting, mostly quartz, minor dark minerals, subangular, poor consolidation, calcareous cement. Sandy silt, 30 percent, pale-brown, (5YR 5/2), very fine-grained, good sorting, subangular grains, well-consolidated, noncalcareous cement. |
| 430-440 | Sandstone, 100 percent, light-brown (5YR 6/4), very fine to medium-grained, poor sorting, mostly quartz, minor dark minerals, smaller grains subangular, larger sub-rounded to rounded, some frosted, poor consolidation, calcareous cement. |
| 440-450 | Siltstone, sandy, 100 percent, light-brown (5YR 6/4). Silt, 50 percent. Sand, 50 percent, same as 430-440. |
| 450-460 | Sandstone, 100 percent, same as 430-440. |
| 460-470 | Sandstone, 100 percent, same as 430-440, except fine-grained, minor medium grains, good sorting. |
| 470-480 | Sandstone, 100 percent, same as 430-440. |
| 480-490 | Sandstone, silty, 100 percent, light-brown (5YR 6/4), very fine to fine grained, fair sorting, mostly quartz, smaller grains subangular, some medium grains rounded poor consolidation calcareous cement. |



350001999

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Entrada Formation - concluded:** |
| 490-500 | Sandstone, 100 percent, same as 480-490. |
| 500-510 | Siltstone, 50 percent, moderate-brown (5YR 4/4), very fine-grained to silt, streaks of white sand. Sand, 40 percent, very light-gray, fine grained, mostly quartz, minor dark minerals, well-consolidated, carbonate cement. Sand, 10 percent, same as 480-490. |



350002000

Table 3. Description of formation cuttings for selected wells - Continued

**Location: 9.6.2.123 (see text for explanation)**
**Well name: Laguna 76-7**
**Samples described by F. P. Lyford**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-10 | Silt, 100 percent, pale-yellowish-brown (10YR 6/2). |
| 10-15 | Silt, 100 percent, pale-yellowish-brown (10YR 6/2) with white calcareous fragments, sandy. |
| 15-20 | Sand and gravel, 100 percent, light-brown (5YR 6/4), very fine to pebble sized, silty, mostly quartz and basalt fragments. |
| 20-40 | Silt, 100 percent, light-brown (5YR 6/4). Minor gravel. Slightly sandy. |
| 40-60 | Silt, 100 percent, pale-red (10R 6/2), very sandy. |
| 60-75 | Gravel, 100 percent, granule and pebble, many rock types including quartz, limestone, various igneous rocks, and sandstone. (Samples well washed.) |
| 75-80 | Sand, 100 percent, light-brown (5YR 6/4), fine to medium-grained, mostly quartz, subrounded, some frosted. Minor gravel. |
| 80-85 | Sand, 70 percent, as above. Gravel, 30 percent, as above. Minor very light-gray (N8) clay. |
| 85-90 | As above except more clay. |
| 90-95 | Gravel, 80 percent, as above. Sand, 10 percent, as above. Clay, 10 percent, as above. |
| 95-110 | Sand, 100 percent, very pale-orange (10YR 8/2), well sorted, mostly quartz, subrounded, frosted. Minor gravel. |
| 110-125 | Silt, 100 percent, light-brown (5YR 6/4). |
| 125-130 | Gravel, 100 percent, granule and pebble, many rock types as above. Minor silt as above. |
| 130-135 | Silt, 100 percent, light-brown (5YR 6/4), very sandy. |
| 135-155 | Sand, 80 percent, grayish-orange-pink (5YR 7/2), medium-grained, quartz. Gravel, 20 percent, as above. (Very clean samples). |
| 155-170 | As above but less gravel. |



350002001

Table 3. Description of formation cuttings for selected wells - Continued

**Location: 9.6.5.222 (see text for explanation).**
**Well name: Laguna 76-6**
**Samples described by F. P. Lyford**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt:** |
| 0-5 | Sand, 100 percent, very fine to very coarse grained, silty, mostly quartz, angular to subangular, some white calcareous fragments. |
| 5-10 | As above, somewhat finer. |
| 10-15 | As above. Scattered subangular granules of quartz and igneous rocks. |
| 15-20 | As above (mostly medium-grained). |
| 20-25 | As above (more basalt particles). |
| 25-30 | Basalt, 100 percent, dark-gray (N3), medium crystalline. Scattered rounded sandstone fragments. |
| 30-35 | Basalt, 100 percent, as above. Much sand, probably cavings. |
| 35-40 | Sand, 70 percent, light-brown (5YR 6/4), mostly fine-grained, very silty. Basalt, 30 percent, as above. |
| 40-45 | Sand, 100 percent, as above, scattered granules of basalt and quartzose rocks, minor gastropod shells. |
| 45-55 | Silt, 100 percent, brownish-gray (5YR 4/1). Minor sand. |
| 55-60 | No sample. |
| 60-70 | Basalt, 100 percent, black (N1), coarsely crystalline. Minor quartz sand. |
| 70-75 | Basalt, 50 percent, as above. Clay, 50 percent, light-brown (5YR 6/4), silty, slightly sandy. |
| 75-80 | Sand and gravel, 70 percent, reddish tinges, medium grained to granule, composed mostly of quartz and quartzite with some sandstone and limestone particles, angular to subangular. Basalt, 30 percent as above. |



350002002

**Table 3. Description of formation cuttings for selected wells - Continued**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - concluded:** |
| 80-105 | Sand and gravel, 100 percent as above except grains are rounded. |
| 105-110 | Gravel, 60 percent, as above. Clay 40 percent, grayish-orange (10YR 7/4). |
| 110-115 | Gravel, 100 percent, granule and pebble, colorful, includes limestone, sandstone, quartzite, various crystalline rocks, quartz, rounded to subrounded. |
| 115-120 | Sandstone, 100 percent, pale-red (10R 6/2), fine to medium-grained, poorly cemented, quartz, angular to rounded, some frosted. |



350002003

Table 3. Description of formation cuttings for selected wells - Continued

**Location: 9.6.26.443 (see text for explanation)**
**Well name: Timia**
**Described by John J. Rote**
**Formation picks by D. W. Risser**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-25 | Silt, pale-yellowish-brown (10YR 6/2); with some medium-grained sand (25 percent). |
| 25-30 | Silt, moderate-yellowish-brown (10 YR 5/4), with very-fine to fine-sand (25 percent) highly cemented and calcareous. |
| | **Jurassic:** |
| | **Bluff Sandstone:** |
| 30-45 | Sandstone, grayish-orange (10YR 7/4), very-fine to fine-grained, highly cemented and calcareous. |
| 45-50 | Same as 30-35; at 49 feet sandstone, very pale-orange (10YR 8/2) to pale-yellowish-orange (10YR 8/6), fine to medium-grained, moderately cemented and slightly calcareous; water seep here yields approximately 1/4 gallon per minute with a specific conductance of 450. |



350002004

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic** |
| | **Bluff Sandstone - Continued** |
| 50-90 | Same as 49-50; at 54 feet sandstone, very pale-orange (10YR 8/2), very-fine to fine-grained hightly cemented and calcareous. |
| 90-105 | Same as 54-55; slightly higher percentage of fine sand and not calcareous. |
| 105-110 | Same as 54-55; at 106 feet siltstone, light-brown (5YR 6/4), calcareous. |
| 110-115 | Siltstone, grayish-orange-pink (5Yr 7/2), calcareous. Sandstone at 112-113 feet, pinkish-gray (5YR 8/1), silt to very fine-grained, moderate to highly cemented and calcareous. |
| 115-120 | Sandstone, very light-gray (N8), silt to very fine-grained, calcareous, spotted (1 percent) with brown and black minerals. |
| 120-125 | Sandstone, very light-gray (N8), very fine to fine-grained, calcareous, spotted (1 percent) with brown and black minerals. |
| 125-130 | Sandstone, light-brown (5YR 6/4), silt to very fine-grained, calcareous, with 10 percent unknown brown mineral. |
| 130-135 | Same as 125-130. |
| 135-140 | Sandstone, light-brown (5YR 6/4) and white (N9), silt to very fine-grained, very calcareous, with 10 percent unknown brown mineral. |



350002005

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic** |
| | **Bluff Sandstone - Concluded** |
| 140-145 | Sandstone, pinkish-gray (5YR 8/1), silt to very fine-grained, very calcareous, with 5 percent unknown brown mineral. |
| 145-160 | Sandstone, grayish-orange-pink (5YR 7/2), silt to very fine-grained, calcareous, with 5 percent brown and pale blue green (5BG 7/2) minerals. |
| 160-170 | Sandstone, light brown (5YR 6/4) and white streaks (N9), silt to very fine-grained, calcareous, unknown minerals above are absent. |
| | **Summerville Formation:** |
| 170-175 | Siltstone, light-brown (5YR 6/4), with very fine-grained sand, calcareous with 5 percent brown, pale-blue-green minerals and bits of mica. |
| 175-200 | Siltstone, light-brown (5YR 6/4) and white streaks (N9), calcareous, with very fine-grained sand. |
| 200-215 | Siltstone, light-brown (5YR 6/4), calcareous. |
| 215-250 | Same as 200-205; with bits of mica. |
| 250-255 | Siltstone, grayish-orange-pink (5YR 7/2), calcareous, with very-fine sand and bits of mica and of unknown brown mineral. |
| 255-290 | Sandstone, grayish-orange-pink (5YR 7/2), silt to very fine-grained, calcareous, with bits of mica and of an unknown brown mineral. |



350002006

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Summerville Formation - concluded:** |
| 290-295 | Sandstone, pinkish-gray (5YR 8/1), silt to very fine-grained, calcareous, with bits of unknown brown mineral. |
| 295-300 | Same as 290-295. |
| | **Todilto Formation:** |
| 300-305 | Sandstone, pinkish-gray (5YR 8/1), silt to very fine-grained; and limestone (25 percent), medium gray (N5). |
| 305-310 | Same as 300-305; except increase in limestone (40 percent). |
| 310-315 | Same as 300-305 except increase in limestone (50 percent). |
| 315-320 | Same as 310-315. |
| | **Entrada Sandstone:** |
| 320-325 | Sandstone, very pale-orange (10YR 8/2), silt to very fine-grained, calcareous, with bits of limestone and (5 percent) fine to medium-grained sand. |
| 325-340 | Sandstone, very-pale-orange (10YR 8/2), silt to fine-grained, calcareous, with bits of mica and unknown brown mineral. |
| 340-345 | Sandstone, grayish-orange-pink (5YR 7/2), silt to fine-grained, calcareous, with bits of mica and unknown brown mineral. |
| 345-430 | Sandstone, light-brown (5YR 6/4), silt to fine-grained; calcareous with bits of mica and unknown brown mineral. |
| 430-440 | Sandstone, light-brown (5YR 5/6) with touches of white (N9), silt to very fine-grained, calcareous, with siltstone (10 percent), moderate brown (5YR 4/4) and bits of mica. |
| 440-445 | Same as 430-435, except increase in siltstone (40 percent). |
| 445-465 | Siltstone, moderate-brown (5YR 4/4), and light-brown (5YR 5/6), calcareous, with very fine-grained, touches of white (N9) sand and bits of mica. |
| 465-475 | Siltstone, light-brown (5YR 5/6), calcareous, with bits of mica. |



350002007

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Entrada Sandstone - concluded:** |
| 475-480 | Siltstone, light-brown (5YR 5/6) to moderate-brown (5YR 4/4), calcareous, with touches of white (N9) siltstone. |
| 480-505 | Same as 475-480, except white absent. |
| 505-510 | Siltstone, light-brown (5YR 5/6), calcareous. |
| | **Triassic:** |
| | **Chinle Formation:** |
| 510-530 | Shale, moderate-reddish-brown (10R 4/6) to dark-reddish-brown (10R 3/4), calcareous. |



350002008

Table 3. Description of formation cuttings for selected wells - Continued

**Location:** 10.6.35.342a (see text for explanation)
**Well name:** Laguna Ir. #2
**Samples described by** S. Craigg

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt:** |
| 0-10 | Alluvium, moderate-brown (5YR 4/4) to moderate-reddish-brown (10R 4/6), fine sand to coarse gravel; sand is mostly subrounded quartz grains and gravel is fragments of light-brown sandstone with minor basalt fragments. |
| 10-20 | Gravel, subangular to angular; sphere, roller, and disc-shaped; mostly quartz, with minor feldspar, light brown sandstone, and basalt fragments. |
| 20-30 | Gravel, fragments of reddish-black rocks, light-brown sandstone, arkosic sandstone, feldspar, calcite, minor hornblende crystals, and basalt. |
| 30-35 | Same as above; pebble-sized particles present in this interval (large-screen). |
| 35-40 | Same as above (no large screen particles). |
| 40-50 | Same as above. |
| 50-60 | Same as above, mostly fragments of light-brown sand-stone and basalt. |
| 60-70 | Same as above. |
| 70-80 | Gravel, granules to medium pebbles, rock types represented include basalt, andesite, gray limestone, and light-gray, tan, and iron-stained sandstone (dry when described). |
| 80-90 | Gravel, as above, grain size from coarse sand to medium pebbles. No limestone fragments. Basalt fragments account for about 70 percent of sample. The smaller grain sizes are subangular to round. |
| 90-94 | Gravel, as above. Shaley limestone in small amounts. Minor amount of light brown quartzite chips. Basalt fragments account for about 60 percent of sample. |



350002009

**Table 3. Description of formation cuttings for selected wells - Continued**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - concluded:** |
| 94-100 | Gravel, as above. |
| 100-110 | Gravel, as above. Basalt chips account for about 50 percent of sample. Cream-colored dendritic limestone chips present in small quantities. |
| 110-120 | Gravel, as above, 50 percent. Medium-grained, well-rounded, frosted, clean quartz sand accounts for other 50 percent of sample. |
| 120-130 | Gravel, as above, 80 percent. Quartz sand, as above, 20 percent. |
| 130-140 | Gravel as above, 20 percent. Sandstone, light brown (5YR 6/4), 80 percent, medium to coarse-grained, mostly quartz, subround, polished grains, friable, clay matrix, slightly calcareous. |
| 140-146 | Gravel, as above, 15 percent. Sandstone, as above 85 percent, grain size is fine to coarse. |
| 146-150 | Gravel, as above, 15 percent. Sandstone, as above, 70 percent. Clay, 15 percent, grayish pink (5R 8/2). |
| 150-156 | Gravel, as above, 10 percent. Sandstone, as above, 60 percent. Clay, as above, 5 percent. Highly calcareous "grainy" gypsum, white, 25 percent. |
| 156-160 | Same as above. |



350002010

**Table 3. Description of formation cuttings for selected wells - Continued**

**Location: 10.7.10.122 (see text for explanation)**
**Well name: Seco Canyon 1**
**Samples described by John J. Rote**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-5 | Basalt boulders, medium-dark-gray (NH); with silt, moderate-yellowish-brown (10YR 5/4); slightly calcareous. |
| 5-10 | Same as 0-5. |
| 10-15 | Same as 0-5. |
| 15-20 | Silt, yellowish-gray (5Y 7/2) and sandstone gravel, dark-yellowish-orange (10YR 6/6). |
| 20-25 | Same as 15-20. |
| 25-30 | Same as 15-20. |
| 30-35 | Silt, light-olive-gray (5Y 6/1). |
| 35-40 | Shale, medium-light-gray (N6). |



350002011

Table 3. Description of formation cuttings for selected wells - Continued

Location: 10.7.10.213 (see text for explanation)
Well name: Laguna 79-1
Samples described by D.W. Risser
Samples described wet unless noted

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-10 | Alluvium, unconsolidated silt, sand and rock fragments; grayish-orange (5 YR 7/2-dry), 60 percent silt and sand, 30 percent sandstone rock frags, 10 percent basalt fragments, calcareous. |
| 10-20 | Alluvium, as above. |
| 20-30 | Alluvium, as above. |
| 30-40 | Alluvium, pale-yellow-brown (10YR 6/2-dry), 80 percent gravel composed mainly of sandstone and basalt rock fragments with minor clay, silt and sand 20 percent, mostly quartz grains. |
| 40-50 | Alluvium, as above. |
| 50-60 | Alluvium, as above. |
| | **Cretaceous:** |
| | **Mancos Shale:** |
| 60-70 | Shale, 90 percent, medium-dark-gray, (N4), silty, poorly-indurated, calcareous, sandstone and basalt 10 percent, probably cavings. |
| 70-80 | Shale, 90 percent, medium-dark-gray, (N4), silty, poorly-indurated, calcareous, sandstone and basalt 10 percent, probably cavings. |
| 80-90 | Shale, 85 percent, as above, sandstone and basalt 15 percent, probably cavings. |
| 90-100 | Shale, 100 percent, as above, minor sandstone and basalt fragments present. |
| 100-110 | Shale, 100 percent, as above, very sticky, poorly indurated, minor sandstone and basalt. |
| 110-120 | Shale, 100 percent, as above with minor sandstone and basalt. |



350002012

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Cretaceous:** |
| | **Mancos Shale - continued:** |
| 120-130 | Shale, 100 percent, medium-dark-gray, (N4), very silty, calcareous, poorly indurated. |
| 130-140 | Shale, 100 percent, as above with minor sandstone. |
| 140-150 | Shale, 100 percent, medium-dark-gray, (N4), silty, carbonaceous calcareous, less sticky and better indurated than above, fissility more apparent. |
| 150-160 | Shale, 100 percent, as previous interval. |
| 160-170 | Shale, 97 percent, as previous interval with 3 percent basalt fragments. |
| 170-180 | Shale, 95 percent, as above with basalt and sandstone 5 percent. |
| 180-190 | Shale, 100 percent, medium-dark-gray, (N4), silty, carbonaceous sticky, not as well indurated as previous 40 feet, highly calcareous. |
| 190-200 | Shale, 100 percent, as above poorly indurated and slightly calcareous. |
| 200-210 | Shale, 100 percent, as above. |
| 210-220 | Shale, 100 percent, as above. |
| 200-230 | Shale, 100 percent, medium-dark-gray, (N4), silty, contains abundant well-rounded, sand-size quartz grains, carbonaceous, calcareous fissile, better indurated than previous 40 feet. |
| 230-240 | Shale, 100 percent, as above. |
| 240-250 | Shale, 100 percent, as above. |
| 250-260 | Shale, 100 percent, as above, with minor sandstone. |
| 260-270 | Shale, 100 percent, as above, with minor sandstone. |
| 270-280 | Siltstone, 80 percent, medium-dark-gray, (N4), clayey, carbonaceous, sand-size quartz grains present, highly calcareous shale 20 percent, medium-dark-gray, (N4), silty, calcareous. |



350002013

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Cretaceous:** |
| | **Mancos Shale - concluded:** |
| 280-290 | Siltstone, 70 percent, as above, shale 20 percent as above, sandstone 10 percent, light-brown (5 YR 5/6), composed mainly of quartz and feldspar, minor sand-size quartz grains present, minor marcasite. |
| 290-300 | Shale, 50 percent, medium-dark-gray, (N4), very sandy, sand predominantly well-rounded quartz grains, silty, calcareous; siltstone 50 percent, medium-dark-gray, (N4), clayey, calcareous. |
| | **Dakota Sandstone:** |
| 300-310 | Sandstone, 80 percent, medium-dark-gray, (N4), very fine-grained, composed mainly of well-rounded quartz, silty, friable, carbonaceous calcareous; siltstone 20 percent, as above. |
| 310-320 | Sandstone, 100 percent, as above. |
| 320-330 | Sandstone, 100 percent, as above with minor moderate-reddish-brown (10 R 4/6) sandstone. |
| 330-340 | Sandstone, 100 percent, as above, with slightly more clay content. |
| 340-350 | Sandstone, 100 percent, as above. |
| 350-360 | Sandstone, 100 percent, as above. |
| 360-370 | Sandstone, 100 percent, as above. |
| 370-380 | Siltstone, 90 percent, medium-dark-gray, (N4), very sandy with well-rounded quartz, carbonaceous, calcareous; shale 10 percent medium-dark-gray, silty, poorly indurated, calcareous. |
| 380-390 | Siltstone, 50 percent, as above; sandstone, 50 percent, medium-gray, (N5), composed of well-rounded quartz, silty, friable, carbonaceous, calcareous. |
| 390-400 | Siltstone, 60 percent, medium-dark-gray, (N4), sandy, carbonaceous, calcareous; sandstone, 20 percent, as above; shale 20 percent, poorly indurated, calcareous. |
| 400-410 | Siltstone, 50 percent; shale, 50 percent, as above. |



350002014

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Cretaceous:** |
| | **Mancos Shale:** |
| 410-420 | Shale, 100 percent, dark-gray, (N3), silty and sandy sticky, poorly indurated, less calcareous than previous intervals. |
| 420-430 | Shale, 100 percent, as above. |
| 430-440 | Shale, 100 percent, as above but sandier and less sticky. |
| 440-450 | Siltstone, 100 percent, medium-dark-gray, (N4), very silty, abundant sand size quartz grains, very clayey, sticky and friable, highly calcareous. |
| 450-460 | Siltstone, 100 percent, as above. |
| 460-470 | Siltstone, 100 percent, dark-gray, (N3), hard, brittle, silty with sand-size quartz present, slightly calcareous, carbonanceous. |
| 470-480 | Siltstone, 100 percent, as above. |
| 480-490 | Siltstone, 100 percent, as above. |
| 490-500 | Siltstone, 100 percent, grayish-black, (N2), poorly indurated, silty, calcareous. |
| 500-510 | Siltstone, 95 percent, as above but much sandier; sandstone, 5 percent, white (N9), composed of very fine-grained quartz, calcareous. |
| | **Dakota Sandstone:** |
| 510-520 | Sandstone, 90 percent, medium to light-gray, (N5-N7), composed of very-clean, fine-grained, well-rounded quartz, silty, calcareous, friable; shale, 10 percent, grayish-black, (N2), silty, calcareous. |
| 520-530 | Sandstone, 50 percent, as above but somewhat coarser; shale, 50 percent, as above. |
| 530-540 | Sandstone, 60 percent; shale, 40 percent, as above. |
| 540-550 | Shale, 70 percent, medium-dark-gray, (N4), very silty and sandy, poorly indurated, calcareous; sandstone, 30 percent, as above. |
| 550-560 | Shale, 50 percent; sandstone, 50 percent, as above. |



350002015

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Cretaceous:** |
| | **Dakota Sandstone - concluded:** |
| 560-570 | Sandstone, 90 percent, light-gray, (N3), composed of very fine-grained, well-rounded quartz, and minor dark minerals, friable, highly calcareous; siltstone, 10 percent, dark-gray, (N3), sandy, calcareous, minor chert present. |
| 570-580 | Sandstone, 90 percent, as above; shale, 10 percent, dark-gray, (N3), silty, calcareous, minor chert present. |
| | **Mancos Shale:** |
| 580-590 | Shale, 100 percent, medium-dark-gray, (N4), silty, carbonaceous, calcareous, poorly indurated. |
| 590-600 | Shale, 100 percent, as above but much sandier. |
| | **Dakota Sandstone:** |
| 600-610 | Sandstone, 90 percent, light to medium-dark-gray, (N4-N7), medium to very fine-grained quartz, well-rounded, minor dark minerals, friable, slightly calcareous, carbonaceous; siltstone, 10 percent, medium-dark gray, (N4), very clayey, carbonaceous, calcareous. |
| 610-620 | Sandstone, 90 percent; siltstone, 10 percent, as above. |
| 620-630 | Sandstone, 90 percent; siltstone, 10 percent, as above. |
| 630-640 | Sandstone, 90 percent; siltstone, 10 percent, as above. |
| | **Jurassic:** |
| | **Morrison Formation, Brushy Basin Member:** |
| 640-650 | Sandstone, 70 percent, very-light to medium-gray, (N8-N5), composed of rounded to subangular quartz, medium to very-fine-grained, darker colored sandstone contains silt and carbonaceous material, minor pyrite also present, friable, non-calcareous; siltstone, 30 percent, dark-gray, (N3), clayey with some sand-size quartz grains, calcareous, carbonaceous. |
| 650-660 | Sandstone, 80 percent; siltstone, 20 percent, as above. |
| 660-670 | Sandstone, 80 percent; siltstone, 20 percent, as above. |



350002016

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Brushy Basin Member - continued:** |
| 670-680 | Shale, 60 percent, greenish-gray, (5 G 6/1), slightly silty, non-calcareous; sandstone, 40 percent, very light-gray to medium-gray (N8-N5), composed mainly of very-fine to fine-grained, rounded to subangular quartz. Sandstone varies from very well-washed orthoquartzite to a very silty, carbonaceous sandstone. Silty sandstone is calcareous, orthoquartzite is non-calcareous. |
| 680-690 | Siltstone, 40 percent, medium-dark-gray, (N4), very clayey, calcareous, carbonaceous; claystone, 40 percent, very-light-gray to greenish-gray (N8-5 G 6/1), slightly silty, noncalcareous; sandstone, 20 percent, very light-gray to light-gray (N8-N7), very-fine to fine-grained, rounded to subangular quartz, calcareous. |
| 690-700 | Siltstone, 40 percent; claystone, 40 percent; sandstone, 20 percent, as above. |
| 700-710 | Siltstone, 40 percent; sandstone, 40 percent; claystone, 20 percent, as above. |
| 710-720 | Claystone, 40 percent; siltstone, 30 percent; sandstone, 30 percent, as above. |
| 720-730 | Sandstone, 50 percent; claystone, 25 percent; siltstone, 25 percent, as above. |
| 730-740 | Sandstone, 40 percent, very light-gray to medium light-gray, (N8-N6), composed mainly of subangular quartz grains, some grains iron-stained, fine-grained, minor carbonaceous material, calcareous. Claystone, 40 percent, yellowish-gray to greenish-gray with minor brownish-gray, (5 Y 8/1 - 5GY 6/1), slightly silty, non-calcareous. Siltstone, 20 percent, light to medium-gray (N7-N5), clayey and sandy, carbonaceous, calcareous. |
| 740-750 | Claystone, 70 percent, mainly olive-gray (5 Y 4/1); siltstone, 20 percent; sandstone, 10 percent, as above. |
| 750-760 | Claystone, 70 percent; sandstone, 20 percent; siltstone, 10 percent as previous interval. |



350002017

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Brushy Basin Member - concluded:** |
| 760-770 | Claystone, 50 percent, light-olive-gray (5 Y 6/1), to greenish-gray (5 G 6/1), much sandier than above. Sandstone, 40 percent, very light-gray (N8), to light-greenish-gray, (5 G 8/1). Siltstone, 10 percent, sandier and more carbonaceous than previous intervals. |
| 770-780 | Claystone, 50 percent; siltstone, 30 percent; sandstone, 20 percent, as previous interval. |
| 780-790 | Claystone, 50 percent; siltstone, 30 percent; darker colored medium-dark-gray, (N4); sandstone, 20 percent, as above. |
| 790-800 | Siltstone, 60 percent, medium-dark-gray, (N4), carbonaceous, as above; claystone, 30 percent; sandstone, 10 percent, as above. |
| 800-810 | Siltstone, 70 percent; claystone, 20 percent; sandstone, 10 percent, as above. |
| 810-820 | Siltstone, 60 percent; sandstone, 30 percent; claystone, 10 percent, as above. |
| | **Morrison Formation, Westwater Canyon Member:** |
| 820-830 | Sandstone, 80 percent, light-gray, (N7), composed mainly of fine to medium-grained, well-rounded to subangular quartz grains, contains carbonaceous material, but few accessory minerals, minor pyrite, very friable and poorly cemented, grains appear frosted. Siltstone, 15 percent, medium-dark-gray, (N4), greenish-gray, (5 G 6/1) and moderate-red (5 R 5/4), contains sand-size quartz and abundant clay, carbonaceous, calcareous. Claystone, 5 percent, light-brownish-gray, (5 YR 6/1) to dark-greenish-gray (5 G 4/1), silty, non-calcareous. |
| 830-840 | Sandstone, 80 percent; siltstone, 10 percent; claystone, 10 percent, as above. |
| 840-850 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent as above. |
| 850-860 | Sandstone, 70 percent; siltstone, 25 percent; claystone, 5 percent, as above. |



350002018

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Westwater Canyon Member - continued:** |
| 860-870 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 870-880 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 880-890 | Sandstone, 90 percent; siltstone, 5 percent; claystone, 5 percent, as above. |
| 890-900 | Sandstone, 90 percent; siltstone, 5 percent; claystone, 5 percent, as above. |
| 900-910 | Sandstone, 90 percent; siltstone, 5 percent; claystone, 5 percent, as above. |
| 910-920 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 920-930 | Sandstone, 75 percent; siltstone, 20 percent; claystone, 5 percent, as above. |
| 930-940 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 940-950 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 950-960 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 960-970 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 970-980 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 980-990 | Sandstone, 80 percent; siltstone, 15 percent; claystone, 5 percent, as above. |
| 990-1000 | Sandstone, 80 percent, siltstone, 15 percent; claystone, 5 percent, as above. |



350002019

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Westwater Canyon Member - concluded:** |
| 1,000-1,010 | Sandstone, 70 percent; siltstone, 25 percent; claystone, 5 percent, as above. |
| 1,010-1,020 | Sandstone, 70 percent; siltstone, 25 percent; claystone, 5 percent, as above. |
| | **Morrison Formation, Recapture Member:** |
| 1,020-1,030 | Siltstone, 40 percent, dark-reddish-brown, (10 R 3/4), very-light to medium-dark-gray, (N8-N4), clayey and sandy, gray grains contain carbonaceous material, calcareous. Sandstone, 40 percent, yellowish-gray, (5 Y 8/1), to dusky-red, (10 R 2/2), composed of fine to medium-grained quartz, well-rounded to subangular, friable. Claystone, 20 percent, grayish-olive, (10 Y 4/2), to dark-greenish-gray, (5 G 4/1), slightly silty, non-calcareous, carbonaceous. |
| 1,030-1,040 | Siltstone, 40 percent; sandstone, 40 percent; claystone, 20 percent, as above. |
| 1,040-1,050 | Sandstone, 60 percent; siltstone, 30 percent; claystone, 10 percent, as above. |
| 1,050-1,060 | Sandstone, 50 percent; claystone, 30 percent; siltstone, 20 percent, as above. |
| 1,060-1,070 | Sandstone, 50 percent; siltstone, 30 percent; claystone, 20 percent, as above. |
| 1,070-1,080 | Sandstone, 50 percent; siltstone, 40 percent; claystone, 10 percent, as above. |
| 1,080-1,090 | Sandstone, 40 percent; siltstone, 40 percent; claystone, 20 percent, as above. |
| 1,090-1,100 | Sandstone, 60 percent; siltstone, 20 percent; claystone, 20 percent, as above. |
| 1,100-1,110 | Sandstone, 40 percent; siltstone, 30 percent; claystone, 30 percent, as above. |
| 1,110-1,120 | Siltstone, 40 percent; claystone, 40 percent; sandstone, 20 percent, as above. |



350002020

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Recapture Member - continued:** |
| 1,120-1,130 | Siltstone, 40 percent, harder and better indurated than above; sandstone, 30 percent; claystone, 30 percent, as above. |
| 1,130-1,140 | Siltstone, 40 percent; claystone, 40 percent; sandstone, 20 percent, as above. |
| 1,140-1,150 | Siltstone, 50 percent; claystone, 30 percent; sandstone, 20 percent, as above. |
| 1,150-1,160 | Siltstone, 60 percent; claystone, 20 percent; sandstone, 20 percent, as above. |
| 1,160-1,170 | Missing sample. |
| 1,170-1,180 | Sandstone, 50 percent; yellowish-gray (5 Y 8/1) to dusky-red (10 R 2/2), composed mainly of very-fine to medium-grained quartz, well-rounded to subangular grains, friable, calcareous. Siltstone, 40 percent, mainly light to medium-dark-gray (N3-N6), some grains dark-reddish-brown (10 R 3/4), clayey and sandy, gray grains contain abundant carbonaceous material, calcareous. Claystone, 10 percent, greenish-gray (5 GY 6/1), to dark-yellowish-brown (10 YR 4/2), non-calcareous. |
| 1,180-1,190 | Sandstone, 60 percent; siltstone, 30 percent; claystone, 10 percent, as above. |
| 1,190-1,200 | Sandstone, 50 percent; siltstone, 40 percent; claystone, 10 percent, as above. |
| 1,200-1,210 | Sandstone, 50 percent; siltstone, 40 percent; claystone, 10 percent, as above except more carbonaceous. |
| 1,210-1,220 | Sandstone, 60 percent; siltstone, 30 percent; claystone, 10 percent; sandstone and siltstone very carbonaceous, pyrite common. |
| 1,220-1,230 | Sandstone, 60 percent; siltstone, 30 percent; claystone, 10 percent; very carbonaceous with abundant pyrite, minor limestone also present. |
| 1,230-1,240 | Sandstone, 60 percent; siltstone, 30 percent; claystone, 10 percent; pyritic sandstone abundant and very carbonaceous. |



350002021

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Jurassic:** |
| | **Morrison Formation, Recapture Member - concluded:** |
| 1,240-1,250 | Sandstone, 65 percent; siltstone, 30 percent; claystone, 5 percent; as above, carbonaceous with pyrite abundant. |
| 1,250-1,260 | Sandstone, 60 percent; siltstone, 35 percent; claystone, 5 percent; as above with abundant pyrite. |
| 1,260-1,270 | Sandstone, 65 percent; siltstone, 35 percent; claystone, 5 percent; reddish-sandstone becoming more abundant, pyrite abundant. |
| 1,270-1,280 | Sandstone, 50 percent, as above; siltstone, 40 percent, with dark-reddish-brown color (10 R 3/4), more abundant than gray siltstone; claystone, 10 percent, as above. |
| 1,280-1,290 | Sandstone, 50 percent; siltstone, 40 percent; claystone, 10 percent, as previous interval. |
| 1,290-1,300 | Siltstone, 60 percent, dark-reddish-brown (10 R 3/4) and medium-dark-gray (N4); sandstone, 35 percent; claystone, 5 percent; as above, minor limestone presents. |
| 1,300-1,310 | Siltstone, 60 percent; sandstone, 35 percent; claystone, 5 percent, as above. |
| 1,310-1,320 | Siltstone, 70 percent, mostly medium-dark-gray (N4); sandstone, 25 percent; claystone, 5 percent, as above. |
| 1,320-1,330 | Siltstone, 70 percent, dark-reddish-brown and dark-gray; sandstone, 25 percent; claystone, 5 percent, as above, minor pyrite present. |



350002022

Table 3. Description of formation cuttings for selected wells - Continued

Location: 10.7.36.424a (see text for explanation)
Well name: Laguna Ir. #1
Samples described by S. Craigg

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt:** |
| 0-10 | Sand, light-brown (5YR 6/4), very-fine to fine-sand, angular to subround, well-sorted, moderate reaction to HCl, quartz-95 percent, dark minerals (Amphibole, biotite) - 5 percent (dry when described). |
| 10-20 | Sand and gravel, light-brown (5YR 5/6) to moderate brown (5YR 4/4), fine sand to fine gravel, average grain size is medium to coarse, angular to subround with angular dominating, poorly sorted, slight reaction to HCl, Quartz-60 percent, basalt rock fragments-25 percent, light-gray sandstone rock fragments-25 percent, light-gray sandstone rock fragments-10 percent, dark minerals-5 percent (dry when described). |
| 20-24 | Gravel, olive-black (5Y 2/1) to greenish black (5 GY 2/1), coarse sand to medium gravel, angular to subround with angular predominating, poorly sorted, basalt rock fragments-75 percent, Quartz-15 percent, gray sandstone and Quartzite fragments-10 percent (dry when described). |
| 24-27 | Gravel, olive-gray (5Y 4/1) to greenish-black (5 GY 2/1), very-coarse sand to coarse gravel, poorly sorted, angular to subangular, basalt rock fragments-85 percent; quartz, sandstone fragments, and Quartzite fragments-15 percent (wet when described). |
| 27-30 | Gravel, medium-gray (N5) to greenish black (5 GY 2/1), coarse sand to coarse gravel, poorly sorted, angular to subround, basalt rock fragments-75 percent, gray and pink Quartzite rock fragments and sand-25 percent (dry when described). |
| 30-34 | Gravel, brownish-black (5 YR 2/1), medium sand to coarse gravel, poorly sorted, angular to round, larger fragments are angular, smaller grains are more rounded. Basalt rock fragments-75 percent, coarse Quartz sand-5 percent, gray Quartz-25 percent (wet when described). |



350002023

**Table 3. Description of formation cuttings for selected wells - Continued**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - continued:** |
| 34-49 | Gravel, medium-gray (N5) to olive-gray (5Y 2/1), medium sand to coarse gravel, poorly sorted, angular to round, basalt rock fragments-80 percent, coarse Quartz sand 10 percent, gray Quartzite fragments-10 percent (dry when described). |
| 49-55 | Basalt, medium-dark-gray (N4), finely vesicular,--60 percent; a very light-gray, probably monesilicic rock with aphanitic testure (resembles a dacite/syenite rock)--25 percent; alluvial gravels and sands as described above-15 percent (dry when described). |
| 55-65 | Same as above, except basalt-85 percent; "dacite/syenite" rock-10 percent; gravels-5 percent, (dry when described). |
| 65-75 | Basalt, 100 percent, amydaloidal, medium dark gray (N4), vesicles are filled with silica, (dry when described). |
| 75-85 | Same as above; (wet when described). |
| 85-90 | Same as above; except occurs both as amygdaloidal and vesicular fragments (wet when described). |
| 90-95 | Basalt fragments-25 percent; alluvial sand-75 percent, light brown (5YR 5/6), fine to very-coarse sand, poorly sorted, angular to round, Quartz-80 percent, light-gray to iron-stained sandstone rock fragments-14 percent, dark minerals-3 percent, opaque minerals (magnetite)-3 percent (dry when described; driller reports to have broken through basalt layer in this interval). |
| 95-100 | Gravel, 70 percent, coarse sand to fine pebbles, angular to sub-round, poorly sorted, rock fragments and grains include the following: iron-stained sandstone chips, green (chloritic) schistose rock chips, light and dark-gray Quartzite chips, dark and opague minerals grains, "granitic" rock chips, pinkish white massive quartz chips. Basalt cuttings from above intervals-30 percent (dry when described). |
| 100-105 | Same as above, except cuttings are 80 percent gravel, fine sand to fine pebbles; 20 percent basalt fragments (dry when described). |
| 105-115 | Same as above, except gravel is 70 percent, basalt is 30 percent (dry when described). |
| 115-125 | Gravel, as above, except grain size from fine sand to coarse gravel. Only a minor amount of basalt cuttings (dry when described). |



350002024

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - concluded:** |
| 125-135 | Gravel, as above, except grain size is very-fine sand to medium gravel; subround to round, medium-grained quartz sand becoming more common. Minor amount of basalt cuttings (dry when described). |
| 135-145 | Gravel, as above, except grain size is very-fine sand to fine pebbles. Very minor amount of basalt cuttings (dry when described). |
| 145-155 | Gravel as above; approximately 50 percent is Quartz sand, medium grained, subrounded. (Total depth of pilot hole is 155 feet). |

*Note: Samples were washed to remove drilling mud, therefore a small amount of finer grained material in the cuttings was probably also washed out.

**Location: 10.7.36.322 (see text for explanation)**
**Well name: Laguna 76-2**
**Sample described by Gary Levings**

| | |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt:** |
| 0-5 | Top soil. |
| 5-10 | Sand, very silty (may be top soil), light-olive-gray (5Y 6/1) when dry, very fine to very coarse-grained, poorly sorted, subrounded, primarily quartz grains, some basalt and granite, unconsolidated. |
| 10-15 | Sand and silt (may be top soil), light-olive-gray (5Y 6/1) when dry, very fine to fine-grained with a few coarse grains, poorly sorted, primarily quartz grains, a few basalt and granite, unconsolidated. |
| 15-20 | Sand, light-olive-gray (5Y 6/1) when dry, very-fine to very coarse-grained, poorly sorted, subangular, quartz, granite, and basalt grains, unconsolidated. |
| 20-25 | Basalt, 60 percent, grayish-black (N2) when wet. Sand, 40 percent, very fine to coarse-grained, subangular, poorly sorted. (Sand may be cavings). |



350002025

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - concluded:** |
| 25-30 | Same as above except 80 percent basalt and 20 percent sand. |
| 30-35 | Same as above except 50 percent basalt and 50 percent sand. |
| 35-55 | Same as above except 80 percent basalt and 20 percent sand. |
| 55-75 | Same as above except less than 3 percent sand. |
| 75-80 | Basalt, 95 percent, grayish-black (N2) when wet. Sand, 5 percent, light-olive-gray (5Y 6/1) when dry, very fine to medium-grained, poorly sorted. |
| 80-85 | Clay, 90 percent, sand 5 percent, basalt 5 percent, mixture is light-olive-brown (5Y 5/6) when dry. |
| 90-95 | Same as above except mixture is light-gray (N7) - Clay, light-olive-gray (5Y 5/1) when wet. Minor sand, very fine-grained. |
| 95-100 | Clay, light-olive-gray (5Y 6/1) when wet, sandy, sand grains composed of basalt and sandstone with a few quartz grains. |
| 100-110 | Clay, light-gray (N7) when wet. Minor sand grains composed of basalt and quartz. |
| 110-115 | Clay, light-gray (N7) when wet. Minor sand grains composed mainly of sandstone, some chips 1/4 inch in diameter. |
| 115-125 | Sand, 80 percent, fine-grained to 1/4 inch in diameter, composed of sandstone, basalt, and siltstone, poorly sorted, very angular chips. |
| 125-130 | Same as above except grain size is very fine to coarse, less siltstone chips. |
| 130-135 | Sand, very fine to coarse-grained, a few large chips of greenish-gray (5GY 6/1) sandstone, mostly grains from quartz sandstone, mostly angular, poorly sorted. Less than 10 percent clay. |
| 135-150 | Sand, very fine to medium-grained, poorly sorted, subangular to subrounded mostly quartz. Less than 3 percent siltstone and sandstone grains. |
| 150-154 | Same as above except some large chips of sandstone. |



350002026

Table 3. Description of formation cuttings for selected wells - Continued

**Location: 10.7.36.424 (see text for explanation)**
**Well Name: Laguna 76-1**
**Sample described by Gary Roybal**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt:** |
| 0-10 | Clay, moderate brown (5YR 4/4). Silt, less than 5 percent. Strong reaction to hydrochloric acid. |
| 10-15 | Clay and silt, 80 to 90 percent, as above. Gravel, 10 to 20 percent, various colors, mostly dark-gray particles up to 1/2 inch in diameter, subrounded to angular. |
| 15-20 | Clay, 50 percent, as above. Gravel, 50 percent, as above. |
| 20-35 | Clay, 90 percent, as above. Gravel, 10 percent as above, but smaller-sized particles. |
| 35-40 | Clay, 70 percent, as above. Gravel, 30 percent as above but very large range of particles sizes. |
| 40-45 | As above, some fine-grained sand as quartz. |
| 45-50 | Clay, 80 percent, pale-red (10R 6/2) to grayish-orange (10YR 7/4) slightly silty, only slightly reactive hydrochloric acid. Sand and gravel, 20 percent, angular. |
| 50-55 | No sample. |
| 55-65 | Clay, 80 percent, pale-yellowish-brown (10YR 6/2), nonreactive to hydrochloric acid. Gravel 20 percent, as above. |
| 65-70 | Clay, 50 percent, as above. Basalt, 50 percent, very dark, scattered olivine crystals. |
| 70-85 | Basalt, 100 percent, as above. |
| 85-90 | Basalt, 40 percent, as above. Sand, 40 percent, very fine-grained, quartz. Silt, 20 percent, nonreactive hydrochloric acid. |



350002027

**Table 3. Description of formation cuttings for selected wells - Continued**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium and basalt - concluded:** |
| 90-95 | Gravel, 80 percent, size range 1/8 to 1/2 inch, angular. Clay 20 percent, pale yellowish-brown (10YR 6/2), nonreactive to hydrochloric acid. |
| 95-100 | Gravel, 40 percent, as above except somewhat smaller particle size. Sand, 30 percent, very fine to medium-grained, mostly quartz. Clay, 30 percent, as above. |
| 100-115 | Sand, 60 percent, as above. Clay, 30 percent as above. Gravel, 10 percent, as above. |
| 115-120 | As above except somewhat less sand and gravel and highly reactive to hydrochloric acid. |
| 120-125 | As above except high sand percentage. |
| 125-130 | As above except no reaction to hydrochloric acid. |
| 130-140 | Sand, 50 percent, as above. Gravel, 30 percent, as above. Clay, 20 percent, as above. |
| 140-145 | Sand, 50 percent, very fine to medium-grained, mostly quartz. Gravel, 30 percent, 1/4 inch diameter or less. Clay, 20 percent, pale yellowish-brown (10YR 6/2), no reaction to hydrochloric acid. |
| 145-150 | As above except somewhat less sand. |
| 150-157 | Silt and clay, 55 percent, light-brown, (5YR 6/4) to pale-brown (5YR 5/2), highly calcareous. Sand, 40 percent, as above. Gravel 5 percent. |



350002028

Table 3. Description of formation cuttings for selected wells - Continued

Location: 11.6.27.334 (see text for explanation)
Well name: Encinal Canyon #1
well cuttings described by John J. Rote.

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-5 | Silt, pale-yellowish-brown (10YR 6/2), with scattered basalt granules. Minor caliche. |
| 5-10 | Same as 0-5. |
| 10-15 | Same as 0-5 except color is light-brown (5YR 6/4). No caliche. |
| 15-20 | Same as 10-15. |
| 20-25 | Same as 10-15. |
| 25-30 | Same as 10-15. |
| 30-35 | Same as 10-15; basalt granules absent. |
| 35-40 | Shale, light gray (N7); with limestone fragments (numerous). |
| 40-45 | Same as 35-40. |
| 45-50 | Shale, calcareous, light gray (N7). |
| 50-55 | Same as 45-50. |
| 55-60 | Same as 45-50. |
| 60-65 | Same as 45-50. |
| 65-70 | Same as 45-50. |
| 70-75 | Same as 45-50. |
| 75-80 | Same as 45-50. |
| 80-85 | Same as 45-50. |
| 85-90 | Same as 45-50. |
| 90-95 | Same as 45-50. |



350002029

Table 3. Description of formation cuttings for selected wells - Continued

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium - concluded:** |
| 95-100 | Shale, light gray (N7). |
| 100-105 | Same as 95-100. |
| 105-110 | Same as 95-100. |



350002030

Table 3. Description of formation cuttings for selected wells - Continued

**Location: 11.6.34.134 (see text for explanation)**
**Well name: Encinal Canyon #2**
**Well cuttings described by John J. Rote.**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-30 | Silt, grayish-orange (10YR 7/4); slightly calcareous scattered basalt and gravel (50 percent). |
| 30-35 | Shale, pale yellowish brown (10YR 6/2), calcareous, scattered basalt and gravel. |

Note: Percentage of basalt and gravel probably decrease as depth increases, because of drill hole caving near top.



350002031

**Table 3. Description of formation cuttings for selected wells - Concluded**

**Location: 11.7.35.243 (see text for explanation)**
**Well name: Castillo Canyon 1**
**Well cuttings described by John J. Rote.**

| Interval in feet below land surface | Description |
|---|---|
| | **Quaternary:** |
| | **Alluvium:** |
| 0-5 | Silt, pale-yellowish-brown (10YR 6/2), slightly calcareous. |
| 5-10 | Same as 0-5. |
| 10-15 | Same as 0-5. |
| 15-20 | Shale, light-gray (N7). |
| 20-25 | Same as 15-20. |
| 25-30 | Same as 15-20. |
| 30-35 | Same as 15-20. |
| 35-40 | Silt, light-gray (N7). |
| 40-45 | Sandstone, very light-gray (N8) fine grained, poorly cemented. |
| 45-50 | Same as 40-45. |
| 50-55 | Same as 40-45. |
| 55-60 | Sandstone, as above, to silt, very light-gray (N8). |
| 60-65 | Shale, very light gray (N8), to light-gray (N7). |
| 65-70 | Same as 60-65. |
| 70-75 | Same as 60-65. |



350002032

Table 4. Summary of all aquifer tests conducted on the Pueblo of Laguna

EXPLANATION

Location number : See text for explanation

Water-bearing geologic unit: Qal, alluvium; Qb, Quaternary basalt; QTb, Older basalt; QTs, Santa Fe Group; Kmv, Mesaverde Group Km, Mancos Shale; Kd, Dakota Sandstone, Jm, Morrison Formation; Jb, Bluff Sandstone; Js, Summerville Formation; Jt, Todilto Formation; Je, Entrada Sandstone; Trc , Chinle Formation; Psa, San Andres Limestone, Pg, Glorieta Sandstone

Specific capacity: Determined at end of aquifer test unless noted

Thickness of producing interval: Determined from well-completion data.

Remarks: (1) Aquifer test by well driller or consultant
(2) Aquifer test results published by Dinwiddie and Motts (1964)
(3) Well-completion zones not reported by driller; producing interval estimated based on geologic logs
(4) Transmissivity calculated using modified nonequilibrium formula (Ferris and others, 1962, p. 98)
(5) Transmissivity calculated using Theis recovery method (Ferris and others, 1962, p. 100)
(6) Transmissivity calculated using nonequilibrium method (Ferris and others, 1962, p. 92)
(7) Transmissivity calculated using method of Harrill (1970, p C212)

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 8.6.8.234 RWP 14 | Je | 1975 | 3.5 | 59 | 2± | 0.05 | - | 50 | - | (3) |
| 8.7.14.223 RWP 34 | Je | 1975 | 3 | 60 | 2± | 0.05 | - | 35 | - | (3) |
| 9.2.24.230 BIA Sedillo | QTs | 1980 | 12 | 84 | 24 | 0.14 | - | 9 | - | Tested by Bureau of Indian Affairs. |
| 9.5.9.231 Laguna 78-1 | Jb, Jt, Je | 1978 | 74 | 190 | 24 | 0.39 | 55 4/ | 70 | 0.8 | Unable to measure drawdown after 11 hr pumping. Specific capacity calculated after 11 hr pumping. |
| 9.5.12.442 Mesita Test | Psa(?) | 1964 | 15 | 391 | - | 0.04 | - | - | - | Flowing well. |



350002033

**Table 4. Summary of all aquifer tests conducted on the Pueblo of Laguna - Continued**

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.5.13.233 Mesita P.S. | Je, Trc | 1965 | 15 | 77 | 3.5 | 0.19 | - | - | - | (1) |
| 9.5.13.411 Burnell 2 | Trc | 1963 | 22 | 51 | 24 | 0.43 | - | 24 | 4.6 | (3) |
| 9.5.24.413 EPNG 3 | Trc | 1957 | 40 | 205 | - | 0.19 | - | 40 | - | (1) |
| 9.6.2.123 Laguna 76-7 | Qal | 1977 | 4.5 | 105 | 24 | 0.04 | 290 | 122 | 2.4 | (5) Two 1/2 hour bailer tests at 20 gal/min in 1978 caused less than 5 ft drawdown indicating well should produce more than 4.5 gal/min. |
| 9.6.4.433 Standard | Jb, Je | 1974 | 3 | 12.5 | 0.5 | 0.24 | - | - | - | (1) Flowing well. |
| 9.6.5.222 Laguna 76-6 | Qal,Qb | 1977 | 125 | 11.4 | 24 | 11.0 | 3,800 | 70 | 54 | (6) |
| 9.6.13.343 Transwestern 1 | Jb, Je | 1967 | 0.5 | 87 | 1.5 | 0.005 | - | 80 | - | (1) |
| 9.6.20.412 RWP 18 | Je | 1962 | 20 | 12 | - | 1.7 | - | 40 | - | (1) |



350002034

Table 4. Summary of all aquifer tests conducted on the Pueblo of Laguna - Continued

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 9.6.26.233 RWP 24 | Jb | 1974<br>1978 | 4.5<br>5.1 | 0.6<br>1.1 | 2±<br>8 | 7.5<br>4.5 | -<br>450 | 21<br>21 | 52<br>21 | (4) 1974 test conducted allowing windmill to pump. A pump jack was installed for 1978 test. |
| 10.2.25.444 Cañoncito P.S. 2 | QTs | 1974 | 41 | 114 | 24 | .35 | 60 | 70 | .86 | (5) Tested by Bureau of Indian Affairs. |
| 10.6.3.111 Encinal 1 | Kd | 1964<br>1978 | 14<br>10.6 | 63<br>190 | -<br>24 | .22<br>- | -<br>- | 25<br>25 | -<br>- | (3) 1964 test by driller, 1978 test by USGS. Bailer test indicated yield of at least 25 gal/min. |
| 10.6.9.121 Encinal 2 | Kd | 1964<br>1978 | 30<br>54 | 1<br>14.7 | "all day"<br>24 | 30<br>3.7 | -<br>2,000 | 20<br>20 | -<br>100 | (3,7) 1964 test by driller, 1978 test by USGS. Pumping rate decreased irregularly from 100 to 47 gal/min during 1978 test. |
| 10.6.31.434 Seama P.S. | Qal,Qb | 1963 | 450 | 23.5 | .75 | 19.1 | 1,500 | 73 | 21 | (1,4) Step pumped 150 to 450 gal/min. Transmissivity calculated after pumping 45 minutes at 150 gal/min. |
| 10.6.31.443 Ir. test 7 | Qal | 1960 | 115 | 8.5 | 24 | 13.5 | 3,200 | 138 | 23 | (2,3,5) |
| 10.6.35.322 Pueblo test 1 | Qal | 1960 | 23 | 23 | 12 | 1.0 | 400 | 40 | 10 | (2,3,4) |
| 10.6.35.324 New Laguna P.S. | Qal | 1960 | 75 | 32 | 24 | 2.3 | - | - | - | (1) |



350002035

Table 4. Summary of aquifer tests conducted on the Pueblo of Laguna – Continued

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 10.7.36.424a Laguna Ir. 1 | Qal,Qb | 1977 | 343 | 86 | 24 | 5.7 | - | 68 | - | Step pumped 250 to 490 gal/min. Specific capacity calculated while pumping at 490 gal/min. |
| 11.2.1.124 ECW 8 | Qal,Kmv | 1964 | 15 | 45 | - | .33 | - | - | - | (1) |
| 11.5.13.112 LJ 205 | Jm | 1971 | 34 | 154 | 15 | .22 | - | - | - | (1) |
| 11.5.14.241 L-Bar 2 | Psa,Pg | 1975 | 5 | 390 | - | .01 | - | - | - | (1) |
| 11.5.24.213 Anaconda 1 | Jm | 1971 | 30 | 152 | 8 | .19 | 18 | - | - | (1) |
| 11.5.30.422 Pueblo test 3 | Jm | 1960 | 10 | 192 | 12 | .05 | 3.3 | - | - | (2,5) |
| 11.5.32.232 Paquate P.S. 2 | Qal | 1974 | 75 | 43 | 3 | 1.7 | - | 50 | - | (1,3) Flowing well. |
| 11.5.32.234 Pueblo test 5 | Qal | 1960 | 35 | 25 | 12 | 1.4 | 75 | 50 | 1.5 | (2,3,4) Flowing well. |
| 11.5.32.234a Paguate P.S. 1 | Qal | 1963 | 90 | 23 | 12 | 3.9 | - | 50 | - | (1,3) Flowing well. |
| 11.6.27.334 Encinal Canyon 1 | Qal | 1978 | 5.3 | - | 1.7 | - | - | 5 | - | Bailer test. |



350002036

Table 4. Summary of all aquifer tests conducted on the Pueblo of Laguna - Continued

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 10.6.35.342 Pueblo Test 2 | Qal | 1960 | 90 | 4 | 12 | 22.5 | 17,000 | 56 | 300 | (2,3,5) |
| 10.6.35.342a Laguna Ir. 2 | Qal | 1977 | 184 | 31 | 24 | 5.9 | 15,000 | 80 | 188 | (7) Pumping rate varied during test from 80 to 212 gal/min. |
| 10.7.10.213 Laguna 79-1 | Jm,Kd | 1980 | 10 | 128 | 24 | .08 | 19 | 300 | .06 | (3,5) |
| 10.7.25.432 Abandoned New York | Qal | 1953 | 17 | 30 | - | .56 | - | 43 | - | (3) |
| 10.7.35.232 Ir. Test 6 | Qal | 1960 | 100 | 17.5 | 20 | 5.7 | 1,060 | 110 | 9.6 | (2,3,5) |
| 10.7.36.212 New York 2 | Qal | 1970 | 295 | 8.7 | 40 | 33.9 | - | 106 | - | (1,3) |
| 10.7.36.221 New York 1 | Qal | 1970 | 290 | 37 | 20 | 7.8 | - | 90 | - | (1,3) |
| 10.7.36.322 Laguna 76-2 | Qal,Qb | 1976 | 80 | 45 | 24 | - | - | 70 | - | - |
| 10.7.36.424 Laguna 76-1 | Qal,Qb | 1976 | 140 | 8.5 | 20 | 16.5 | 9,200 | 70 | 131 | (5) |



350002037

**Table 4. Summary of all aquifer tests conducted on the Pueblo of Laguna - Concluded**

| Location number and local name | Water-bearing geologic unit(s) | Year tested | Average discharge (gallons per minute) | Drawdown (feet) | Duration of test (hours) | Specific capacity (gallons per minute per foot) | Transmissivity (feet squared per day) | Thickness of producing interval (feet) | Hydraulic conductivity (feet per day) | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| 11.7.35.243 Castillo Canyon 1 | Kmv | 1978 | 5 | 25± | .4 | .2 | - | 20 | - | Bailer test. |
| 12.1.30.324 Conoco 65A | Jm | 1974 | 80 | 60 | 3 | 1.3 | 490 | - | - | (1,4) Well flowed 80 gal/min for 3 hrs. Shut-in pressure prior to test was 26 psi. |
| 12.2.1.134 ECW 4 | Kd,Km | 1936 | 14 | 20 | 3.5 | .7 | - | 48 | - | (1) |
| 12.2.36.442 Conoco WW-101 | Jm | 1976 | 1212 | 470 | 336 | 2.6 | 240 | 300 | 0.8 | (1,4) |



350002038

Table 5. Major constituents of water in selected wells and springs

EXPLANATION

Location number: See text for explanation
Laboratory: BIA, U.S. Bureau of Indian Affairs; USGS, U.S. Geological Survey; P, Private laboratory; PHS, U.S. Public Health Service;

Note: All constituents are dissolved and reported in milligrams per liter. Values for bicarbonate, carbonate, temperature, pH, and specific conductance were measured onsite after August 1, 1975 unless marked with asterisk. "T" indicates trace amount.

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 6.2.6.431 | Salt Spg. 173 | 08-07-41 | USGS | - | 540 | 450 | 3,700 | 38 | 1,390 |
| | | 06-05-75 | USGS | - | - | - | 3,100 | 36 | 960 |
| 6.7.18.113 | Wilson | 07-09-63 | USGS | - | 550 | 520 | 210 | 15 | 460 |
| 6.7.34.341 | Blue Water | 11-02-73 | BIA | - | 66 | 29 | 22 | 2.0 | 230 |
| 7.1.31.124 | - | 04-26-56 | USGS | - | 110 | 55 | 1,940 | - | 910 |
| 7.2.6.214 | Salt Spg. 192 | 09-03-41 | USGS | - | 230 | 190 | - | - | 2,100 |
| | | 04-21-75 | USGS | - | 210 | 110 | 10,000 | 280 | - |
| 7.2.6.434 | Salt Spg. 190 | 09-03-41 | USGS | - | 320 | 130 | - | - | 2,140 |
| | | 04-22-75 | USGS | - | 110 | 160 | 11,000 | 320 | 1,910 |
| 7.2.6.442 | Railroad Spg. | 04-22-75 | USGS | - | 350 | 350 | 9,300 | 260 | 2,460 |
| 7.2.7.123 | Salt Spg. 186 | 08-25-41 | USGS | - | 110 | 140 | 9,900 | 290 | 1,750 |
| 7.2.7.241 | Pipeline Spg. | 04-22-75 | USGS | - | 490 | 140 | 9,100 | 260 | 2,950 |



350002039

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | 2,700 | 5,200 | 21 | 3,200 | - | 13,700 | 25.5 | - | - | - | - |
| - | - | 4,400 | - | - | - | - | 15.0 | 8.7 | - | - | - |
| 0 | 3,200 | 71 | 8.8 | 3,500 | 3,100 | 4,970 | - | 6.9 | 5,070 | 1.5 | $C_4S_1$ |
| 9 | 94 | 17 | - | 290 | 99 | 380 | 14 | 7.9 | 630 | .6 | $C_2S_1$ |
| 0 | 2,440 | 1,010 | 27 | 500 | 0 | 6,170 | 18 | 7.7 | 8,540 | 89 | $C_4S_4$ |
| - | 8,000 | 12,000 | - | - | - | 33,100 | - | - | - | - | - |
| - | 6,700 | 11,000 | 20 | 980 | - | - | - | 8.6 | 37,000 | 139 | $C_4S_4$ |
| - | 6,500 | 9,800 | - | - | - | 27,600 | - | - | - | - | - |
| 180 | 7,400 | 12,000 | 30 | 930 | 0 | 32,200 | - | 9.1 | 41,500 | 157 | $C_4S_4$ |
| 0 | 6,200 | 10,000 | 22 | 2,300 | 300 | 27,700 | 13.5 | 6.9 | 36,500 | 84 | $C_4S_4$ |
| - | 6,800 | 10,000 | 38 | 850 | - | 28,400 | - | - | - | - | - |
| 0 | 5,600 | 9,000 | 23 | 1,800 | 0 | 26,100 | 14.0 | 7.7 | 34,100 | 93 | $C_4S_4$ |



350002040

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 7.2.7.343 | Salt Spg. 185 | 08-25-41 | USGS | - | 330 | 150 | - | - | 2,250 |
| | | 04-22-75 | USGS | - | 140 | 160 | 9,400 | 320 | 1,920 |
| 7.2.10.444 | RWP 5 | 06-05-75 | USGS | - | 92 | 30 | 2,200 | 33 | 460 |
| 7.2.18.134 | Salt Spg. 184b | 08-25-41 | USGS | - | 580 | 190 | - | - | 2,070 |
| 7.2.18.144 | Salt Spg. 184c | 08-25-41 | USGS | - | 430 | 190 | - | - | 1,640 |
| 7.2.18.313 | Salt Spg. 184a | 08-25-41 | USGS | - | 940 | 230 | 11,000 | 290 | 2,910 |
| | | 04-22-75 | USGS | - | 380 | 230 | 12,000 | 310 | 1,960 |
| 7.2.18.431 | Mammoth Mound | 04-22-75 | USGS | - | 390 | 170 | 8,600 | 230 | 2,720 |
| 7.2.29.214 | RWP 6 | 05-16-75 | USGS | - | 410 | 110 | 520 | 34 | 120 |
| 7.2.30.124 | Salt Spg. 189 | 09-02-41 | USGS | - | 710 | 220 | 6,600 | 170 | 2,210 |
| | | 05-16-75 | USGS | - | 340 | 230 | 9,500 | 280 | 1,490 |
| 7.2.30.411 | Salt Spg. 188 | 09-02-41 | USGS | - | 300 | 230 | - | - | 1,390 |
| 7.2.31.144 | Salt Spg. 187 | 09-02-41 | USGS | - | 610 | 270 | 5,300 | 120 | 1,630 |
| 7.3.1.432a | Indian Ruins Spg. | 04-21-75 | USGS | - | 540 | 200 | 1,300 | 31 | 640 |
| 7.4.3.344 | Salt Spg. 195 | - | USGS | - | 610 | 150 | - | - | 410 |



350002041

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | 6,800 | 9,200 | - | - | - | 27,100 | - | 8.3 | - | - | - |
| 0 | 6,200 | 10,000 | 32 | 1,000 | 0 | 27,200 | 13.5 | 8.3 | 36,800 | 129 | $C_4S_4$ |
| 0 | 2,600 | 1,500 | 15 | 350 | 0 | 6,730 | - | 8.3 | 9,430 | 51 | $C_4S_4$ |
| - | 7,500 | 9,400 | - | - | - | 28,300 | - | - | - | - | - |
| - | 8,200 | 10,300 | - | - | - | 30,600 | - | - | - | - | - |
| - | 9,100 | 11,400 | 35 | 3,300 | - | 34,700 | 28 | - | - | - | - |
| 54 | 9,100 | 12,000 | 26 | 1,900 | 200 | 35,100 | - | 8.7 | 45,000 | 120 | $C_4S_4$ |
| 0 | 5,900 | 9,900 | 27 | 1,700 | 0 | 22,600 | 11.5 | 7.8 | 34,300 | 49 | $C_4S_4$ |
| 0 | 1,900 | 480 | 13 | 1,500 | 1,400 | 3,550 | 19.0 | 7.7 | 4,660 | 5.9 | $C_4S_2$ |
| - | 5,700 | 6,700 | 32 | 2,700 | - | 21,200 | 24 | - | - | - | - |
| 0 | 7,400 | 10,000 | 23 | 1,800 | 570 | 28,600 | 21.5 | 8.3 | 37,000 | 98 | $C_4S_4$ |
| - | 6,800 | 9,000 | - | - | - | 26,100 | 30 | - | - | - | - |
| - | 5,400 | 5,200 | 20 | 2,700 | - | 17,700 | 26.5 | - | - | - | - |
| 0 | 2,800 | 1,100 | 21 | 2,200 | 1,600 | 6,320 | - | 7.6 | 8,530 | 12 | $C_4S_4$ |
| - | 2,000 | 150 | - | - | - | 6,400 | 18.5 | - | - | - | - |



350002042

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 7.4.11.431 | Lucero Spg. | 09-04-41 | USGS | - | 640 | 180 | 300 | 26 | 630 |
| | | 05-28-75 | USGS | - | - | - | 300 | 15 | - |
| 8.2.1.333 | RWP 3 | 06-05-75 | USGS | - | 140 | 53 | 1,100 | 28 | 565 |
| 8.2.7.314 | Miranda Spg. | 04-21-75 | USGS | - | 260 | 130 | 7,400 | 440 | 1,780 |
| 8.2.19.421 | El Ojo Escondido | 09-24-73 | BIA | - | 270 | 110 | 580 | 11 | 190 |
| 8.2.20.332 | Ojo Escondido | 09-08-41 | USGS | - | 33 | 20 | 23 | 5.6 | 220 |
| | | 09-24-73 | BIA | - | 42 | 22 | 25 | 5.5 | 230 |
| 8.2.20.423 | Salt Spg. | 09-24-73 | BIA | - | 630 | 120 | 8,100 | 6.3 | 2,810 |
| | | 04-21-75 | USGS | - | 570 | 150 | 8,300 | 280 | 2,900 |
| 8.2.30.342 | Salt Spg. 193 | 09-03-41 | USGS | - | 520 | 170 | 6,700 | 200 | 1,360 |
| | | 04-21-75 | USGS | - | 560 | 350 | 11,000 | 320 | 1,530 |
| 8.3.10.222 | Suwanee Spg. | 10-12-48 | USGS | - | 260 | 120 | 500 | - | 230 |
| | | 09-24-73 | BIA | - | 280 | 100 | 510 | 7.8 | 180 |
| 8.3.11.232 | CCC 1 | 04-21-75 | USGS | - | 250 | 100 | 530 | 12 | 219 |
| 8.3.12.413 | Dipping Vat Spg. | 12-07-57 | USGS | - | 270 | 110 | 600 | 11 | 220 |
| | | 09-14-73 | BIA | - | 270 | 110 | 540 | 12 | 190 |
| | | 04-21-75 | USGS | - | 270 | 100 | 560 | 12 | 230 |
| 8.3.15.413 | United Brokers | 11-29-63 | USGS | - | 680 | 180 | 3,500 | 120 | 2,390 |
| | | 05-28-75 | USGS | - | - | - | 3,300 | 110 | - |
| 8.3.20.211 | McGaughys | 02-08-57 | USGS | - | 450 | 250 | - | 380 | 160 |



350002043

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | 2,000 | 330 | 20 | 2,300 | - | 4,000 | 16.5 | - | - | - | - |
| - | - | 320 | - | - | - | - | 16.0 | - | 4,370 | - | - |
| 0 | 2,300 | 210 | 9.5 | 570 | 100 | 4,120 | - | 2.4 | 5,430 | 20 | $C_4S_4$ |
| 0 | 5,100 | 7,700 | 17 | 1,200 | 0 | 22,000 | - | 8.3 | 30,100 | 94 | $C_4S_4$ |
| 16 | 1,600 | 390 | - | 1,100 | 990 | 3,380 | 16 | 8.1 | 4,230 | 7.5 | $C_4S_4$ |
| - | 32 | 5.6 | 12 | 160 | - | 240 | 23 | - | - | - | - |
| 17 | 33 | 4.6 | - | 190 | 10 | 280 | 20 | 8.3 | 490 | 0.8 | $C_2S_1$ |
| T | 5,500 | 8,100 | - | 2,100 | - | 24,900 | 25 | 7.7 | 32,300 | 77 | $C_4S_4$ |
| 0 | 6,100 | 7,800 | 22 | 2,000 | 0 | 24,700 | 24 | 7.1 | 32,600 | 80 | $C_4S_4$ |
| - | 6,600 | 6,300 | 20 | 2,000 | - | 21,200 | 22 | - | - | - | - |
| 0 | 8,900 | 11,000 | 19 | 2,800 | 1,600 | 32,900 | - | 7.3 | 41,400 | 90 | $C_4S_4$ |
| 0 | 1,500 | 300 | - | 1,100 | - | 2,850 | - | - | 3,810 | - | - |
| 21 | 1,400 | 360 | - | 1,100 | 970 | 3,190 | 17 | 8.1 | 3,930 | 6.7 | $C_4S_2$ |
| 0 | 1,400 | 350 | 31 | 1,000 | 860 | 2,790 | - | 7.8 | 3,940 | 7.2 | $C_4S_2$ |
| 0 | 1,600 | 380 | 30 | 1,100 | 940 | 3,270 | - | 7.7 | 4,030 | 7.8 | $C_4S_3$ |
| 17 | 1,600 | 380 | - | 1,100 | 990 | 3,300 | 17 | 8.2 | 4,150 | 6.9 | $C_4S_2$ |
| 0 | 1,500 | 380 | 30 | 1,100 | 900 | 2,970 | 16.5 | 7.9 | 4,030 | 7.4 | $C_4S_2$ |
| 0 | 4,300 | 2,800 | 11 | 2,400 | 460 | 12,700 | 20.1 | 7.3 | 15,800 | 31 | - |
| - | - | 2,700 | - | - | - | - | - | - | 15,800 | - | - |
| 0 | 2,220 | 360 | 33 | 2,200 | 2,000 | 3,810 | 15 | 7.4 | 4,500 | 3.5 | - |



350002044

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.3.35.114 | Spring 194 | 09-03-41 | USGS | - | 65 | 18 | 43 | 3.9 | 380 |
| 8.4.15.123 | ECW 10 | 10-29-73 | BIA | - | 66 | 45 | 730 | 1.2 | 460 |
| 8.5.12.311 | RWP 21 | 11-16-73 | BIA | - | 460 | 24 | 360 | 5.5 | 48 |
| 8.5.17.213 | - | 04-04-74 | BIA | - | 4,700 | 370 | 12,000 | T | 10 |
| | | 06-12-75 | USGS | - | - | - | 12,000 | 7.8 | - |
| 8.5.36.423 | ECW 8 | 11-02-73 | BIA | - | 36 | 19 | 85 | 1.2 | 230 |
| 8.6.36.432 | Thompson | 11-08-73 | BIA | - | 4.0 | T | 420 | T | 710 |
| 9.1.4.432 | Stuckys | 06-05-75 | USGS | - | 45 | 13 | 1,000 | 7.1 | 900 |
| 9.2.9.433 | ECW 8 | 1940 | USGS | - | 28 | 10 | 1,600 | - | 510 |
| | | 07-03-74 | BIA | - | 26 | 11 | 1,300 | .78 | 550 |
| 9.2.24.230 | BIA Sedillo | 04-29-80 | BIA | 12 | 8.0 | T | 380 | 10 | 440* |
| 9.2.27.422 | RWP 9 | 09-24-73 | BIA | - | 34 | 7.3 | 52 | 3.9 | 180 |
| 9.3.22.443 | Coyote Spg. | 04-26-73 | BIA | - | 220 | 24 | 890 | T | 150 |
| 9.4.16.341 | RWP 16 | 05-01-59 | USGS | - | - | - | - | - | - |
| 9.4.29.323 | Fernando | 05-01-73 | BIA | - | 420 | 55 | 470 | T | 140 |



350002045

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | 13 | 31 | 28 | 240 | - | 360 | 18.5 | - | - | - | - |
| 16 | 1,100 | 320 | - | 350 | - | 2,570 | - | 8.0 | 3,470 | 17 | - |
| T | 1,700 | 99 | - | 1,300 | 1,200 | 2,750 | - | 7.7 | 3,290 | 4.4 | - |
| T | 940 | 28,000 | - | 13,000 | 13,000 | 52,200 | - | 7.1 | 82,800 | 44 | - |
| - | - | 27,000 | - | - | - | - | 18.5 | - | 65,000 | - | - |
| 9 | 130 | 19 | - | 170 | - | 437 | 17 | 8.0 | 720 | 2.8 | - |
| 40 | 120 | 110 | - | 10 | - | 1,200 | 16.5 | 8.3 | 1,630 | 57 | - |
| 0 | 1,300 | 200 | 13 | 170 | 0 | 3,030 | - | 8.1 | 4,360 | 34 | - |
| 50 | 2,800 | 84 | - | - | - | 4,990 | - | - | - | - | - |
| 41 | 2,300 | 83 | - | 110 | - | 4,170 | - | 8.4 | 6,900 | 53 | - |
| 31* | 320 | 60 | - | 20 | 0 | 1,070 | - | 8.8 | 1,600* | 37 | $C_3S_4$ |
| 19 | 44 | 4.6 | - | 110 | - | 290 | 20 | 8.1 | 460 | 2.1 | - |
| 12 | 2,100 | 63 | - | 660 | 540 | 3,570 | - | 8.3 | 4,400 | 15 | - |
| - | - | 330 | - | - | - | - | - | - | 3,870 | - | - |
| 12 | 1,800 | 140 | - | 1,300 | 1,200 | 3,230 | 13 | 8.2 | 3,660 | 5.8 | - |



350002046

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 9.4.33.223a | Pino 2 | 05-03-73 | BIA | - | 340 | 100 | 910 | 18 | 270 |
| 9.5.4.133 | ATSF | 03-19-65 | USGS | - | 300 | 76 | - | 160 | 210 |
| | | 09-13-73 | BIA | - | 310 | 63 | 170 | 5.1 | 190 |
| 9.5.9.231 | Laguna 78-1 | 11-13-78 | BIA | 50 | 630 | 43 | 170 | 10 | 107* |
| | | 11-29-78 | BIA | 40 | 580 | 30 | 230 | 5.9 | 120* |
| | | 12-21-78 | BIA | 70 | 550 | 24 | 310 | 5.9 | 130* |
| 9.5.12.442 | Mesita test | 09-19-63 | USGS | - | 510 | 300 | 5,500 | 32 | 1,320 |
| | | 11-10-64 | USGS | - | 320 | 330 | 4,100 | 59 | 1,770 |
| | | 12-03-73 | BIA | - | 180 | 150 | 3,200 | 28 | 1,500 |
| | | 06-12-75 | USGS | - | - | - | 2,900 | 31 | - |
| 9.5.13.233 | Mesita P.S. | 03-19-65 | USGS | - | 95 | 38 | - | 230 | 220 |
| | | 01-19-73 | PHS | - | 72 | 28 | 220 | 13 | 200 |
| 9.5.13.411 | Burnell 2 | 05-02-63 | USGS | - | 74 | 28 | - | 320 | 270 |
| 9.5.14.244 | Burnell 1 | 1963 | USGS | - | - | - | - | - | |
| 9.5.19.234 | Test hole 2 | 08-23-66 | USGS | - | - | - | - | - | 264 |
| 9.5.19.421 | Test hole 5 | 08-23-66 | USGS | - | - | - | - | - | 208 |
| 9.5.24.413 | EPNG 3 | 02-25-57 | P | - | - | - | - | - | - |
| 9.5.29.232 | RWP 25 | 12-11-73 | BIA | - | 240 | 27 | 350 | 4.3 | 210 |



350002047

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 2,000 | 630 | - | 1,300 | 1,100 | 4,620 | 15.5 | 8.2 | 5,640 | 11 | - |
| 0 | 1,000 | 110 | 27 | 1,100 | 890 | 1,810 | - | 7.6 | 2,280 | 2.1 | - |
| 13 | 1,000 | 220 | - | 1,000 | 880 | 1,980 | 15.5 | 8.1 | 2,390 | 2.4 | - |
| T* | 1,880 | 77 | - | 1,750 | 1,660 | 3,050 | 15.0 | 7.6 | 3,100 | 1.8 | $C_4S_1$ |
| T* | 1,980 | 35 | - | 1,580 | 1,480 | 3,110 | - | 8.2 | 3,200 | 3.0 | $C_4S_1$ |
| T* | 1,950 | 37 | - | 1,480 | 1,370 | 3,150 | 17.0 | 7.4 | 3,500 | 3.5 | $C_4S_2$ |
| 0 | 4,800 | 5,800 | 14 | 2,500 | 1,400 | 17,700 | - | 7.3 | 23,200 | 48 | - |
| 0 | 4,300 | 3,700 | 14 | 2,200 | 710 | 13,700 | 31.7 | 6.7 | 18,000 | 38 | - |
| 62 | 3,300 | 2,000 | - | 1,100 | - | 9,770 | 26.5 | 8.3 | 13,000 | 42 | - |
| - | - | 2,000 | - | - | - | - | 26.0 | - | - | - | - |
| 0 | 550 | 86 | 25 | 390 | 210 | 1,140 | - | 7.8 | 1,660 | 5.0 | - |
| T | 450 | 79 | - | - | - | - | - | - | 1,440 | 5.6 | - |
| 0 | 550 | 110 | 20 | 300 | 76 | 1,270 | - | 7.5 | 1,850 | 8.0 | $C_3S_2$ |
| - | 470 | 290 | - | - | - | - | - | - | 2,340 | - | - |
| 0 | 38 | 11 | 10 | - | - | - | - | - | 510 | - | - |
| 0 | 22 | 4.3 | 9.9 | - | - | - | - | - | 370 | - | - |
| - | 360 | 4 | - | 60 | - | 920 | - | 8.5 | - | - | - |
| T | 1,200 | 34 | - | 720 | 550 | 2,090 | - | 8.1 | 2,670 | 5.7 | $C_4S_2$ |



350002048

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 9.6.2.123 | Laguna 76-7 | 01-27-77 | USGS | 4.5 | 130 | 90 | 410 | 6.6 | 420 |
| | | 08-24-78 | BIA | 20 | 160 | 110 | 450 | 6.3 | 400* |
| 9.6.4.243 | Mooney | 10-21-74 | BIA | - | 78 | 95 | 420 | 1.6 | 92 |
| 9.6.4.433 | Standard | 10-19-74 | BIA | - | 4.0 | 2.4 | 940 | 2.0 | 190 |
| | | 06-12-75 | USGS | - | - | - | 870 | 6.8 | - |
| 9.6.5.222 | Laguna 76-6 | 01-25-77 | USGS | 125 | 80 | 75 | 400 | 8.6 | 430 |
| 9.6.10.124 | Casa Blanca | 11-16-73 | BIA | - | 76 | 12 | 19 | 3.5 | 290 |
| 9.6.13.322 | Trans-western 2 | 05-12-67 | PHS | - | 5.0 | 3.5 | 230 | 2.3 | 450 |
| 9.6.13.343 | Trans-western 1 | 05-12-67 | PHS | - | 11 | 1.3 | 210 | 2.7 | 250 |
| 9.6.26.233 | RWP 24 | 10-11-73 | BIA | - | 54 | 9.7 | 22 | 2.0 | 170 |
| | | 12-11-78 | BIA | 5 | 50 | 11 | 28 | 2.4 | 210 |
| 9.6.26.443 | Tlmia | 10-18-78 | BIA | < 1 | 60 | 6 | 23 | 2.0 | 190* |
| 9.6.28.122 | Turquoise Spg. | 02-04-74 | BIA | - | 64 | .12 | 13 | 1.2 | 210 |
| 9.6.31.143 | ECW 6 | 05-13-57 | USGS | - | 240 | 89 | - | 270 | 270 |
| 10.2.25.444 | Canoncito P.S. 2 | 09-26-74 | BIA | - | 92 | 1.2 | 380 | 5.9 | 89 |



350002049

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 970 | 220 | 25 | 700 | 360 | 2,060 | - | 7.6 | 2,900 | 6.7 | $C_4S_2$ |
| T* | 1,110 | 230 | - | 850 | 510 | 2,460 | - | 8.0 | 3,100* | 6.8 | $C_4S_2$ |
| 12 | 210 | 260 | 12 | 390 | 310 | 1,800 | - | 7.2 | 2,590 | 9.3 | $C_4S_3$ |
| 97 | 1,600 | 83 | 16.5 | 20 | - | 2,910 | - | 9.8 | 4,120 | 92 | $C_4S_4$ |
| - | - | 80 | - | - | - | - | 15.0 | - | 4,200 | - | - |
| 0 | 790 | 170 | 32 | 510 | 160 | 1,770 | - | 7.8 | 2,500 | 7.7 | $C_4S_2$ |
| T | 24 | 3.6 | 15 | 240 | 3 | 350 | - | 8.2 | 520 | .5 | $C_2S_1$ |
| 23 | 110 | 13 | - | 27 | - | 910 | - | 8.7 | 1,110 | - | - |
| 8 | 270 | 15 | - | 61 | - | 770 | - | 8.5 | 1,150 | - | - |
| 11 | 43 | 17 | - | 170 | 33 | 270 | 16 | 8.3 | 460 | .7 | $C_2S_1$ |
| 0 | 38 | 18 | - | 180 | 15 | 260 | 14.5 | 7.8 | 480 | 0.9 | $C_2S_1$ |
| - | 39 | 16 | - | 180 | 21 | 280 | - | 8.2 | 450* | 0.8 | $C_2S_1$ |
| 6 | 28 | 20 | - | 210 | 35 | 255 | - | 8.2 | 440 | .4 | $C_2S_1$ |
| 0 | 1,200 | 60 | 21 | 970 | 740 | 2,000 | 14.4 | 7.4 | 2,530 | 3.7 | $C_4S_1$ |
| T | 870 | 53 | - | 280 | 180 | 1,570 | - | - | 2,180 | 9.8 | $C_3S_3$ |



350002050

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 10.4.8.344 | ECW 3 | 04-04-74 | BIA | - | 58 | 6.1 | 390 | 2.7 | 280 |
| 10.4.30.414 | RWP 28 | 03-15-74 | BIA | - | 370 | 18 | 260 | 3.3 | 180 |
| 10.4.36.224 | RWP 32 | 03-27-68 | PHS | - | 36 | 12 | 650 | 5.9 | 480 |
| 10.5.4.323 | P-10 | 11-25-74 | P | - | 11 | 2 | 450 | - | 370 |
| 10.5.14.234 | Sinkhole | 08-03-72 | BIA | - | 98 | 39 | 350 | 6.7 | 200 |
| | | 10-19-74 | BIA | - | 108 | 39 | 370 | 2.3 | 180 |
| 10.6.3.111 | Encinal 1 | 09-11-52 | USGS | - | 20 | 9.8 | - | 300 | 400 |
| | | 03-25-65 | USGS | - | 22 | 8.5 | - | 350 | 400 |
| | | 11-17-78 | BIA | 12 | 160 | 45 | 46 | 4.7 | 280 |
| 10.6.3.334 | 871 | 02-20-51 | USGS | - | 130 | 67 | - | 160 | 300 |
| 10.6.9.121 | Encinal 2 | 12-13-66 | PHS | - | 120 | 68 | 110 | 4.7 | 380 |
| | | 11-07-78 | USGS | 69 | 140 | 59 | 110 | 4.3 | 480 |
| 10.6.25.242 | Frog Pond Spg. | 11-26-73 | BIA | - | 26 | 51 | 270 | 7.4 | 190 |
| 10.6.31.434 | Seama P.S. | 03-18-65 | USGS | - | 97 | 53 | - | 180 | 380 |
| | | 01-19-73 | PHS | - | 96 | 55 | 250 | 9.4 | 390 |
| 10.6.31.443 | Ir. Test 7 | 05-25-60 | USGS | - | 100 | 47 | - | 180 | 360 |
| 10.6.33.122 | Paraje deep test | 12-09-52 | USGS | - | - | - | - | - | 520 |
| 10.6.33.213 | ECW 12 | 10-20-52 | USGS | - | 130 | 31 | - | 530 | 420 |



350002051

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 660 | 37 | - | 170 | - | 1,390 | - | 8.5 | 2,090 | 13 | $C_3S_4$ |
| 9 | 1,400 | 39 | - | 990 | 840 | 2,220 | 11 | 8.0 | 2,670 | 3.6 | $C_4S_1$ |
| 0 | 1,100 | 37 | - | 140 | - | - | - | 8.2 | 2,810 | - | - |
| - | 580 | 26 | - | - | - | 1,240 | - | 8.2 | 1,650 | - | - |
| 11 | 830 | 95 | - | 410 | 240 | 1,610 | - | 8.3 | 2,240 | 7.6 | $C_3S_2$ |
| 24 | 800 | 100 | - | 430 | 280 | 1,700 | 14 | 8.0 | 2,310 | 7.8 | $C_4S_2$ |
| 0 | 370 | 20 | 12 | 90 | 0 | 940 | - | - | 1,410 | - | - |
| 0 | 450 | 23 | 12 | 90 | 0 | 1,070 | - | 8.1 | 1,620 | - | - |
| 0 | 420 | 9 | - | 580 | 360 | 910 | 18.0 | 7.3 | 1,130 | 0.8 | $C_3S_1$ |
| 0 | 560 | 80 | 50 | 610 | 360 | 1,190 | - | - | 1,650 | 2.8 | $C_3S_1$ |
| 0 | 400 | 25 | - | 580 | - | - | - | 7.5 | 1,370 | - | - |
| 0 | 410 | 19 | 18 | 600 | 200 | 1,000 | 16.0 | 7.0 | 1,300 | 2.0 | $C_3S_1$ |
| 38 | 560 | 21 | - | 270 | 120 | 1,080 | 15 | 8.9 | 1,670 | 7.2 | $C_3S_2$ |
| 0 | 430 | 68 | 28 | 460 | 150 | 1,050 | - | 8.0 | 1,530 | 3.7 | $C_3S_1$ |
| T | 520 | 92 | - | 610 | - | 1,270 | - | 7.8 | 1,760 | 5.0 | $C_3S_2$ |
| 0 | 420 | 70 | 36 | 440 | 150 | 1,040 | 14.4 | 7.7 | 1,510 | 3.8 | - |
| 12 | - | 47 | - | 370 | 0 | - | - | - | 3,250 | - | - |
| 0 | 1,200 | 37 | 13 | 450 | 110 | 2,110 | - | - | 2,810 | - | - |



350002052

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 10.6.35.322 | Pueblo test 1 | 02-12-60 | USGS | - | 62 | 50 | - | 210 | 260 |
| 10.6.35.324 | New | 09-09-60 | USGS | - | 85 | 47 | - | 230 | 280 |
| | Laguna | 03-25-65 | USGS | - | 84 | 56 | - | 250 | 280 |
| | P.S. | 01-19-73 | PHS | - | 78 | 55 | 240 | 3.1 | 320 |
| 10.6.35.342 | Pueblo test 2 | 03-08-60 | USGS | - | 73 | 44 | - | 230 | 280 |
| 10.7.10.213 | Laguna 79-1 | 01-16-80 | BIA | 10 | 52 | 25 | 400 | 24 | 530* |
| 10.7.25.441 | - | 03-27-53 | USGS | - | - | - | - | - | 350 |
| 10.7.35.232 | Ir. | 05-01-60 | USGS | - | 99 | 81 | 570 | - | 490 |
| | test 6 | 08-14-75 | BIA | 0 | 110 | 89 | 570 | 9.4 | 420* |
| 10.7.36.212 | New | 08-29-70 | PHS | - | 80 | 24 | 60 | 7.4 | 310 |
| | York 2 | 01-18-73 | PHS | - | 78 | 24 | 70 | 8.2 | 300 |
| 10.7.36.221 | New York 1 | 08-29-70 | PHS | - | 80 | 24 | 60 | 7.4 | 300 |
| 10.7.36.322 | Laguna 76-2 | 07-14-76 | BIA | 80 | 100 | 100 | 600 | 11 | 520* |
| 10.7.36.424 | Laguna | 07-08-76 | BIA | - | 120 | 47 | 120 | 10 | 320* |
| | 76-1 | 07-10-76 | USGS | 145 | - | - | - | - | - |
| 10.7.36.424a | Laguna Ir. 1 | 09-27-77 | BIA | 340 | 130 | 56 | 160 | 11 | 320* |
| 11.5.13.112 | LJ 205 | 09- -71 | P | - | 1 | 1 | 310 | - | 260 |



350002053

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 520 | 38 | 29 | 360 | 150 | 1,040 | 15 | 8.1 | 1,460 | 4.8 | $C_3S_1$ |
| 0 | 590 | 42 | 27 | 400 | 180 | 1,170 | - | 7.6 | 1,650 | 5.0 | $C_3S_2$ |
| 0 | 650 | 48 | 28 | 440 | 210 | 1,240 | - | 7.8 | 1,760 | 5.1 | $C_3S_2$ |
| 19 | 500 | 61 | - | 570 | - | 1,170 | - | 8.0 | 1,450 | 5.2 | $C_3S_2$ |
| 0 | 560 | 43 | 24 | 360 | 140 | 1,110 | 16.1 | 7.8 | 1,570 | 5.3 | $C_3S_2$ |
| 12* | 560 | 69 | 18 | 240 | 0 | 1,400 | 28.0 | 7.4 | 2,000 | 11 | $C_3S_3$ |
| 0 | - | 22 | - | 210 | - | - | - | 7.8 | 980 | - | - |
| 0 | 1,100 | 200 | 27 | 580 | 180 | 2,310 | 15.6 | 7.6 | 3,250 | 10 | $C_4S_3$ |
| 40* | 1,060 | 230 | - | 640 | 230 | 2,500 | - | 8.1 | 3,300 | 9.9 | $C_4S_3$ |
| 0 | 150 | 13 | - | 300 | - | 590 | - | 7.9 | 880 | - | - |
| T | 160 | 18 | - | - | - | - | - | 8.0 | 720 | 1.8 | $C_3S_1$ |
| 0 | 150 | 14 | - | 300 | - | 600 | - | 8.2 | 920 | - | - |
| T* | 1,180 | 280 | - | 770 | 350 | 2,680 | 15.5 | 7.8 | 3,700 | 10 | $C_4S_3$ |
| 14* | 340 | 66 | - | 500 | 220 | 910 | - | 8.3 | 1,350 | 2.2 | $C_3S_1$ |
| - | - | - | - | - | - | - | - | 8.1 | 1,500 | - | - |
| 17* | 470 | 74 | - | 550 | 250 | 1,140 | 15.0 | 8.3 | 1,350 | 3.0 | $C_3S_1$ |
| 37 | 140 | 38 | - | - | - | 590 | - | - | - | - | - |



350002054

Table 5. Major constituents of water in selected wells and springs - Continued

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 11.5.24.213 | Anaconda 1 | 05-14-71 | USGS | - | 21 | 12 | 370 | 3.0 | 480 |
| 11.5.29.444 | - | 04-16-55 | USGS | - | 11 | 6.5 | - | 440 | 400 |
| 11.5.30.422 | Pueblo test 3 | 03-31-60 | USGS | - | 5.5 | 1.1 | - | 150 | 230 |
| 11.5.32.234 | Pueblo test 5 | 04-22-60 | USGS | - | 69 | 20 | - | 30 | 310 |
| 11.5.32.234a | Paquate | 03-18-65 | USGS | - | 60 | 18 | - | 31 | 270 |
| | P.S. 1 | 01-18-73 | PHS | - | 70 | 21 | - | 300 | 250 |
| 11.6.22.333 | Enclnal | 08-08-69 | BIA | - | 19 | 4.3 | 11.5 | 3.1 | 93 |
| | Public Supply Spring | 01-18-73 | PHS | - | 20 | 3.6 | 11.5 | 3.5 | 97 |
| 11.6.27.334 | Enclnal Canyon 1 | 07-05-78 | BIA | 5 | 180 | 70 | 170 | 8.2 | 310* |
| 11.7.35.243 | Castillo Canyon 1 | 08-14-78 | BIA | 4 | 10 | 1 | 250 | 3.5 | 620* |
| 12.1.18.134 | Ojito Spg. | 06-17-74 | BIA | - | 68 | 13 | 40 | T | 180 |
| 12.1.29.113 | Conoco 17-10 | - | P | - | - | - | - | - | - |
| 12.1.30.324 | Conoco | 08-05-71 | PHS | - | - | - | - | - | 420 |
| | 65A | 05-13-74 | BIA | - | 94 | 14 | 3,100 | 4.7 | 430 |
| | | 06-05-75 | USGS | - | - | - | 3,200 | 10 | 500 |
| | | - -76 | P | 0 | 74 | 12 | 3,300 | 9.4 | 380* |



350002055

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 470 | 16 | 13 | 100 | 0 | 1,140 | 18.0 | 7.5 | 1,750 | 16 | $C_3S_4$ |
| 7 | 610 | 25 | 15 | 54 | 0 | 1,310 | - | 8.4 | 1,900 | 26 | $C_3S_4$ |
| 5 | 120 | 7.3 | 15 | 18 | 0 | 420 | 18.9 | 8.4 | 670 | 15 | $C_2S_3$ |
| 0 | 53 | 7.6 | 42 | 254 | 1 | 380 | 13.3 | 7.3 | 580 | .8 | $C_2S_1$ |
| 0 | 45 | 14 | 42 | 220 | 0 | 350 | - | 7.4 | 510 | .9 | $C_2S_1$ |
| T | 95 | 11 | - | 320 | - | 410 | - | 7.6 | 630 | .8 | $C_2S_1$ |
| T | 6.2 | 6.0 | - | 65 | - | 110 | 15 | 7.7 | 190 | .6 | $C_1S_1$ |
| T | 2.9 | 3.5 | - | 65 | - | 160 | - | 8.0 | 190 | .6 | $C_1S_1$ |
| 10* | 800 | 16 | - | 750 | 480 | 1,570 | 15.0 | 7.6 | 1,900 | 2.8 | $C_3S_1$ |
| 14* | 17 | 12 | - | 30 | 0 | 670 | 17.0 | 8.4 | 950 | 20 | $C_3S_4$ |
| 15 | 108 | 11 | - | 230 | 24 | 400 | - | 8.1 | 600 | 1.2 | $C_2S_1$ |
| - | - | - | - | 350 | - | 9,690 | - | 7.6 | - | - | - |
| 0 | 4,000 | 2,100 | - | 290 | - | 9,630 | - | 7.6 | 14,000 | - | - |
| 32 | 3,700 | 2,100 | - | 290 | - | 9,650 | - | 8.2 | 16,000 | 79 | $C_4S_4$ |
| - | - | 2,100 | - | - | - | - | 26.0 | 8.2 | 12,900 | - | - |
| 0* | 3,840 | 2,130 | 15 | 230 | 0 | 9,520 | - | 8.0* | - | 510 | $C_4S_4$ |



350002056

Table 5. Major constituents of water in selected wells and springs - Concluded

| Location number | Local well or spring name | Date of collection | Laboratory | Pumping rate (gallon per minute) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) |
|---|---|---|---|---|---|---|---|---|---|
| 12.1.33.132 | Conoco 22-10 | - | P | - | - | - | - | - | - |
| 12.2.24.442 | Conoco 15-9 | - | P | - | - | - | - | - | - |
| 12.2.36.442 | Conoco WW-101 | 05-29-76 | P | 1,212 | 70 | 13 | 3,300 | 10 | 250* |
| 13.2.26.434 | Conoco 9-8 | - | P | - | - | - | - | - | - |



350002057

| Carbonate (as $CO_3$) | Sulfate | Chloride | Silica | Calcium-magnesium hardness (as $CaCO_3$) | Hardness, noncarbonate | Dissolved solids residue at 105° Celsius | Temperature (degrees Celsius) | pH (units) | Specific conductance (micromhos per centimeter at 25° Celsius) | Sodium absorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|---|---|
| - | - | - | - | 870 | - | 10,800 | - | 7.1 | - | - | - |
| - | - | - | - | 300 | - | 9,580 | - | 7.7 | - | - | - |
| 0* | 3,380 | 1,970 | 17 | 230 | 25 | 8,640 | - | 8.2* | 11,000 | 510 | $C_4S_4$ |
| - | - | - | - | 470 | - | 2,930 | - | 8.3 | - | - | - |



350002058

Table 6. Nutrients and minor constituents of water in selected wells

EXPLANATION

Location number: See text for explanation.

Note: All constituents reported in milligrams per liter. Concentrations of dissolved nitrate (as N), boron, and phosphorus (as P) were determined by U.S. Bureau of Indian Affairs unless marked with asterisks. Those marked with asterisks and all other concentrations were determined by U.S. Geological Survey. "T" indicates trace concentration detected.

| Location number | Local well name | Date of collection | Nitrate (dissolved as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen (total Kjeldahl as N) | Phosphorus (dissolved as P) |
|---|---|---|---|---|---|---|
| 9.5.9.231 | Laguna 78-1 | 11-13-78 | 0.28 | - | - | T |
| | | 11-29-78 | .01 | - | - | T |
| | | 12-21-78 | .04 | 0.00 | - | T |
| 9.6.2.123 | Laguna 76-7 | 01-27-77 | - | .57 | 0.10 | 0.04* |
| | | 08-24-78 | .28 | - | - | T |
| 9.6.5.222 | Laguna 76-6 | 01-25-77 | .06 | .43 | .02 | .07* |
| 9.6.26.233 | RWP 24 | 12-11-78 | .56 | 1.5 | - | T |
| 9.6.26.443 | Timia | 10-18-78 | .28 | - | - | T |
| 10.6.3.111 | Encinal 1 | 11-17-78 | .07 | - | - | .05 |
| 10.6.9.121 | Encinal 2 | 11-07-78 | .04 | .05 | - | .01 |
| 10.7.10.213 | Laguna 79-1 | 01-16-80 | .98 | - | - | .03 |
| 10.7.35.232 | Ir. Test 6 | 08-14-75 | .14 | - | - | .11 |
| 10.7.36.322 | Laguna 76-2 | 07-13-76 | .28 | - | - | T |
| 10.7.36.424 | Laguna 76-1 | 07-08-76 | 2.5 | - | - | .05 |
| 10.7.36.424a | Laguna Ir. 1 | 09-27-77 | .14 | - | - | .90 |
| 11.6.27.334 | Encinal Canyon 1 | 07-05-78 | .07 | - | - | .10 |
| 11.7.35.243 | Castillo Canyon 1 | 08-14-78 | .14 | - | - | .01 |



350002059

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as as P) | Carbon (organic, total as C) | Carbon (organic, dissolved as C) | Chemical oxygen demand | Sulfide (dissolved) | Boron (dissolved) |
|---|---|---|---|---|---|---|
| - | - | - | - | - | - | 1.2 |
| - | - | - | - | - | - | 0.58 |
| - | 0.00 | 0.7 | - | 6.0 | - | T |
| 0.04 | .04 | 1.1 | - | - | - | 0.47* |
| - | - | - | - | - | - | .65 |
| .07 | .06 | 0.9 | - | - | - | .47* |
| - | .01 | - | - | 9.0 | 0.0 | .13 |
| - | - | - | - | - | - | .15 |
| - | .01 | - | 1.7 | 1.0 | 0.1 | .20 |
| - | .01 | - | 2.0 | 4.0 | - | .20* |
| - | - | - | - | - | - | .30 |
| - | - | - | - | - | - | .40 |
| - | - | - | - | - | - | 2.0 |
| - | - | - | - | - | - | 0.13 |
| - | - | - | - | - | - | .18 |
| - | - | - | - | - | - | .29 |
| - | - | - | - | - | - | .65 |



350002060

Table 7. Trace elements of water in selected wells

EXPLANATION

Location number: See text for explanation.
Note: All constituents are reported in micrograms per liter unless noted otherwise; concentrations less than the detection limit of the analytical method used are indicated by "<"; "T" indicates trace concentration detected.

Part 1

| Location number | Local well name | Date of collection | Aluminum (dissolved) | Arsenic (total) | Barium (dissolved) | Barium (total) | Cadmium (total) |
|---|---|---|---|---|---|---|---|
| 9.5.9.231 | Laguna 78-1 | 11-13-78 | - | 2 | - | 480 | < 1 |
| | | 11-29-78 | - | 2 | - | 80 | T |
| | | 12-21-78 | 0 | 4 | 0 | 140 | 8 |
| 9.6.2.123 | Laguna 76-7 | 01-27-77 | - | 2 | - | 0 | 10 |
| | | 08-24-78 | - | 1 | - | 110 | T |
| 9.6.5.222 | Laguna 76-6 | 01-25-77 | - | 3 | - | 0 | 10 |
| 9.6.26.233 | RWP 24 | 12-11-78 | 0 | 2 | 0 | 180 | T |
| 9.6.26.443 | Timia Well | 10-18-78 | - | < 1 | - | 340 | 2 |
| 10.6.3.111 | Encinal 1 | 11-17-78 | 0 | 2 | 0 | 110 | T |
| 10.6.9.121 | Encinal 2 | 11-07-78 | 0 | 2 | 0 | - | 2 |
| 10.7.10.213 | Laguna 79-1 | 01-16-78 | - | - | 90 | - | - |
| 10.7.36.322 | Laguna 76-2 | 07-14-76 | - | 6 | - | - | - |
| 10.7.36.424 | Laguna 76-1 | 07-08-76 | - | - | - | - | - |
| | | 07-10-76 | - | 3 | - | - | - |
| 11.6.27.334 | Encinal Canyon 1 | 07-05-78 | - | T | - | 220 | T |
| 12.1.30.324 | Conoco 65A | - -76 | < 100 | < 10 | < 100 | - | < 1 |
| 12.2.36.442 | Conoco WW-101 | 05-29-76 | 6 | 10 | < 100 | - | < 1 |



350002061

| Chromium (total) | Cobalt (dissolved) | Cobalt (total) | Copper (dissolved) | Copper (total) | Flouride (dissolved, in milligrams per liter) | Iron (milligrams per liter) (dissolved) | Iron (milligrams per liter) (total) | Lead (dissolved) | Lead (total) |
|---|---|---|---|---|---|---|---|---|---|
| 24 | - | - | - | - | 1.0 | .02 | 16.8 | - | T |
| T | - | - | - | - | - | T | 13.5 | - | T |
| 8 | - | - | - | - | - | 0.01 | 1.4 | - | 90 |
| 0 | - | 70 | - | < 50 | 1.1 | 0.01 | 6.3 | - | < 100 |
| T | - | - | - | - | 1.5 | 0.02 | 1.7 | - | T |
| 0 | - | < 50 | - | < 50 | 1.5 | 0.01 | 1.9 | - | < 100 |
| T | - | - | - | - | 0.4 | T | 0.3 | - | T |
| < 10 | - | - | - | - | 0.2 | T | 1.4 | - | T |
| T | - | - | - | - | 1.2 | T | 1.2 | - | T |
| < 10 | 0 | - | 0 | - | 0.9 | 0.5 | 0.7 | 2 | T |
| - | < 3 | - | < 10 | - | 3.4 | 0.12 | - | < 10 | - |
| - | - | - | - | - | 1.6 | T | - | - | - |
| - | - | - | - | - | 1.0 | T | - | - | - |
| - | - | - | - | - | - | - | - | - | - |
| T | - | - | - | - | 0.5 | 0.01 | 11.5 | - | 62 |
| < 1 | < 1 | - | < 1 | - | 0.7 | 3.4 | - | < 1 | - |
| 7 | 2 | - | < 1 | - | 0.9 | 0.2 | - | 5 | - |



350002062

Table 7. Trace elements of water in selected wells - Concluded

EXPLANATION

Location number: See text for explanation.

Note: All analyses are reported in micrograms per liter unless noted otherwise; concentrations less than the detection limit of the analytical method used are indicated by "<"; "T" indicates trace concentration detected.

Part II

| Location number | Well name | Lithium (dissolved) | Lithium (total) | Manganese (dissolved) | Manganese (total) | Mercury total |
|---|---|---|---|---|---|---|
| 9.5.9.231 | Laguna 78-1 | - | - | - | - | < 2 |
| | | - | - | - | - | < 2 |
| | | - | - | - | 120 | < 2 |
| 9.6.2.123 | Laguna 76-7 | 250 | 260 | - | 350 | .1 |
| | | - | - | - | - | T |
| 9.6.5.222 | Laguna 76-6 | 370 | 390 | - | 110 | .1 |
| 9.6.26.233 | RWP 24 | - | - | - | - | < 2 |
| 9.6.26.443 | Timia | - | - | - | - | - |
| 10.6.3.111 | Encinal 1 | - | - | - | - | < 2 |
| 10.6.9.121 | Encinal 2 | - | - | 90 | - | < 2 |
| 10.7.10.213 | Laguna 79-1 | 140 | - | 60 | - | - |
| 10.7.36.322 | Laguna 76-2 | - | - | - | - | .2 |
| 10.7.36.424 | Laguna 76-1 | - | - | - | - | - |
| | | - | - | - | - | .3 |
| 11.6.27.334 | Encinal Canyon 1 | - | - | - | - | T |
| 12.1.30.324 | Conoco 65A | - | - | 110 | - | - |
| 12.2.36.442 | Conoco WW-101 | - | - | 80 | - | - |



350002063

| Molybdenum | | Selenium | | Silver | | Strontium (milligrams per liter) | | Vanadium | Zinc |
|---|---|---|---|---|---|---|---|---|---|
| (dissolved) | (total) | (dissolved) | (total) | (dissolved) | (total) | (dissolved) | (total) | (dissolved) | (dissolved) |
| - | - | - | T | - | < 10 | - | - | - | - |
| - | - | - | T | - | T | - | - | - | - |
| 6 | T | - | T | - | T | 10.0 | - | 0.0 | - |
| - | 4 | - | 3 | - | < 10 | - | 2.8 | 2.9 | - |
| - | - | - | T | - | T | - | - | - | - |
| - | 7 | - | 2 | - | < 10 | - | 1.8 | 3.6 | - |
| 2 | 0 | - | T | - | T | .44 | - | 0.0 | - |
| - | - | - | T | - | < 10 | - | - | - | - |
| 3 | - | - | T | - | < 10 | 1.6 | - | 0.0 | - |
| 8 | - | 0 | T | - | < 10 | 2.7 | - | 0.0 | 10 |
| 38 | - | 0 | - | - | - | 2.7 | - | < 6 | 36 |
| - | 7 | - | 1 | - | - | - | - | 1.1 | - |
| - | - | - | - | - | - | - | - | - | - |
| - | 3 | - | 3 | - | - | - | - | 1.1 | - |
| - | - | - | T | - | T | - | - | - | - |
| < 1 | - | < 10 | - | < 1 | - | - | - | < 10 | 10 |
| < 1 | - | < 10 | - | 33 | - | - | - | < 10 | 20 |



350002064

Table 8. Radiochemicals of water in selected wells

EXPLANATION

Location number: See text for explanation.
Note: All constituents are reported in picocuries per liter unless noted otherwise. All analyses by U.S. Geological Survey. Concentrations less than the detection limit of the analytical method used are indicated by "<". U, uranium; Cs, cesium; Sr, strontium; Yt, yttrium.

| Location number | Local well name | Date of collection | Gross alpha (dissolved as U) (micrograms per liter) | Gross alpha (suspended as U) (micrograms per liter) | Gross beta (dissolved as Cs-137) |
|---|---|---|---|---|---|
| 9.5.9.231 | Laguna 78-1 | 12-21-78 | 100 | - | 23 |
| 9.6.2.123 | Laguna 76-7 | 01-27-77 | < 32 | 2.4 | 10 |
| 9.6.5.222 | Laguna 76-6 | 01-25-77 | < 30 | 12 | 8.1 |
| 9.6.26.233 | RWP 24 | 12-11-78 | 9.6 | - | 4.0 |
| 10.6.3.111 | Encinal 1 | 11-17-78 | < 17 | - | 9.5 |
| 10.6.9.121 | Encinal 2 | 11-07-78 | 29 | - | 7.4 |
| 10.7.10.213 | Laguna 79-1 | 01-16-80 | < 19 | < 28 | 26 |



350002065

| Gross beta (dissolved as Sr/Yt-90) | Gross beta (suspended as Cs-137) | Gross beta (suspended as Sr/Yt-90) | Radium-226 (dissolved, radon method) | Uranium (dissolved as U) (micrograms per liter) | Potassium-40 (dissolved) |
|---|---|---|---|---|---|
| 21 | - | - | 3.5 | 3.5 | 4.9 |
| 8.2 | 2.6 | 2.1 | .19 | 7.2 | 4.8 |
| 6.5 | 12 | 10 | .09 | 7.9 | 6.2 |
| 3.7 | - | - | .13 | 3.5 | 1.4 |
| 8.5 | - | - | .05 | 4.5 | 3.9 |
| 6.8 | - | - | 1.0 | 9.2 | 3.2 |
| 24 | - | - | 1.0 | 1.0 | - |



350002066

Table 9.--Selected major chemical constituents of surface water

EXPLANATION

Laboratory: BIA, U.S. Bureau of Indian Affairs; USGS, U.S. Geological Survey

Notes: All constituents are dissolved. All values of water temperature were measured onsite. Specific conductance, pH, bicarbonate, and carbonate values marked by "*" were measured onsite. All other values were determined in the laboratory. Trace concentrations indicated by "T". 9/ indicates discharge measurement is daily mean value from streamflow-gaging station. All other discharge measurements were of instantaneous flow.

| | | | Constituents in milligrams | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Date of collection | Laboratory | Discharge (cubic feet per second) | Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
| **Rio San Jose near Grants (below Horace Springs) (10.9.23.444)** | | | | | | | | | |
| 04- -61 | BIA | - | 81 | 41 | 130 | 4.7 | 240 | 6 | 280 |
| 05- -61 | BIA | - | 80 | 36 | 97 | 2.3 | 220 | 13 | 250 |
| 06- -61 | BIA | - | 80 | 35 | 110 | 5.5 | 210 | 13 | 280 |
| 07- -61 | BIA | - | 79 | 35 | 110 | 3.9 | 220 | 4 | 280 |
| 08- -61 | BIA | - | 84 | 36 | 120 | .4 | 240 | 8 | 280 |
| 09- -61 | BIA | - | 82 | 35 | 110 | 4.7 | 210 | 21 | 260 |
| 10- -61 | BIA | - | 94 | 33 | 140 | 7.8 | 230 | 24 | 290 |
| 02- -62 | BIA | - | - | - | - | - | - | - | - |
| 11- -62 | BIA | - | - | - | - | - | - | - | - |
| 06-26-67 | BIA | 2.9 9/ | 130 | 10 | 100 | 4.2 | 230 | T | 260 |
| 07-15-68 | BIA | 4.6 9/ | 81 | 36 | 110 | 4.3 | 240 | T | 260 |
| 10-14-68 | BIA | 3.9 9/ | 81 | 38 | 110 | 3.9 | 250 | 6 | 250 |



350002067

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 99 | - | 370 | 170 | - | - | 7.9 | 1,280 | 2.9 | $C_3S_1$ |
| 84 | - | 350 | 170 | - | - | 8.4 | 1,170 | 2.2 | $C_3S_1$ |
| 80 | - | 350 | 180 | - | - | 8.4 | 1,200 | 2.6 | $C_3S_1$ |
| 60 | - | 350 | 170 | - | - | 8.1 | 1,130 | 2.5 | $C_2S_1$ |
| 91 | - | 360 | 160 | - | - | 8.2 | 1,250 | 2.8 | $C_3S_1$ |
| 84 | - | 350 | 180 | - | - | 8.5 | 1,180 | 2.6 | $C_3S_1$ |
| 100 | - | 370 | 180 | - | - | 8.4 | 1,300 | 3.1 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,580 | 3.3 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,180 | 2.5 | $C_3S_1$ |
| 87 | - | 360 | 170 | 784 | - | 8.3 | 1,090 | 2.3 | $C_3S_1$ |
| 68 | - | 350 | 150 | 752 | - | 8.2 | 1,130 | 2.5 | $C_3S_1$ |
| 94 | - | 360 | 140 | 808 | - | 8.2 | 1,190 | 2.5 | $C_3S_1$ |



350002068

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose near Grants (below Horace Springs) (10.9.23.444) - continued** | | | | | | | | | |
| 05-06-69 | BIA | 6.6[g]/ | 95 | 51 | 200 | 7.0 | 270 | 6 | 390 |
| 06-19-69 | BIA | 4.6[g]/ | 88 | 39 | 130 | 3.9 | 260 | 7 | 250 |
| 07- -69 | BIA | - | 83 | 40 | 120 | 3.9 | 240 | 6 | 280 |
| 08-08-69 | BIA | 5.7[g]/ | 90 | 41 | 150 | 6.3 | 280 | 4 | 310 |
| 09- -69 | BIA | - | 73 | 26 | 100 | 8.2 | 190 | 3 | 230 |
| 10- -69 | BIA | - | 91 | 46 | 150 | 3.9 | 270 | 4 | 290 |
| 05-07-70 | BIA | 4.0[g]/ | 89 | 44 | 150 | 5.9 | 250 | 10 | 360 |
| 06-22-70 | BIA | 4.6[g]/ | 97 | 50 | 190 | 8.6 | 270 | T | 410 |
| 08-05-70 | BIA | 6.3[g]/ | 89 | 44 | 170 | 9.8 | 260 | 9 | 370 |
| 09- -70 | BIA | - | 86 | 39 | 110 | 3.1 | 240 | 13 | 350 |
| 07-26-71 | BIA | 5.2[g]/ | 92 | 40 | 150 | 4.8 | 240 | 5 | 350 |
| 08- -71 | BIA | - | 86 | 38 | 110 | 1.6 | 240 | 10 | 260 |
| 10-27-71 | BIA | 7.5[g]/ | 96 | 47 | 190 | 11 | 220 | 18 | 400 |
| 07-10-72 | BIA | 4.3[g]/ | 92 | 40 | 150 | 7.4 | 270 | 5 | 320 |
| 08-31-72 | BIA | 11[g]/ | 58 | 17 | 76 | 4.3 | 210 | T | 140 |
| 11-01-73 | BIA | 4.9[g]/ | 86 | 40 | 120 | 5.5 | 260 | 6 | 250 |



350002069

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 180 | - | 450 | 220 | 1,180 | - | 8.1 | 1,740 | 4.2 | $C_3S_1$ |
| 120 | - | 380 | 170 | 854 | - | 8.3 | 1,310 | 2.8 | $C_3S_1$ |
| 98 | - | 370 | 170 | 820 | - | 8.0 | 1,240 | 2.8 | $C_3S_1$ |
| 130 | - | 390 | 160 | 940 | - | 8.0 | 1,440 | 3.3 | $C_3S_1$ |
| 74 | - | 290 | 140 | 664 | - | 8.1 | 1,010 | 2.6 | $C_3S_1$ |
| 140 | - | 420 | 190 | 1,010 | - | 8.8 | 1,470 | 3.4 | $C_3S_1$ |
| 130 | - | 410 | 200 | 943 | - | 8.3 | 1,410 | 3.3 | $C_3S_1$ |
| 150 | - | 450 | 230 | 1,100 | - | 7.8 | 1,620 | 3.8 | $C_3S_1$ |
| 150 | - | 400 | 190 | 1,020 | - | 7.9 | 1,580 | 3.7 | $C_3S_1$ |
| 99 | - | 380 | 180 | 841 | - | 8.3 | 1,220 | 2.6 | $C_3S_1$ |
| 120 | - | 400 | 190 | 935 | - | 7.9 | 1,380 | 3.2 | $C_3S_1$ |
| 98 | - | 370 | 180 | 809 | - | 8.1 | 1,220 | 2.6 | $C_3S_1$ |
| 150 | - | 440 | 250 | 1,200 | - | 8.1 | 1,650 | 4.0 | $C_3S_1$ |
| 120 | - | 400 | 180 | 920 | - | 8.1 | 1,350 | 3.4 | $C_3S_1$ |
| 48 | - | 220 | 39 | 493 | - | 8.0 | 760 | 2.2 | $C_3S_1$ |
| 110 | - | 380 | 170 | 836 | - | 7.9 | 1,260 | 2.7 | $C_3S_1$ |



350002070

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose near Grants (below Horace Springs) (10.9.23.444) - continued** | | | | | | | | | |
| 01-25-74 | BIA | 5.1[9]/ | 92 | 41 | 140 | 5.5 | 250 | 14 | 280 |
| 04-03-74 | BIA | 5.9[9]/ | 88 | 39 | 110 | 5.5 | 250 | 12 | 260 |
| 07-08-74 | BIA | 6.3[9]/ | 84 | 38 | 110 | 1.6 | 230 | 18 | 250 |
| 03-28-75 | BIA | 5.0 | 86 | 36 | 130 | 5.9 | 230 | 17 | 300 |
| 04-20-76 | BIA | 5.1 | 80 | 41 | 130 | 5.9 | 330 | 22 | 230 |
| 09-12-76 | BIA | 4.2 | 42 | 41 | 150 | 8.2 | 110 | 10 | 340 |
| 01-21-77 | USGS | 6.5 | 85 | 38 | 130 | 7.4 | 260 | 0 | 290 |
| 04-06-77 | BIA | 5.5 | 96 | 38 | 170 | 7.8 | 240 | 19 | 310 |
| 04-19-78 | USGS | 6.5 | 85 | 40 | 150 | 7.6 | 280* | 0* | 270 |
| 07-24-78 | BIA | 5.3 | 84 | 33 | 120 | 6.3 | 270* | 0* | 250 |
| 10-25-78 | BIA | 5.7 | 90 | 35 | 140 | 8.6 | 300* | 0* | 300 |
| 01-23-79 | BIA | 5.7 | 130 | 17 | 140 | 9.4 | 340* | 0* | 280 |
| 03-08-79 | BIA | 4.9 | - | - | - | - | - | - | - |
| 06-20-79 | BIA | 5.6 | 94 | 38 | 182 | 8.6 | 312* | 0* | 380 |
| 11-13-79 | BIA | 6.0[9]/ | 96 | 40 | 150 | 8.6 | 270 | T | 310 |



350002071

| Chloride (per liter) | Silica (per liter) | Calcium magnesium hardness (as $CaCo_3$) (per liter) | Hardness, noncarbonate (per liter) | Dissolved solids (per liter) | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|
| 110 | - | 400 | 200 | 897 | - | 8.2 | 1,300 | 3.1 | $C_3S_1$ |
| 110 | - | 380 | 180 | 822 | - | 8.2 | 1,270 | 2.5 | $C_3S_1$ |
| 99 | - | 370 | 190 | 819 | - | 8.4 | 1,190 | 2.5 | $C_3S_1$ |
| 110 | - | 370 | 180 | 850 | - | 8.4 | 1,240 | 2.9 | $C_2S_1$ |
| 100 | - | 370 | 67 | 870 | - | 8.6 | 1,250 | 2.9 | $C_3S_1$ |
| 130 | - | 280 | 170 | 820 | - | 9.0 | 1,230 | 4.2 | $C_3S_1$ |
| 110 | 28 | 370 | 160 | 830 | 10.0 | 7.8* | 1,350* | 2.9 | $C_3S_1$ |
| 120 | - | 400 | 170 | 920 | - | 8.0 | 1,370 | 3.6 | $C_3S_1$ |
| 130 | 29 | 380 | 140 | 870 | 10.0 | 8.1* | 1,350* | 3.4 | $C_3S_1$ |
| 100 | - | 350 | 130 | 820 | 16.0 | 7.9* | 1,180* | 2.8 | $C_3S_1$ |
| 130 | - | 370 | 150 | 860 | 12.0 | 7.6* | 1,350* | 3.2 | $C_3S_1$ |
| 120 | - | 390 | 170 | 900 | 9.5 | 7.9* | 1,300* | 3.2 | $C_3S_1$ |
| 160 | - | - | - | - | 13.5 | - | 1,480* | - | - |
| 160 | - | 390 | 170 | 970 | 20.5 | 8.2 | 1,500* | 4.0 | $C_3S_1$ |
| 130 | - | 410 | 180 | 880 | - | 7.8* | 1,400* | 3.2 | $C_3S_1$ |



350002072

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at McCartys North Diversion (10.8.29.423)** | | | | | | | | | |
| 04- -61 | BIA | - | 81 | 41 | 140 | 3.9 | 240 | 11 | 280 |
| 05- -61 | BIA | - | 79 | 38 | 120 | 3.1 | 210 | 21 | 300 |
| 06- -61 | BIA | - | 76 | 36 | 110 | 3.1 | 220 | 8 | 270 |
| 07- -61 | BIA | - | 77 | 34 | 120 | 4.7 | 220 | 6 | 250 |
| 08- -61 | BIA | - | 85 | 36 | 140 | .8 | 240 | 6 | 310 |
| 09- -61 | BIA | - | 86 | 38 | 130 | 8.6 | 230 | 18 | 310 |
| 10- -61 | BIA | - | 94 | 35 | 78 | 6.3 | 250 | 18 | 160 |
| 02- -62 | BIA | - | - | - | - | - | - | - | - |
| 11- -62 | BIA | - | - | - | - | - | - | - | - |
| 06-26-67 | BIA | - | 120 | 12 | 110 | 3.7 | 230 | T | 280 |
| 05-06-69 | BIA | - | 90 | 47 | 180 | 5.9 | 270 | 10 | 350 |
| 06- -69 | BIA | - | 86 | 39 | 140 | 5.1 | 240 | 16 | 300 |
| 07- -69 | BIA | - | 81 | 38 | 110 | 3.5 | 240 | 11 | 240 |
| 08-08-69 | BIA | - | 83 | 38 | 120 | 4.7 | 270 | 6 | 270 |
| 09- -69 | BIA | - | 68 | 22 | 97 | 10 | 160 | T | 240 |
| 10- -69 | BIA | - | 86 | 43 | 150 | 3.1 | 260 | 11 | 290 |



350002073

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 100 | - | 370 | 170 | - | - | 8.1 | 1,300 | 3.2 | $C_3S_1$ |
| 89 | - | 350 | 180 | - | - | 8.6 | 1,290 | 2.6 | $C_3S_1$ |
| 80 | - | 340 | 160 | - | - | 8.1 | 1,180 | 2.6 | $C_3S_1$ |
| 98 | - | 330 | 150 | - | - | 7.9 | 1,150 | 2.8 | $C_2S_1$ |
| 93 | - | 360 | 160 | - | - | 8.1 | 1,320 | 3.2 | $C_3S_1$ |
| 93 | - | 370 | 180 | - | - | 8.3 | 1,320 | 3.0 | $C_3S_1$ |
| 100 | - | 380 | 170 | - | - | 8.2 | 1,320 | 1.7 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,420 | 3.2 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,150 | 2.4 | $C_3S_1$ |
| 89 | - | 350 | 160 | 740 | - | 8.4 | 1,110 | 2.4 | $C_3S_1$ |
| 150 | - | 420 | 200 | 1,040 | - | 8.2 | 1,560 | 3.8 | $C_3S_1$ |
| 110 | - | 380 | 180 | 870 | - | 8.5 | 1,340 | 3.1 | $C_3S_1$ |
| 92 | - | 360 | 160 | 804 | - | 8.2 | 1,200 | 2.6 | $C_3S_1$ |
| 99 | - | 370 | 150 | 802 | - | 8.1 | 1,260 | 2.8 | $C_3S_1$ |
| 65 | - | 260 | 130 | 654 | - | 8.0 | 940 | 2.6 | $C_3S_1$ |
| 120 | - | 390 | 180 | 956 | - | 8.3 | 1,390 | 3.0 | $C_3S_1$ |



350002074

Table 9.--Selected major chemical constituents of surface water--Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at McCartys North Diversion (10.8.29.423) - continued** | | | | | | | | | |
| 05-08-70 | BIA | - | 86 | 43 | 140 | 8.6 | 260 | 11 | 300 |
| 06- -70 | BIA | - | 90 | 47 | 170 | 9.0 | 260 | 7 | 350 |
| 08-05-70 | BIA | - | 80 | 40 | 130 | 5.1 | 260 | 10 | 280 |
| 09- -70 | BIA | - | 86 | 39 | 120 | 3.5 | 260 | 10 | 260 |
| 07-26-71 | BIA | - | 100 | 45 | 180 | 5.7 | 250 | 10 | 400 |
| 08- -71 | BIA | - | 86 | 43 | 140 | T | 250 | 19 | 280 |
| 10-27-71 | BIA | - | 86 | 39 | 160 | 9.8 | 220 | 17 | 310 |
| 07-10-72 | BIA | - | 92 | 43 | 160 | .4 | 280 | 17 | 280 |
| 08-31-72 | BIA | - | 56 | 18 | 77 | 5.5 | 200 | T | 160 |
| 11-01-73 | BIA | - | 86 | 39 | 130 | 4.7 | 370 | 12 | 260 |
| 01-25-74 | BIA | - | 86 | 39 | 130 | 4.7 | 250 | 12 | 260 |
| 04-03-74 | BIA | - | 88 | 39 | 130 | 4.3 | 250 | 19 | 270 |
| 07-08-74 | BIA | - | 76 | 40 | 110 | 2.0 | 220 | 22 | 230 |
| 10-21-74 | BIA | - | 86 | 43 | 130 | 3.1 | 230 | 24 | 300 |
| 03-28-75 | BIA | - | 88 | 39 | 140 | 5.9 | 230 | 24 | 270 |
| 04-20-76 | BIA | - | 88 | 46 | 160 | 6.7 | 270 | 12 | 290 |



350002075

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 120 | - | 390 | 180 | 906 | - | 8.3 | 1,380 | 3.2 | $C_3S_1$ |
| 130 | - | 420 | 210 | 977 | - | 8.0 | 1,470 | 3.7 | $C_3S_1$ |
| 100 | - | 370 | 150 | 892 | - | 8.0 | 1,290 | 3.0 | $C_3S_1$ |
| 110 | - | 380 | 160 | 776 | - | 8.3 | 1,260 | 2.7 | $C_3S_1$ |
| 150 | - | 390 | 160 | 1,120 | - | 8.1 | 1,610 | 3.7 | $C_3S_1$ |
| 100 | - | 390 | 180 | 899 | - | 8.2 | 1,290 | 3.0 | $C_3S_2$ |
| 120 | - | 380 | 190 | 951 | - | 8.2 | 1,430 | 3.6 | $C_3S_1$ |
| 120 | - | 410 | 170 | 970 | - | 8.3 | 1,390 | 3.5 | $C_3S_1$ |
| 48 | - | 220 | 47 | 504 | - | 8.0 | 1,280 | 2.3 | $C_3S_1$ |
| 98 | - | 380 | 170 | 786 | - | 8.1 | 1,160 | 2.9 | $C_3S_1$ |
| 120 | - | 380 | 170 | 872 | - | 8.4 | 1,190 | 2.8 | $C_3S_1$ |
| 110 | - | 380 | 180 | 838 | - | 8.3 | 1,270 | 2.8 | $C_3S_1$ |
| 88 | - | 360 | 170 | 839 | - | 8.3 | 1,190 | 2.5 | $C_3S_1$ |
| 99 | - | 390 | 200 | 892 | - | 8.1 | 1,250 | 2.9 | $C_3S_1$ |
| 110 | - | 380 | 190 | 890 | - | 8.3 | 1,340 | 3.1 | $C_3S_1$ |
| 120 | - | 410 | 160 | 1,010 | 10.0 | 8.5 | 1,450* | 3.4 | $C_3S_1$ |



350002076

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at McCartys North Diversion (10.8.29.423) - continued** | | | | | | | | | |
| 09-12-76 | BIA | - | 78 | 40 | 130 | 6.3 | 160 | 24 | 330 |
| 04-06-77 | BIA | - | 88 | 38 | 140 | 7.4 | 220 | 22 | 300 |
| 05-31-78 | BIA | - | 88 | 38 | 150 | 7.0 | 280* | 0* | 320 |
| 07-20-78 | BIA | 1.9 | 84 | 36 | 130 | 6.3 | 300* | 0* | 280 |
| 11-01-78 | BIA | 8.0 | 86 | 35 | 140 | 7.4 | 270* | 0* | 250 |
| 01-31-79 | BIA | 7.0 | 88 | 36 | 140 | 8.2 | 290* | 0* | 270 |
| **Rio San Jose at Acomita Diversion (10.8.36.223)** | | | | | | | | | |
| 04- -61 | BIA | - | 140 | 97 | 420 | 9.0 | 240 | 13 | 950 |
| 05- -61 | BIA | - | 100 | 78 | 360 | 3.1 | 250 | 19 | 730 |
| 06- -61 | BIA | - | 90 | 55 | 210 | 4.9 | 230 | 17 | 470 |
| 07- -61 | BIA | - | 88 | 15 | 74 | 9.4 | 150 | - | 260 |
| 08- -61 | BIA | - | 97 | 45 | 170 | .4 | 250 | 10 | 410 |
| 09- -61 | BIA | - | 150 | 44 | 190 | 6.2 | 230 | 27 | 550 |
| 10- -61 | BIA | - | 94 | 42 | 170 | 7.0 | 220 | 30 | 380 |
| 02- -62 | BIA | - | - | - | - | - | - | - | - |
| 11- -62 | BIA | - | - | - | - | - | - | - | - |



350002077

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 120 | - | 360 | 190 | 890 | 16.0 | 9.2 | 1,350* | 3.0 | $C_3S_1$ |
| 110 | - | 380 | 160 | 870 | 15.0 | 8.0 | 1,250* | 3.1 | $C_3S_1$ |
| 120 | 23 | 380 | 150 | 900 | 14.5 | 7.7* | 1,300* | 3.3 | $C_3S_1$ |
| 110 | - | 360 | 130 | 820 | 18.0 | 7.7* | 1,290* | 3.1 | $C_3S_1$ |
| 110 | - | 360 | 140 | 810 | 13.0 | 8.1* | 1,280* | 3.1 | $C_3S_1$ |
| 120 | - | 370 | 150 | 880 | 4.0 | 7.8* | 1,330* | 3.1 | $C_3S_1$ |
| 210 | - | 750 | 550 | - | - | 8.1 | 3,090 | 6.7 | $C_4S_2$ |
| 170 | - | 570 | 360 | - | - | 8.3 | 2,470 | 6.5 | $C_4S_2$ |
| 120 | - | 450 | 260 | - | - | 8.4 | 1,730 | 4.2 | $C_3S_1$ |
| 35 | - | 280 | 160 | - | - | 8.0 | 900 | 1.9 | $C_3S_1$ |
| 110 | - | 430 | 220 | - | - | 8.3 | 1,560 | 3.6 | $C_3S_1$ |
| 120 | - | 560 | 370 | - | - | 8.6 | 1,720 | 3.6 | $C_3S_1$ |
| 110 | - | 410 | 230 | - | - | 8.5 | 1,430 | 3.6 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,550 | 3.6 | $C_3S_1$ |
| - | - | - | - | - | - | - | 2,800 | 6.6 | $C_4S_2$ |



350002078

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Acomita Diversion (10.8.36.223) - continued** | | | | | | | | | |
| 06-26-67 | BIA | - | 170 | 5.5 | 190 | 5.4 | 250 | T | 480 |
| 05-06-69 | BIA | - | 110 | 62 | 250 | 6.6 | 280 | 17 | 590 |
| 06- -69 | BIA | - | 93 | 49 | 180 | 2.7 | 250 | 18 | 410 |
| 07- -69 | BIA | - | 92 | 51 | 160 | 3.9 | 250 | 20 | 390 |
| 08-08-69 | BIA | - | 110 | 48 | 200 | 7.4 | 280 | T | 490 |
| 09- -69 | BIA | - | 82 | 33 | 140 | 9.8 | 180 | 4 | 340 |
| 10- -69 | BIA | - | 100 | 56 | 190 | 3.1 | 290 | 14 | 450 |
| 05-07-70 | BIA | - | 110 | 71 | 300 | 7.8 | 310 | 20 | 670 |
| 06- -70 | BIA | - | 98 | 52 | 190 | 7.0 | 280 | 12 | 410 |
| 08-05-70 | BIA | - | 130 | 64 | 240 | 10 | 360 | 8 | 550 |
| 09- -70 | BIA | - | 100 | 52 | 170 | 3.5 | 280 | 18 | 380 |
| 07-26-71 | BIA | - | 120 | 57 | 250 | 8.6 | 270 | 17 | 560 |
| 08- -71 | BIA | - | 140 | 94 | 500 | T | 330 | 19 | 1,100 |
| 10-27-71 | BIA | - | 92 | 58 | 240 | 11 | 250 | 18 | 530 |
| 07-10-72 | BIA | - | 94 | 47 | 160 | 4.3 | 250 | 19 | 360 |
| 08-31-72 | BIA | - | 56 | 21 | 85 | 3.1 | 200 | T | 170 |



350002079

| per liter | | | | | | | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | | | |
| 120 | - | 460 | 250 | 1,200 | - | 8.3 | 1,600 | 3.9 | $C_3S_1$ |
| 160 | - | 520 | 300 | 1,420 | - | 8.3 | 2,020 | 4.8 | $C_3S_2$ |
| 130 | - | 440 | 230 | 1,090 | - | 8.5 | 1,620 | 3.8 | $C_3S_1$ |
| 110 | - | 440 | 230 | 1,060 | - | 8.3 | 1,530 | 3.4 | $C_3S_1$ |
| 140 | - | 480 | 250 | 1,250 | - | 8.1 | 1,800 | 4.0 | $C_3S_1$ |
| 94 | - | 340 | 190 | 868 | - | 8.1 | 1,250 | 3.2 | $C_3S_1$ |
| 130 | - | 490 | 250 | 1,240 | - | 8.4 | 1,700 | 3.8 | $C_3S_1$ |
| 170 | - | 580 | 320 | 1,560 | - | 8.5 | 2,180 | 5.4 | $C_3S_2$ |
| 130 | - | 460 | 230 | 1,120 | - | 8.2 | 1,640 | 3.9 | $C_3S_1$ |
| 160 | - | 590 | 300 | 1,440 | - | 8.1 | 1,980 | 4.2 | $C_3S_1$ |
| 120 | - | 470 | 240 | 1,130 | - | 8.4 | 1,600 | 3.4 | $C_3S_1$ |
| 210 | - | 540 | 290 | 1,540 | - | 8.2 | 2,150 | 4.8 | $C_3S_2$ |
| 280 | - | 750 | 480 | 2,460 | - | 8.4 | 3,360 | 7.9 | $C_4S_1$ |
| 150 | - | 470 | 270 | 1,330 | - | 8.3 | 1,940 | 4.8 | $C_3S_2$ |
| 120 | - | 430 | 220 | 1,010 | - | 8.4 | 1,470 | 3.4 | $C_3S_1$ |
| 48 | - | 230 | 65 | 576 | - | 8.1 | 820 | 2.5 | $C_3S_1$ |



350002080

Table 9.—Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Acomita Diversion (10.8.36.223) - continued** | | | | | | | | | |
| 11-01-73 | BIA | - | 130 | 74 | 330 | 6.6 | 350 | 9 | 770 |
| 01-25-74 | BIA | - | 94 | 47 | 170 | 5.1 | 250 | 20 | 370 |
| 04-03-74 | BIA | - | 94 | 50 | 160 | 4.7 | 260 | 15 | 370 |
| 07-08-74 | BIA | - | 96 | 53 | 180 | 1.2 | 230 | 24 | 430 |
| 10-21-74 | BIA | - | 130 | 80 | 320 | 7.8 | 450 | 44 | 700 |
| 03-06-75 | BIA | - | 92 | 44 | 170 | 6.3 | 250 | 23 | 390 |
| 03-28-75 | BIA | - | 94 | 46 | 170 | 5.5 | 270 | 13 | 400 |
| 04-20-76 | BIA | - | 98 | 43 | 200 | 6.3 | 260 | 5 | 410 |
| 09-12-76 | BIA | - | 54 | 55 | 200 | 7.0 | 140 | 13 | 490 |
| 04-06-77 | BIA | - | 98 | 50 | 200 | 7.8 | 260 | 19 | 410 |
| 05-31-78 | BIA | - | 100 | 50 | 210 | 7.4 | 300* | 0* | 490 |
| 07-20-78 | BIA | 2.3 | 100 | 50 | 200 | 6.7 | 320* | 0* | 470 |
| 11-01-78 | BIA | 6.4 | 100 | 49 | 200 | 7.4 | 320* | 0* | 420 |
| 01-31-79 | BIA | 9.0 | 96 | 44 | 172 | 7.8 | 310* | 0* | 370 |



350002081

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 180 | - | 630 | 340 | 1,750 | - | 7.7 | 2,310 | 5.8 | $C_4S_2$ |
| 110 | - | 430 | 230 | 1,080 | - | 8.5 | 1,510 | 3.6 | $C_3S_1$ |
| 120 | - | 440 | 230 | 1,080 | - | 8.4 | 1,500 | 3.3 | $C_3S_1$ |
| 120 | - | 460 | 270 | 1,170 | - | 8.5 | 1,600 | 3.7 | $C_3S_1$ |
| 190 | - | 660 | 290 | 1,800 | - | 8.3 | 2,470 | 5.4 | $C_4S_2$ |
| 120 | - | 410 | 210 | 1,040 | 12.0 | 8.4 | 1,470 | 3.6 | $C_3S_1$ |
| 120 | - | 430 | 200 | 1,090 | - | 8.5 | 1,520 | 3.7 | $C_3S_1$ |
| 130 | - | 420 | 200 | 1,240 | 14.0 | 8.6 | 1,700* | 3.9 | $C_3S_1$ |
| 140 | - | 360 | 220 | 1,100 | 14.0 | 8.8 | 1,650* | 4.6 | $C_3S_1$ |
| 130 | - | 450 | 200 | 1,110 | 13.0 | 8.1 | 1,600* | 4.2 | $C_3S_1$ |
| 140 | 19 | 470 | 230 | 1,260 | 17.5 | 8.2* | 1,700* | 4.3 | $C_3S_1$ |
| 130 | - | 470 | 220 | 1,160 | 25.0 | 8.1* | 1,700* | 4.0 | $C_3S_1$ |
| 130 | - | 460 | 210 | 1,130 | 13.0 | 8.2* | 1,660* | 4.0 | $C_3S_1$ |
| 130 | - | 420 | 190 | 1,050 | 0.0 | 7.8* | 1,530* | 3.7 | $C_3S_1$ |



350002082

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242)** | | | | | | | | | |
| 04- -61 | BIA | - | 160 | 120 | 530 | 5.9 | 390 | 15 | 930 |
| 05- -61 | BIA | - | 150 | 160 | 870 | 7.8 | 360 | 30 | 1,700 |
| 06- -61 | BIA | - | 37 | 75 | 290 | 6.8 | 320 | 19 | 550 |
| 07- -61 | BIA | - | 80 | 130 | 55 | 8.6 | 140 | - | 220 |
| 08- -61 | BIA | - | 100 | 44 | 200 | 8.6 | 260 | 8 | 460 |
| 09- -61 | BIA | - | 84 | 69 | 240 | 7.0 | 220 | 30 | 600 |
| 10- -61 | BIA | - | 98 | 49 | 210 | 7.0 | 250 | 24 | 470 |
| 02- -62 | BIA | - | - | - | - | - | - | - | - |
| 11- -62 | BIA | - | - | - | - | - | - | - | - |
| 06-26-67 | BIA | - | 250 | 85 | 610 | 8.6 | 320 | 16 | 1,500 |
| 07- -68 | BIA | - | 89 | 75 | 320 | 7.8 | 320 | T | 700 |
| 10-14-68 | BIA | - | 150 | 130 | 540 | 4.8 | 260 | 11 | 1,400 |
| 05-06-69 | BIA | - | 170 | 270 | 1,100 | 15 | 280 | 17 | 2,900 |
| 06- -69 | BIA | - | 120 | 97 | 440 | 7.8 | 320 | 29 | 970 |
| 07- -69 | BIA | - | 150 | 140 | 750 | 6.3 | 370 | 20 | 1,700 |
| 08-08-69 | BIA | - | 82 | 34 | 75 | 13 | 160 | T | 640 |



350002083

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 280 | - | 890 | 570 | - | - | 8.1 | 3,400 | 7.9 | $C_4S_2$ |
| 330 | - | 1,030 | 730 | - | - | 8.1 | 5,100 | 12 | $C_4S_3$ |
| 160 | - | 400 | 140 | - | - | 8.4 | 2,200 | 6.4 | $C_3S_2$ |
| 18 | - | 730 | 620 | - | - | 7.9 | 770 | 1.5 | $C_3S_1$ |
| 120 | - | 430 | 220 | - | - | 8.2 | 1,750 | 4.2 | $C_3S_1$ |
| 120 | - | 490 | 310 | - | - | 8.7 | 1,980 | 4.8 | $C_3S_1$ |
| 120 | - | 450 | 240 | - | - | 8.3 | 1,690 | 4.4 | $C_3S_1$ |
| - | - | - | - | - | - | - | 1,700 | 4.0 | $C_3S_1$ |
| - | - | - | - | - | - | - | 4,400 | 10 | $C_4S_3$ |
| 360 | - | 970 | 710 | 3,060 | - | 8.3 | 4,000 | 8.6 | $C_4S_3$ |
| 180 | - | 530 | 270 | 1,620 | - | 8.3 | 2,320 | 6.0 | $C_4S_2$ |
| 290 | - | 930 | 700 | 2,970 | - | 8.3 | 3,810 | 7.7 | $C_4S_3$ |
| 480 | - | 1,540 | 1,310 | 5,540 | - | 8.3 | 6,590 | 12 | $C_4S_4$ |
| 240 | - | 690 | 430 | 2,190 | - | 8.5 | 3,040 | 7.3 | $C_4S_2$ |
| 360 | - | 960 | 660 | 3,540 | - | 8.3 | 4,530 | 10 | $C_4S_3$ |
| 170 | - | 350 | 220 | 1,420 | - | 8.0 | 2,070 | 7.1 | $C_3S_2$ |



350002084

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242) - continued** | | | | | | | | | |
| 09- -69 | BIA | - | 110 | 36 | 110 | 5.5 | 210 | 4 | 440 |
| 10- -69 | BIA | - | 140 | 97 | 420 | 4.3 | 350 | 21 | 940 |
| 05-07-70 | BIA | - | 150 | 200 | 930 | 9.4 | 460 | 36 | 2,100 |
| 06- -70 | BIA | - | 140 | 130 | 360 | 7.4 | 190 | 38 | 1,500 |
| 08-05-70 | BIA | - | 80 | 22 | 89 | 6.6 | 130 | T | 300 |
| 09- -70 | BIA | - | 150 | 110 | 480 | 2.4 | 380 | 21 | 1,100 |
| 07-26-71 | BIA | - | 140 | 64 | 310 | 11 | 270 | 28 | 700 |
| 08- -71 | BIA | - | 110 | 60 | 240 | 12 | 270 | 25 | 550 |
| 10-27-71 | BIA | - | 96 | 56 | 260 | 11 | 250 | 17 | 520 |
| 07-10-72 | BIA | - | 140 | 190 | 1,100 | 1.6 | 360 | 43 | 2,400 |
| 08-31-72 | BIA | - | 58 | 18 | 91 | 5.1 | 190 | T | 180 |
| 09-13-73 | BIA | - | 112 | 49 | 210 | 13 | 240 | 19 | 530 |
| 01-25-74 | BIA | - | 100 | 61 | 240 | 5.1 | 270 | 25 | 500 |
| 04-03-74 | BIA | - | 100 | 63 | 230 | 5.5 | 280 | 20 | 480 |
| 07-01-74 | BIA | - | 96 | 81 | 290 | 3.1 | 300 | 29 | 650 |
| 10-21-74 | BIA | - | 160 | 110 | 510 | 4.7 | 280 | 61 | 1,100 |



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| Chloride (per liter) | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|
| 100 | - | 420 | 250 | 1,110 | - | 8.2 | 1,520 | 3.6 | $C_3S_1$ |
| 230 | - | 740 | 450 | 2,260 | - | 8.4 | 2,970 | 6.7 | $C_4S_2$ |
| 480 | - | 1,190 | 820 | 4,310 | - | 8.4 | 5,400 | 12 | $C_4S_4$ |
| 330 | - | 890 | 730 | 3,050 | - | 8.3 | 4,210 | 9.3 | $C_4S_3$ |
| 55 | - | 290 | 180 | 608 | - | 8.3 | 1,100 | 2.3 | $C_3S_1$ |
| 260 | - | 830 | 520 | 2,580 | - | 8.4 | 3,380 | 7.2 | $C_4S_2$ |
| 200 | - | 620 | 400 | 1,660 | - | 8.2 | 2,360 | 5.4 | $C_4S_2$ |
| 150 | - | 530 | 300 | 1,370 | - | 8.5 | 1,940 | 4.5 | $C_3S_2$ |
| 150 | - | 470 | 260 | 1,340 | - | 8.3 | 1,930 | 5.1 | $C_3S_2$ |
| 510 | - | 1,150 | 850 | 4,850 | - | 8.5 | 5,900 | 14 | $C_4S_4$ |
| 48 | - | 220 | 66 | 547 | - | 8.1 | 840 | 2.7 | $C_3S_1$ |
| 150 | - | 480 | 280 | 1,250 | 16 | 8.2 | 1,900* | 4.1 | $C_3S_1$ |
| 140 | - | 510 | 280 | 1,320 | - | 8.5 | 1,910 | 4.6 | $C_3S_2$ |
| 140 | - | 520 | 290 | 1,370 | 6 | 8.4 | 1,800* | 4.4 | $C_3S_1$ |
| 180 | - | 580 | 330 | 1,680 | 20 | 8.3 | 2,100* | 5.3 | $C_4S_2$ |
| 280 | - | 870 | 640 | 2,610 | 12 | 8.2 | 3,000* | 2.5 | $C_4S_2$ |



350002086

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242) - continued** | | | | | | | | | |
| 03-28-75 | BIA | - | 110 | 57 | 230 | 6.3 | 280 | 28 | 520 |
| 08-08-75 | BIA | - | 220 | 110 | 660 | 12 | 420 | 34 | 1,400 |
| 03-25-76 | BIA | - | 100 | 64 | 240 | 6.7 | 310 | 10 | 500 |
| 01-11-77 | BIA | - | 140 | 88 | 350 | 7.4 | 350 | 16 | 890 |
| 04-04-77 | BIA | - | 100 | 62 | 270 | 6.7 | 280 | 14 | 540 |
| 07-07-77 | BIA | - | 90 | 86 | 390 | 11 | 300 | 10 | 780 |
| 10-03-77 | BIA | - | 110 | 57 | 260 | 8.6 | 280 | 17 | 540 |
| 01-10-78 | BIA | - | 110 | 63 | 280 | 7.8 | 310 | T | 620 |
| 03-01-78 | BIA | - | 100 | 62 | 260 | 7.8 | 300 | 12 | 540 |
| 06-05-78 | BIA | - | 150 | 94 | 530 | 11 | 370 | 10 | 1,100 |
| 09-05-78 | BIA | - | 150 | 84 | 400 | 11 | 360 | 7 | 1,010 |
| 01-08-79 | BIA | - | 100 | 56 | 210 | 9.0 | 270 | 7 | 450 |
| 03-01-79 | BIA | - | 100 | 54 | 230 | 7.4 | 300 | T | 510 |
| 06-06-79 | BIA | - | 130 | 69 | 350 | 11 | 340 | 2.4 | 790 |



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| Chloride (per liter) | Silica (per liter) | Calcium magnesium hardness (as $CaCo_3$) (per liter) | Hardness, noncarbonate (per liter) | Dissolved solids (per liter) | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|
| 150 | - | 500 | 270 | 1,340 | 5.0 | 8.5 | 2,000* | 4.5 | $C_3S_2$ |
| 350 | - | 1,020 | 620 | 3,370 | 22.0 | 8.3 | 4,060 | 9.0 | $C_4S_3$ |
| 150 | - | 520 | 250 | 1,430 | 8.0 | 8.5 | 1,900* | 4.7 | $C_3S_2$ |
| 210 | - | 710 | 380 | 2,060 | 0.0 | 8.1 | 2,500* | 5.8 | $C_4S_2$ |
| 160 | - | 510 | 250 | 1,390 | 2.0 | 7.6 | 1,800* | 5.2 | $C_3S_2$ |
| 210 | - | 580 | 320 | 1,750 | 17.0 | 8.2 | 2,500* | 7.1 | $C_4S_2$ |
| 160 | - | 520 | 260 | 1,340 | 13.0 | 8.3 | 2,000* | 5.0 | $C_3S_2$ |
| 190 | - | 550 | 300 | 1,510 | - | 8.1 | 2,100 | 5.3 | $C_3S_2$ |
| 160 | - | 510 | 240 | 1,380 | 8.0 | 8.2 | 2,200* | 5.0 | $C_3S_2$ |
| 290 | - | 750 | 430 | 2,490 | 12.0 | 8.2 | 3,500* | 8.5 | $C_4S_2$ |
| 230 | - | 720 | 410 | 2,090 | 16.0 | 8.4 | 2,800* | 6.4 | $C_4S_2$ |
| 150 | - | 480 | 250 | 1,210 | 2.0 | 7.9 | 1,900* | 4.2 | $C_3S_2$ |
| 160 | - | 480 | 230 | 1,340 | 1.0 | 8.1 | 1,500* | 4.6 | $C_3S_1$ |
| 210 | - | 610 | 330 | 1,750 | 22.0 | 8.2 | 2,800* | 6.1 | $C_4S_2$ |



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Table 9.--Selected major chemical constituents of surface water--Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Cubero Creek at Budville (10.7.25.211)** | | | | | | | | | |
| 11-04-74 | BIA | .42 | 92 | 18 | 46 | 6.3 | 260 | 20 | 150 |
| 04-20-78 | USGS | .30 | 87 | 25 | 52 | 6.6 | 290* | 11* | 150 |
| 07-25-78 | BIA | .25 | 64 | 19 | 51 | 7.8 | 250* | 8* | 130 |
| 10-26-78 | BIA | .24 | 78 | 23 | 51 | 7.0 | 320* | 4* | 150 |
| 01-29-79 | BIA | .40 | 78 | 19 | 51 | 8.2 | 280* | 10* | 130 |
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222)** | | | | | | | | | |
| 04- -61 | BIA | - | 150 | 110 | 500 | 5.9 | 380 | 13 | 920 |
| 05- -61 | BIA | - | 140 | 100 | 360 | 10 | 380 | 17 | 120 |
| 06- -61 | BIA | - | 110 | 110 | 390 | 11 | 300 | 11 | 950 |
| 07- -61 | BIA | - | 77 | 18 | 100 | 8.6 | 150 | - | 300 |
| 08- -61 | BIA | - | 88 | 51 | 190 | 7.8 | 240 | 4 | 460 |
| 09- -61 | BIA | - | 96 | 46 | 230 | 7.8 | 250 | 21 | 490 |
| 10- -61 | BIA | - | 92 | 51 | 220 | 7.8 | 250 | 18 | 500 |
| 06-26-67 | BIA | - | 160 | 15 | 220 | 9.9 | 200 | T | 580 |
| 05-06-69 | BIA | - | 160 | 250 | 1,100 | 18 | 290 | 18 | 2,900 |
| 06- -69 | BIA | - | 120 | 98 | 440 | 5.1 | 280 | 23 | 960 |



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| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 14 | - | 310 | 94 | 480 | 12.0 | 8.3 | 700* | 1.2 | $C_2S_1$ |
| 13 | 42 | 320 | 74 | 520 | 10.0 | 8.5* | 780* | 1.3 | $C_3S_1$ |
| 12 | - | 240 | 40 | 450 | 26.0 | 8.5* | 680* | 1.4 | $C_2S_1$ |
| 14 | - | 290 | 50 | 480 | 7.0 | 8.4* | 810* | 1.3 | $C_3S_1$ |
| 16 | - | 280 | 50 | 500 | 2.0 | 8.6* | 680* | 1.3 | $C_2S_1$ |
| 260 | - | 830 | 520 | - | - | 8.2 | 3,300 | 7.9 | $C_4S_2$ |
| 230 | - | 760 | 450 | - | - | 8.2 | 2,890 | 5.6 | $C_4S_2$ |
| 220 | - | 730 | 480 | - | - | 8.2 | 2,960 | 6.4 | $C_4S_2$ |
| 40 | - | 270 | 150 | - | - | 8.0 | 1,000 | 2.7 | $C_3S_1$ |
| 110 | - | 430 | 230 | - | - | 8.2 | 1,620 | 4.0 | $C_3S_1$ |
| 140 | - | 430 | 220 | - | - | 8.4 | 1,930 | 4.8 | $C_3S_1$ |
| 120 | - | 440 | 230 | - | - | 8.3 | 1,720 | 4.7 | $C_3S_1$ |
| 140 | - | 450 | 290 | 1,350 | - | 8.3 | 1,800 | 4.6 | $C_3S_2$ |
| 410 | - | 1,440 | 1,200 | 5,330 | - | 8.3 | 6,310 | 12 | $C_4S_4$ |
| 240 | - | 700 | 460 | 2,260 | - | 8.5 | 3,090 | 7.3 | $C_4S_2$ |



350002090

Table 9.—Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - continued** | | | | | | | | | |
| 07- -69 | BIA | - | 30 | 57 | 190 | 4.7 | 250 | 20 | 450 |
| 08-08-69 | BIA | - | 75 | 29 | 310 | 11 | 120 | T | 650 |
| 09- -69 | BIA | - | 100 | 28 | 120 | 7.0 | 130 | T | 430 |
| 10- -69 | BIA | - | 110 | 65 | 220 | 3.5 | 290 | 14 | 520 |
| 05-07-70 | BIA | - | 130 | 150 | 560 | 11 | 390 | 32 | 1,300 |
| 06- -70 | BIA | - | 110 | 73 | 310 | 9.0 | 130 | 31 | 750 |
| 08-05-70 | BIA | - | 70 | 21 | 53 | 7.0 | 96 | T | 270 |
| 09- -70 | BIA | - | 110 | 77 | 330 | 7.4 | 260 | 20 | 740 |
| 07-26-71 | BIA | - | 140 | 55 | 270 | 8.6 | 290 | 21 | 580 |
| 08- -71 | BIA | - | 110 | 51 | 220 | T | 250 | 24 | 500 |
| 10-27-71 | BIA | - | 84 | 46 | 210 | 10 | 240 | 17 | 410 |
| 07-10-72 | BIA | - | 110 | 74 | 340 | 11 | 230 | 11 | 780 |
| 08-08-72 | BIA | - | 58 | 17 | 84 | 4.3 | 180 | T | 190 |
| 09-13-73 | BIA | - | 100 | 40 | 170 | 12 | 200 | 12 | 460 |
| 01-25-74 | BIA | - | 110 | 63 | 250 | 5.1 | 290 | 20 | 530 |
| 04-03-74 | BIA | - | 100 | 67 | 240 | 4.7 | 270 | 21 | 560 |



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| Chloride (per liter) | Silica (per liter) | Calcium magnesium hardness (as $CaCo_3$) (per liter) | Hardness, noncarbonate (per liter) | Dissolved solids (per liter) | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
|---|---|---|---|---|---|---|---|---|---|
| 130 | - | 460 | 250 | 1,180 | - | 8.5 | 1,700 | 3.9 | $C_3S_1$ |
| 160 | - | 310 | 200 | 1,360 | - | 8.0 | 2,010 | 7.8 | $C_3S_2$ |
| 60 | - | 370 | 260 | 886 | - | 7.9 | 1,220 | 2.7 | $C_3S_1$ |
| 150 | - | 540 | 290 | 1,450 | - | 8.5 | 2,000 | 4.1 | $C_3S_1$ |
| 320 | - | 940 | 610 | 2,890 | - | 8.4 | 3,800 | 7.9 | $C_4S_2$ |
| 180 | - | 570 | 470 | 1,580 | - | 8.2 | 2,340 | 5.7 | $C_4S_2$ |
| 28 | - | 260 | 180 | 541 | - | 8.3 | 790 | 1.4 | $C_3S_1$ |
| 190 | - | 590 | 380 | 1,830 | - | 8.4 | 2,840 | 5.9 | $C_4S_2$ |
| 210 | - | 580 | 300 | 1,520 | - | 8.3 | 2,190 | 4.8 | $C_3S_1$ |
| 150 | - | 490 | 280 | 1,280 | - | 8.6 | 1,820 | 4.4 | $C_3S_2$ |
| 150 | - | 400 | 200 | 1,230 | - | 8.4 | 1,670 | 4.6 | $C_3S_2$ |
| 200 | - | 570 | 380 | 1,730 | - | 8.2 | 2,450 | 6.1 | $C_4S_2$ |
| 48 | - | 220 | 66 | 576 | - | 8.0 | 820 | 2.5 | $C_3S_1$ |
| 120 | - | 430 | 260 | 1,090 | 18 | 8.1 | 1,500* | 3.5 | $C_3S_1$ |
| 150 | - | 530 | 290 | 1,380 | - | 8.5 | 1,940 | 4.8 | $C_3S_2$ |
| 150 | - | 540 | 310 | 1,400 | 7.0 | 8.4 | 1,850* | 4.4 | $C_3S_1$ |



350002092

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - continued** | | | | | | | | | |
| 07-01-74 | BIA | - | 68 | 57 | 230 | 2.0 | 210 | 13 | 480 |
| 10-21-74 | BIA | - | 170 | 110 | 500 | 4.7 | 300 | 47 | 1,200 |
| 03-28-75 | BIA | - | 100 | 64 | 240 | 5.9 | 280 | 30 | 540 |
| 03-25-76 | BIA | - | 100 | 62 | 240 | 7.0 | 310 | 14 | 540 |
| 01-10-77 | BIA | - | 120 | 100 | 130 | 7.0 | 280 | 12 | 750 |
| 04-04-77 | BIA | - | 120 | 75 | 280 | 8.6 | 320 | 22 | 620 |
| 07-07-77 | BIA | - | 70 | 29 | 170 | 9.8 | 200 | 5 | 360 |
| 10-03-77 | BIA | - | 110 | 60 | 270 | 9.0 | 280 | 19 | 550 |
| 01-10-78 | BIA | - | 110 | 63 | 290 | 9.4 | 290 | 19 | 670 |
| 03-01-78 | BIA | - | 110 | 63 | 280 | 7.8 | 270 | 22 | 590 |
| 06-05-78 | BIA | 0 | 240 | 50 | 330 | 11 | 520 | T | 750 |
| 09-05-78 | BIA | - | 130 | 73 | 310 | 12 | 280 | 10 | 820 |
| 01-08-79 | BIA | - | 98 | 60 | 220 | 9.0 | 270 | 10 | 500 |
| 03-01-79 | BIA | - | 100 | 54 | 230 | 7.4 | 300 | T | 520 |
| 06-07-79 | BIA | - | 150 | 74 | 380 | 6.3 | 360 | 7.2 | 870 |



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| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 130 | - | 410 | 230 | 1,160 | 21 | 8.2 | 1,500* | 5.0 | $C_3S_2$ |
| 270 | - | 860 | 610 | 2,630 | 13 | 8.4 | 3,000* | 7.4 | $C_4S_2$ |
| 160 | - | 530 | 300 | 1,380 | 6.0 | 8.6 | 2,000* | 4.6 | $C_3S_2$ |
| 150 | - | 510 | 230 | 1,410 | 8.0 | 8.4 | 1,850* | 4.6 | $C_3S_2$ |
| 14 | - | 710 | 450 | 1,460 | 0.0 | 8.3 | 1,800 | 2.2 | $C_3S_1$ |
| 170 | - | 610 | 310 | 1,520 | 4.0 | 7.9 | 2,000* | 4.9 | $C_3S_2$ |
| 77 | - | 300 | 130 | 860 | 24.0 | 8.1 | 1,500* | 4.3 | $C_3S_1$ |
| 160 | - | 530 | 260 | 1,370 | 14.0 | 8.3 | 2,000* | 5.2 | $C_3S_2$ |
| 180 | - | 550 | 270 | 1,500 | - | 8.2 | 2,100 | 5.3 | $C_3S_2$ |
| 170 | - | 540 | 280 | 1,480 | 8.0 | 8.3 | 2,400* | 5.1 | $C_3S_2$ |
| 210 | - | 810 | 390 | 1,980 | 19.0 | 8.1 | 2,500* | 5.1 | $C_4S_2$ |
| 190 | - | 640 | 390 | 1,780 | 18.0 | 8.4 | 2,400* | 5.4 | $C_4S_2$ |
| 160 | - | 490 | 260 | 1,240 | 2.0 | 7.9 | 1,850* | 4.3 | $C_3S_2$ |
| 160 | - | 480 | 240 | 1,370 | 5.0 | 8.1 | 1,800 | 4.7 | $C_3S_1$ |
| 230 | - | 670 | 360 | 1,920 | 18.0 | 8.4 | 3,000* | 6.4 | $C_4S_2$ |



350002094

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Runoff from Casa Blanca Mesa (9.6.24.311)** | | | | | | | | | |
| 10-10-78 | BIA | - | 22 | 0.6 | 2.3 | 2.4 | 52 | T | 19 |
| **Rio San Jose at New Laguna Dam (9.6.1.322)** | | | | | | | | | |
| 08-07-75 | BIA | - | 92 | 19 | 66 | 11 | 160 | 7 | 250 |
| 01-12-77 | BIA | - | 160 | 100 | 400 | 8.6 | 420 | 22 | 980 |
| 04-06-77 | BIA | - | 110 | 64 | 290 | 7.4 | 290 | 14 | 600 |
| 10-04-77 | BIA | - | 120 | 50 | 230 | 9.4 | 290 | 12 | 460 |
| 01-10-78 | BIA | - | 120 | 60 | 280 | 9.4 | 290 | 24 | 650 |
| 03-07-78 | BIA | - | 110 | 57 | 270 | 9.0 | 270 | 12 | 540 |
| 09-06-78 | BIA | 0 | 330 | 100 | 510 | 19 | 360 | T | 1,670 |
| 01-09-79 | BIA | - | 100 | 57 | 230 | 9.4 | 250 | 22 | 520 |
| 03-02-79 | BIA | - | 110 | 55 | 250 | 9.0 | 330 | T | 530 |
| 06-08-79 | BIA | - | 140 | 62 | 290 | 11 | 310 | T | 730 |
| **Rio Paguate upstream from Paguate, New Mexico (11.5.30.234)** | | | | | | | | | |
| 06-26-67 | BIA | - | 32 | 12 | 13 | 4.3 | 150 | T | 27 |
| 04-21-78 | USGS | .79 | 37 | 14 | 17 | 4.7 | 180* | 4* | 23 |
| 07-19-78 | BIA | .20 | 34 | 10 | 16 | 5.5 | 190* | 0* | 25 |



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| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 3.6 | - | 58 | 15 | 81 | - | 8.0 | 140 | 0.1 | $C_1S_1$ |
| 32 | - | 310 | 170 | 620 | 21.0 | 8.0 | 850* | 1.6 | $C_3S_1$ |
| 250 | - | 830 | 450 | 2,450 | 0.0 | 8.5 | 3,200* | 6.0 | $C_4S_2$ |
| 170 | - | 530 | 270 | 1,520 | 10.0 | 7.4 | 2,100* | 5.5 | $C_3S_2$ |
| 150 | - | 500 | 240 | 1,250 | 14.0 | 8.2 | 1,750* | 4.4 | $C_3S_1$ |
| 180 | - | 540 | 270 | 1,490 | - | 8.4 | 2,000 | 5.3 | $C_3S_2$ |
| 180 | - | 520 | 240 | 1,400 | 4.0 | 8.3 | 2,300* | 5.2 | $C_3S_2$ |
| 290 | - | 1,250 | 950 | 3,390 | 20.0 | 7.9 | 4,000 | 6.3 | $C_4S_2$ |
| 160 | - | 490 | 240 | 1,270 | 2.0 | 8.2 | 1,800* | 4.6 | $C_3S_2$ |
| 160 | - | 500 | 230 | 1,360 | 5.0 | 8.3 | 2,000* | 4.8 | $C_3S_1$ |
| 180 | - | 610 | 350 | 1,690 | 16.0 | 8.2 | 2,400* | 5.2 | $C_4S_1$ |
| 7 | - | 130 | 4 | 190 | - | 8.4 | 310 | .51 | $C_2S_1$ |
| 5 | 44 | 150 | 0 | 240 | 12.0 | 8.5* | 350* | .60 | $C_2S_1$ |
| 4 | - | 130 | 0 | 200 | 20.0 | 8.0* | 330* | .63 | $C_2S_1$ |



350002096

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Paguate, New Mexico (11.5.30.234) - continued** | | | | | | | | | |
| 10-30-78 | BIA | 2.4 | 40 | 11 | 18 | 5.5 | 190* | 0* | 25 |
| 01-30-79 | BIA | .93 | 48 | 13 | 23 | 7.0 | 210* | 0* | 49 |
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | | | |
| 04-01-76 | BIA | - | 84 | 3 | 41 | 5.1 | 300 | 5 | 140 |
| 01-13-77 | BIA | - | 68 | 19 | 23 | 5.5 | 230 | 14 | 94 |
| 01-18-77 | USGS | - | 53 | 18 | 22 | 4.2 | 230 | 0 | 64 |
| 04-05-77 | BIA | - | 74 | 22 | 34 | 5.1 | 280 | 12 | 92 |
| 01-10-78 | BIA | - | 68 | 22 | 30 | 7.0 | 240 | 10 | 110 |
| 03-07-78 | BIA | - | 64 | 18 | 28 | 8.6 | 230 | 12 | 99 |
| 04-21-78 | USGS | .33 | 98 | 35 | 35 | 5.3 | 370* | 4* | 150 |
| 06-06-78 | BIA | - | 84 | 30 | 37 | 6.3 | 300 | 12 | 140 |
| 07-19-78 | BIA | .12 | 82 | 33 | 41 | 6.8 | 330* | 0* | 190 |
| 09-06-78 | BIA | - | 100 | 24 | 34 | 6.7 | 270 | T | 190 |
| 10-26-78 | BIA | .20 | 110 | 35 | 34 | 6.2 | 400* | 0* | 170 |
| 01-08-79 | BIA | - | 96 | 33 | 34 | 5.5 | 300 | 22 | 140 |
| 01-29-79 | BIA | 1.4 | 60 | 19 | 25 | 6.7 | 250* | 0* | 63 |



350002097

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation gation class |
| 5 | - | 150 | 0 | 210 | 10.5 | 8.1* | 380* | .42 | $C_2S_1$ |
| 5 | - | 180 | 1 | 290 | 0.0 | 8.3* | 350* | .76 | $C_2S_1$ |
| 16 | - | 340 | 79 | 500 | - | 8.5 | 770 | .98 | $C_3S_1$ |
| 7 | - | 250 | 38 | 380 | 0.0 | 8.2 | 560 | .63 | $C_2S_1$ |
| 7 | 37 | 210 | 15 | 320 | 4.0 | 8.0* | 490* | .70 | $C_2S_1$ |
| 9 | - | 280 | 25 | 420 | 6.0 | 7.7 | 610 | .90 | $C_2S_1$ |
| 13 | - | 260 | 46 | 400 | - | 8.2 | 590 | .81 | $C_2S_1$ |
| 7 | - | 240 | 27 | 420 | 9.0 | 8.3 | 510 | .78 | $C_2S_1$ |
| 10 | 32 | 390 | 100 | 540 | 8.0 | 8.4* | 800* | .80 | $C_3S_1$ |
| 12 | - | 340 | 66 | 510 | 17.0 | 8.3 | 800* | .87 | $C_3S_1$ |
| 12 | - | 340 | 130 | 520 | 28.0 | 7.9* | 820* | .98 | $C_3S_1$ |
| 12 | - | 350 | 130 | 590 | 15.0 | 8.3 | 850* | .80 | $C_3S_1$ |
| 12 | - | 410 | 100 | - | 11.0 | 8.0* | 890* | .74 | $C_3S_1$ |
| 18 | - | 380 | 92 | 550 | 0.0 | 8.2 | 950* | .77 | $C_3S_1$ |
| 9 | - | 230 | 16 | 360 | 1.0 | 8.0* | 475* | .73 | $C_2S_1$ |



350002098

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424) - continued** | | | | | | | | | |
| 03-01-79 | BIA | - | 100 | 30 | 37 | 5.9 | 350 | 5 | 160 |
| 06-06-79 | BIA | - | 100 | 12 | 35 | 9.0 | 330 | 2.4 | 130 |
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344)** | | | | | | | | | |
| 04-01-76 | BIA | .37 | 170 | 100 | 180 | 11 | 250 | 10 | 900 |
| 01-13-77 | BIA | - | 130 | 100 | 150 | 8.6 | 310 | T | 800 |
| 01-18-77 | USGS | 3.7 | 130 | 63 | 110 | 6.1 | 310 | 0 | 540 |
| 04-05-77 | BIA | - | 170 | 80 | 170 | 7.8 | 300 | T | 790 |
| 07-06-77 | BIA | - | 190 | 120 | 240 | 14 | 180 | 7 | 1,200 |
| 10-03-77 | BIA | - | 200 | 92 | 200 | 12 | 220 | 24 | 1,030 |
| 01-10-78 | BIA | - | 150 | 83 | 160 | 9.0 | 300 | T | 780 |
| 03-07-78 | BIA | - | 180 | 110 | 210 | 10 | 320 | T | 1,010 |
| 04-20-78 | USGS | .31 | 190 | 140 | 250 | 11 | 270* | 4* | 1,300 |
| 06-05-78 | BIA | - | 240 | 190 | 370 | 15 | 230 | 2 | 1,760 |
| 09-06-78 | BIA | - | 240 | 120 | 260 | 12 | 240 | T | 1,360 |
| 11-02-78 | BIA | .75 | 180 | 96 | 190 | 8.6 | 300* | 0* | 990 |
| 01-08-79 | BIA | - | 190 | 100 | 190 | 8.6 | 320 | 14 | 920 |



350002099

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 11 | - | 380 | 87 | 590 | 10.0 | 8.4 | 850* | .82 | $C_3S_1$ |
| 12 | - | 300 | 27 | 440 | 13.0 | 8.3 | 750* | .87 | $C_2S_1$ |
| 18 | - | 840 | 620 | 1,830 | - | 8.4 | 2,100* | 2.8 | $C_3S_1$ |
| 16 | - | 740 | 480 | 1,570 | 0.0 | 8.2 | 1,900 | 2.3 | $C_3S_1$ |
| 11 | 19 | 580 | 330 | 1,040 | 0.0 | 7.8* | 1,400* | 2.0 | $C_3S_1$ |
| 2 | - | 750 | 500 | 1,550 | 6.0 | 7.3 | 1,900* | 2.6 | $C_3S_1$ |
| 25 | - | 960 | 790 | 2,050 | 32.0 | 8.1 | 2,400* | 3.4 | $C_3S_1$ |
| 20 | - | 880 | 660 | 1,820 | 25.0 | 8.1 | 2,000* | 2.9 | $C_3S_1$ |
| 13 | - | 700 | 460 | 1,420 | - | 8.1 | 1,700 | 2.6 | $C_3S_1$ |
| 28 | - | 900 | 620 | 1,880 | 13.0 | 8.1 | 2,300* | 3.0 | $C_3S_1$ |
| 27 | 17 | 1,100 | 840 | 2,060 | 15.0 | 8.4* | 2,400* | 3.4 | $C_3S_1$ |
| 35 | - | 1,380 | 1,200 | 3,060 | 26.0 | 8.3 | 3,400* | 4.3 | $C_4S_2$ |
| 28 | - | 1,080 | 880 | 2,290 | 17.0 | 8.2 | 2,600* | 3.4 | $C_4S_2$ |
| 20 | - | 850 | 630 | 1,740 | 10.0 | 8.3* | 2,200* | 2.9 | $C_3S_1$ |
| 30 | - | 880 | 590 | 1,770 | 0.0 | 8.1 | 2,200* | 2.8 | $C_3S_1$ |



350002100

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Moquino upstream from Jackpile-Paquate Mine (11.5.22.344) - continued** | | | | | | | | | |
| 01-30-79 | BIA | .53 | 180 | 90 | 170 | 11 | 440* | 0* | 830 |
| 03-01-79 | BIA | - | 130 | 64 | 130 | 7.4 | 280 | 28 | 600 |
| 06-06-79 | BIA | - | 180 | 73 | 160 | 11 | 260 | T | 880 |
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | | | |
| 04-01-76 | BIA | 1.4 | 120 | 94 | 160 | 8.2 | 250 | 12 | 700 |
| 01-13-77 | BIA | 2.0 g/ | 120 | 79 | 110 | 7.0 | 300 | 17 | 580 |
| 01-18-77 | USGS | 4.6 | 110 | 65 | 110 | 5.8 | 270 | 0 | 530 |
| 01-24-77 | USGS | 1.5 | 130 | 81 | 140 | 9.3 | 300 | 0 | 690 |
| 04-04-77 | BIA | 2.1 g/ | 120 | 71 | 130 | 8.2 | 250 | 19 | 570 |
| 07-08-77 | BIA | .25 g/ | 190 | 150 | 310 | 13 | 250 | 7 | 1,580 |
| 01-10-78 | BIA | 1.3 g/ | 140 | 84 | 160 | 7.8 | 310 | T | 760 |
| 03-07-78 | BIA | 1.7 g/ | 120 | 69 | 140 | 6.3 | 220 | 14 | 670 |
| 04-18-78 | USGS | 1.1 | 160 | 120 | 200 | 9.4 | 320* | 8* | 1,000 |
| 06-05-78 | BIA | .46 g/ | 110 | 88 | 160 | 9.0 | 250 | 5 | 700 |
| 07-25-78 | BIA | .14 | 190 | 140 | 340 | 11 | 340* | 0* | 1,520 |
| 09-06-78 | BIA | .10 g/ | 260 | 150 | 300 | 12 | 300 | T | 1,620 |



350002101

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 25 | - | 810 | 490 | 1,650 | 0.0 | 8.2* | 2,000* | 2.6 | $C_3S_1$ |
| 18 | - | 580 | 300 | 1,230 | 11.0 | 8.3 | 1,500 | 2.4 | $C_3S_1$ |
| 14 | - | 750 | 540 | 1,470 | 18.0 | 8.2* | 1,900 | 2.6 | $C_3S_1$ |
| 23 | - | 670 | 440 | 1,490 | - | 8.5 | 1,800* | 0.9 | $C_3S_1$ |
| 5 | - | 620 | 340 | 1,190 | - | 8.4 | 1,500 | 1.9 | $C_3S_1$ |
| 12 | 22 | 540 | 320 | 990 | 0.0 | 8.0* | 1,370* | 2.1 | $C_3S_1$ |
| 16 | 22 | 660 | 410 | 1,240 | 9.0 | 8.3* | 1,640 | 2.4 | $C_3S_1$ |
| 16 | - | 600 | 360 | 1,160 | 15.0 | 8.0 | 1,200* | 2.4 | $C_3S_1$ |
| 28 | - | 1,100 | 880 | 2,410 | 20.0 | 8.1 | 3,000* | 4.1 | $C_4S_2$ |
| 21 | - | 690 | 430 | 1,370 | - | 8.1 | 1,700 | 2.6 | $C_3S_1$ |
| 11 | - | 600 | 390 | 1,210 | 14.0 | 8.3 | 1,500* | 2.4 | $C_3S_1$ |
| 20 | 20 | 890 | 640 | 1,680 | 14.0 | 8.5* | 2,200* | 2.9 | $C_3S_1$ |
| 20 | - | 640 | 430 | 1,350 | 26.0 | 8.3 | 1,700* | 2.7 | $C_3S_1$ |
| 35 | - | 1,050 | 800 | 2,640 | 23.0 | 8.3* | 3,000* | 4.6 | $C_4S_2$ |
| 27 | - | 1,250 | 1,010 | 2,770 | 22.0 | 8.2 | 3,000* | 3.7 | $C_4S_2$ |



350002102

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (19.5.2.434) - continued** | | | | | | | | | |
| 10-30-78 | BIA | .51 | 200 | 160 | 260 | 10. | 340* | 0* | 1,320 |
| 01-08-79 | BIA | 2.0 g/ | 180 | 120 | 210 | 8.6 | 310 | 24 | 1,050 |
| 01-24-79 | BIA | 1.5 | 260 | 16 | 160 | 9.8 | 420* | T* | 720 |
| 03-02-79 | BIA | 2.2 g/ | 140 | 75 | 150 | 7.8 | 280 | T | 730 |
| 06-07-79 | BIA | .84 g/ | 170 | 79 | 190 | 14 | 240 | 2.4 | 960 |
| **Rio Paguate downstream from Paguate Dam (10.5.25.133)** | | | | | | | | | |
| 09-13-73 | BIA | - | 160 | 43 | 78 | 9.8 | 120 | 6 | 640 |
| 01-15-74 | BIA | - | 210 | 120 | 240 | 9.8 | 230 | 20 | 1,200 |
| 04-04-77 | BIA | - | 160 | 100 | 220 | 11 | 230 | 17 | 1,000 |
| 07-05-77 | BIA | - | 170 | 97 | 200 | 10 | 240 | 12 | 970 |
| 01-10-78 | BIA | - | 230 | 100 | 240 | 13 | 320 | T | 1,150 |
| 03-07-78 | BIA | - | 170 | 86 | 200 | 11 | 310 | 10 | 930 |
| 06-06-78 | BIA | 0 | 500 | 320 | 790 | 27 | 120 | T | 3,950 |
| 09-06-78 | BIA | - | 190 | 24 | 76 | 12 | 190 | T | 580 |
| 01-08-79 | BIA | - | 130 | 54 | 130 | 11 | 130 | 14 | 640 |
| 03-02-79 | BIA | - | 140 | 56 | 130 | 9.4 | 240 | T | 620 |
| 06-07-79 | BIA | - | 130 | 97 | 250 | 9.8 | 150 | T | 1,100 |



350002103

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 25 | - | 1,150 | 910 | 2,300 | 12.0 | 8.3* | 2,600* | 3.4 | $C_4S_1$ |
| 37 | - | 940 | 640 | 1,920 | 0.0 | 8.1 | 1,800* | 3.0 | $C_3S_1$ |
| 16 | - | 720 | 440 | 1,470 | -0.5 | 8.4* | 1,700* | 2.5 | $C_3S_1$ |
| 16 | - | 650 | 420 | 1,400 | 11.0 | 8.3 | 1,500* | 2.6 | $C_3S_1$ |
| 20 | - | 750 | 550 | 1,650 | 27.0 | 8.3 | 1,900* | 3.0 | $C_3S_1$ |
| 13 | - | 590 | 490 | 1,080 | - | 7.9 | 1,370 | 1.4 | $C_3S_1$ |
| 31 | - | 1,050 | 860 | 2,240 | - | 8.2 | 2,520 | 3.2 | $C_4S_1$ |
| 25 | - | 820 | 600 | 1,800 | 15.0 | 7.8 | 2,000* | 3.4 | $C_3S_1$ |
| 20 | - | 820 | 600 | 1,720 | - | 8.1 | 1,900 | 3.0 | $C_3S_1$ |
| 33 | - | 990 | 720 | 2,090 | - | 8.0 | 2,400 | 3.3 | $C_4S_1$ |
| 27 | - | 780 | 510 | 1,610 | 12.0 | 8.2 | 2,000* | 3.1 | $C_3S_1$ |
| 93 | - | 2,550 | 2,450 | 6,420 | 19.0 | 7.9 | 6,100* | 6.8 | $C_4S_3$ |
| 12 | - | 580 | 420 | 1,080 | 25.0 | 8.1 | 1,300* | 1.4 | $C_3S_1$ |
| 21 | - | 540 | 410 | 1,080 | 4.0 | 8.0 | 1,400* | 2.4 | $C_3S_1$ |
| 18 | - | 580 | 380 | 1,220 | 9.0 | 8.2 | 1,500* | 2.4 | $C_3S_1$ |
| 25 | - | 730 | 610 | 1,810 | 22.0 | 8.2 | 2,200 | 4.0 | $C_3S_1$ |



350002104

Table 9.—Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133)** | | | | | | | | | |
| 04- -61 | BIA | - | 120 | 77 | 330 | 7.0 | 270 | 8 | 710 |
| 08- -61 | BIA | - | 66 | 9.1 | 78 | 7.8 | 140 | 3 | 170 |
| 10- -61 | BIA | - | 94 | 60 | 270 | 9.8 | 240 | 18 | 620 |
| 06-26-67 | BIA | - | 180 | 22 | 200 | 9.4 | 170 | T | 650 |
| 05-06-69 | BIA | - | 150 | 100 | 500 | 7.4 | 220 | 12 | 1,300 |
| 06- -69 | BIA | - | 410 | 81 | 880 | 13 | 250 | 11 | 2,300 |
| 08-08-69 | BIA | - | 250 | 71 | 160 | 9.4 | 130 | 6 | 1,100 |
| 09- -69 | BIA | - | 380 | 24 | 40 | 4.3 | 61 | T | 1,000 |
| 10- -69 | BIA | - | 120 | 67 | 290 | 5.9 | 220 | 10 | 740 |
| 05-08-70 | BIA | - | 170 | 130 | 600 | 9.8 | 240 | 27 | 1,400 |
| 06- -70 | BIA | - | 160 | 130 | 670 | 14 | 120 | 25 | 1,700 |
| 08-05-70 | BIA | - | 89 | 26 | 120 | 7.8 | 130 | T | 390 |
| 09- -70 | BIA | - | 110 | 38 | 180 | 11 | 140 | T | 560 |
| 07-26-71 | BIA | - | 90 | 30 | 150 | 9.3 | 130 | 8 | 440 |
| 08- -71 | BIA | - | 110 | 44 | 210 | 3.9 | 190 | 15 | 550 |
| 10-27-71 | BIA | - | 78 | 50 | 210 | 11 | 240 | 15 | 400 |



350002105

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation gation class |
| 190 | - | 390 | 170 | - | - | 8.0 | 2,500 | 5.7 | $C_4S_2$ |
| 53 | - | 170 | 55 | - | - | 8.0 | 900 | 2.4 | $C_3S_1$ |
| 140 | - | 300 | 100 | - | - | 8.2 | 2,000 | 5.4 | $C_3S_2$ |
| 120 | - | 530 | 390 | 1,360 | - | 8.4 | 1,780 | 3.7 | $C_3S_1$ |
| 270 | - | 810 | 630 | 2,630 | - | 8.4 | 3,430 | 7.7 | $C_4S_2$ |
| 480 | - | 1,360 | 1,160 | 4,640 | - | 8.2 | 5,600 | 10 | $C_4S_3$ |
| 32 | - | 910 | 810 | 1,890 | - | 8.1 | 2,190 | 2.4 | $C_3S_1$ |
| 15 | - | 1,060 | 1,010 | 1,640 | - | 7.6 | 1,860 | .5 | $C_3S_1$ |
| 170 | - | 590 | 410 | 1,740 | - | 8.3 | 2,330 | 5.3 | $C_4S_2$ |
| 340 | - | 940 | 740 | 3,120 | - | 8.3 | 4,020 | 8.6 | $C_4S_3$ |
| 330 | - | 420 | 310 | 3,200 | - | 8.3 | 4,250 | 9.5 | $C_4S_3$ |
| 59 | - | 330 | 220 | 841 | - | 8.2 | 1,220 | 2.8 | $C_3S_1$ |
| 90 | - | 950 | 850 | 1,200 | - | 8.1 | 1,630 | 3.9 | $C_3S_1$ |
| 83 | - | 350 | 220 | 907 | - | 8.1 | 1,360 | 3.6 | $C_3S_1$ |
| 130 | - | 450 | 300 | 1,250 | - | 8.5 | 1,800 | 4.4 | $C_3S_2$ |
| 150 | - | 400 | 200 | 1,130 | - | 8.4 | 1,670 | 4.5 | $C_3S_1$ |



350002106

Table 9.--Selected major chemical constituents of surface water-Continued

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - continued** | | | | | | | | | |
| 08-31-72 | BIA | - | 74 | 44 | 100 | 6.4 | 140 | 5 | 260 |
| 09-13-73 | BIA | - | 92 | 18 | 64 | 11 | 140 | 6 | 240 |
| 01-25-74 | BIA | - | 130 | 73 | 310 | 7.4 | 290 | 19 | 770 |
| 04-03-74 | BIA | - | 120 | 77 | 300 | 7.0 | 270 | 20 | 690 |
| 10-21-74 | BIA | - | 170 | 67 | 300 | 9.0 | 190 | 42 | 890 |
| 03-28-75 | BIA | - | 120 | 73 | 300 | 7.4 | 300 | 26 | 700 |
| 03-30-76 | BIA | - | 130 | 78 | 300 | 7.0 | 310 | 14 | 710 |
| 01-10-77 | BIA | - | 190 | 120 | 450 | 11 | 390 | 38 | 1,220 |
| 01-24-77 | USGS | - | 140 | 84 | 340 | 12 | 340 | 0 | 950 |
| 04-06-77 | BIA | - | 130 | 78 | 340 | 8.6 | 280 | 22 | 770 |
| 07-06-77 | BIA | 0 | 370 | 100 | 570 | 13 | 150 | T | 1,910 |
| 10-04-77 | BIA | - | 140 | 52 | 290 | 11 | 240 | 10 | 680 |
| 01-10-78 | BIA | - | 140 | 74 | 330 | 9.4 | 320 | 19 | 770 |
| 03-07-78 | BIA | - | 130 | 68 | 330 | 10 | 310 | 19 | 790 |
| 04-19-78 | USGS | .50 | 190 | 130 | 610 | 10 | 370* | 14* | 1,500 |
| 06-06-78 | BIA | 0 | 360 | 150 | 780 | 13 | 250 | 5 | 2,330 |



350002107

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 57 | - | 270 | 150 | 687 | - | 8.0 | 980 | 2.7 | $C_3S_1$ |
| 42 | - | 310 | 190 | 620 | - | 8.3 | 920 | 1.6 | $C_3S_1$ |
| 200 | - | 630 | 390 | 1,740 | - | 8.2 | 2,290 | 5.4 | $C_4S_2$ |
| 180 | - | 610 | 390 | 1,710 | - | 8.4 | 2,250* | 5.2 | $C_4S_2$ |
| 170 | - | 710 | 550 | 1,940 | - | 8.3 | 2,200* | 5.0 | $C_4S_2$ |
| 180 | - | 610 | 370 | 1,730 | 12.0 | 8.4 | 2,400* | 5.3 | $C_4S_2$ |
| 170 | - | 640 | 360 | 1,780 | 4.0 | 8.4 | 2,000* | 5.2 | $C_4S_2$ |
| 280 | - | 950 | 570 | 2,780 | 0.0 | 8.1 | 3,050* | 6.1 | $C_4S_2$ |
| 160 | 19 | 700 | 420 | 1,880 | 4.0 | 8.3* | 2,700* | 5.6 | $C_4S_2$ |
| 170 | - | 640 | 370 | 1,760 | 17.0 | 8.0 | 2,400* | 5.8 | $C_4S_2$ |
| 280 | - | 1,340 | 1,220 | 3,370 | 19.0 | 8.0 | 4,050* | 6.7 | $C_4S_2$ |
| 170 | - | 570 | 360 | 1,500 | 19.0 | 8.2 | 2,000* | 5.3 | $C_3S_2$ |
| 210 | - | 650 | 360 | 1,800 | 0.0 | 8.3 | 2,400 | 5.7 | $C_4S_2$ |
| 200 | - | 620 | 330 | 1,600 | 11.0 | 8.4 | 2,300* | 5.7 | $C_3S_2$ |
| 330 | 12 | 1,000 | 680 | 2,980 | 21.0 | 8.5* | 4,000* | 8.4 | $C_4S_3$ |
| 410 | - | 1,500 | 1,280 | 4,460 | 18.0 | 8.0 | 6,000* | 8.8 | $C_4S_3$ |



350002108

Table 9.--Selected major chemical constituents of surface water-Concluded

| Date of collection | Laboratory | Discharge (cubic feet per second) | Constituents in milligrams: Calcium | Magnesium | Sodium | Potassium | Bicarbonate (as $HCO_3$) | Carbonate (as $CO_3$) | Sulfate |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - continued** | | | | | | | | | |
| 09-07-78 | BIA | 0 | 350 | 67 | 310 | 12 | 200 | T | 1,450 |
| 01-09-79 | BIA | - | 110 | 60 | 260 | 9 | 280 | 17 | 620 |
| 01-24-79 | BIA | 8.1 | 200 | 12 | 280 | 9.8 | 310* | 0* | 630 |
| 03-06-79 | BIA | - | 120 | 64 | 290 | 7.8 | 270 | T | 650 |
| 06-06-79 | BIA | - | 150 | 61 | 400 | 11 | 320 | 1.2 | 930 |
| **Rio Puerco at Rt. 66 bridge (9.1.4.412)** | | | | | | | | | |
| 08-24-78 | BIA | - | 210 | 35 | 170 | 9.4 | 130 | T | 900 |



350002109

| per liter | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Chloride | Silica | Calcium magnesium hardness (as $CaCo_3$) | Hardness, noncarbonate | Dissolved solids | Temperature (degrees celsius) | pH | Specific conductance (micromhos per centimeter at 25° celsius) | Sodium adsorption ratio | Irrigation class |
| 140 | - | 1,150 | 990 | 2,540 | 19.0 | 7.9 | 3,000* | 3.9 | $C_4S_2$ |
| 170 | - | 530 | 280 | 1,380 | 0.0 | 8.2 | 1,700* | 4.8 | $C_3S_2$ |
| 160 | - | 540 | 290 | 1,530 | 0.0 | 7.8* | 2,000* | 5.3 | $C_3S_2$ |
| 190 | - | 560 | 340 | 1,620 | 12.0 | 8.7 | 2,200* | 5.3 | $C_3S_2$ |
| 210 | - | 630 | 360 | 1,970 | 16.0 | 8.5 | 2,700 | 7.0 | $C_4S_2$ |
| 20 | - | 660 | 550 | 1,550 | - | 8.1 | 1,820 | 3.0 | $C_3S_1$ |



350002110

Table 10. Nutrients, bacteria, and selected minor elements in surface water

Notes: All constituents are reported in milligrams per liter unless noted. Analyses of total nitrate (as N), total phosphorus (as P), fluoride, and boron were performed by U.S. Bureau of Indian Affairs (BIA) laboratory except where marked with asterisk "*". Those analyses and all others were performed by U.S. Geological Survey (USGS) laboratory. Concentrations less than the detection limit of a particular analytical technique are indicated by "T" by BIA and "<" by USGS lab. Dissolved oxygen was measured on site.

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242)** | | | | | | | | | |
| 06-26-67 | 0.50 | - | - | - | - | - | - | 1.4 | T |
| 07- -68 | .50 | - | - | - | - | - | - | 2.4 | 0.04 |
| 10-14-68 | .37 | - | - | - | - | - | - | 1.8 | .06 |
| 05-06-69 | .62 | - | - | - | - | - | - | 1.8 | .10 |
| 06- -69 | .12 | - | - | - | - | - | - | 1.4 | .01 |
| 07- -69 | .25 | - | - | - | - | - | - | 1.9 | .01 |
| 08-08-69 | 1.9 | - | - | - | - | - | - | .7 | .12 |
| 09- -69 | .62 | - | - | - | - | - | - | .8 | .03 |
| 10- -69 | 1.2 | - | - | - | - | - | - | 1.2 | .16 |
| 05-07-70 | .12 | - | - | - | - | - | - | 1.4 | .12 |
| 06- -70 | .12 | - | - | - | - | - | - | 1.1 | .22 |
| 08-05-70 | .62 | - | - | - | - | - | - | .6 | .03 |
| 09- -70 | T | - | - | - | - | - | - | .8 | .10 |



350002111

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 700 | - | - | - | - | - | - |
| - | - | 450 | - | - | - | - | - | - |
| - | - | 700 | - | - | - | - | - | - |
| - | - | 950 | - | - | - | - | - | - |
| - | - | 520 | - | - | - | - | - | - |
| - | - | 150 | - | - | - | - | - | - |
| - | - | 300 | - | - | - | - | - | - |
| - | - | 300 | - | - | - | - | - | - |
| - | - | 150 | - | - | - | - | - | - |
| - | - | 950 | - | - | - | - | - | - |
| - | - | 750 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 620 | - | - | - | - | - | - |



350002112

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242)-Continued** | | | | | | | | | |
| 07-26-71 | 2.5 | - | - | - | - | - | - | .8 | .78 |
| 08- -71 | .12 | - | - | - | - | - | - | 1.0 | .18 |
| 10-27-71 | 5.0 | - | - | - | - | - | - | .7 | 1.4 |
| 07-10-72 | .25 | - | - | - | - | - | - | 2.2 | .05 |
| 08-31-72 | 1.9 | - | - | - | - | - | - | .7 | .27 |
| 09-13-73 | 5.0 | - | - | - | - | - | - | .6 | .32 |
| 01-25-74 | 6.8 | - | - | - | - | - | - | 1.0 | .40 |
| 04-03-74 | 1.9 | - | - | - | - | - | - | 1.1 | .16 |
| 07-01-74 | 3.7 | - | - | - | - | - | - | 1.4 | .05 |
| 10-21-74 | 5.6 | - | - | - | - | - | - | 1.4 | .10 |
| 03-28-75 | 0.98 | - | - | - | - | - | - | 1.0 | 0.06 |
| 08-08-75 | 0.11 | - | - | - | - | - | - | 1.1 | 0.02 |
| 03-25-76 | 1.5 | - | - | - | - | - | - | 0.6 | 0.73 |
| 01-11-77 | 2.4 | - | - | - | - | - | - | 1.2 | 0.63 |
| 04-04-77 | 0.98 | - | - | - | - | - | - | 1.1 | 0.37 |
| 07-07-77 | 0.28 | - | - | - | - | - | - | 1.2 | 0.19 |



350002113

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 710 | - | - | - | - | - | - |
| - | - | 400 | - | - | - | - | - | - |
| - | - | 820 | - | - | - | - | - | - |
| - | - | 1,500 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 270 | - | - | - | - | - | - |
| - | - | 420 | - | - | - | - | - | - |
| - | - | 500 | - | - | - | - | - | - |
| - | - | 200 | - | - | - | - | - | - |
| - | - | 680 | - | - | - | - | - | - |
| - | - | 26 | - | - | - | - | - | - |
| - | - | 760 | - | - | - | - | - | - |
| - | - | 620 | - | - | - | - | - | - |
| - | - | 920 | - | - | - | - | - | - |
| - | - | 530 | - | - | - | - | - | - |
| - | - | 760 | - | - | - | - | - | - |



350002114

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242) - concluded** | | | | | | | | | |
| 10-03-77 | 0.28 | - | - | - | - | - | - | 0.9 | 0.43 |
| 01-10-78 | 1.5 | - | - | - | - | - | - | 1.1 | 0.69 |
| 03-01-78 | 0.98 | - | - | - | - | - | - | 1.0 | 0.88 |
| 06-05-78 | 0.28 | - | - | - | - | - | - | 1.2 | 0.38 |
| 09-05-78 | 0.04 | - | - | - | - | - | - | 1.3 | 0.20 |
| 01-08-79 | 2.5 | - | - | - | - | - | - | 2.3 | 1.3 |
| 03-01-79 | 1.5 | - | - | - | - | - | - | 0.9 | 1.8 |
| 06-06-79 | 1.4 | - | - | - | - | - | - | 0.9 | .85 |
| **Cubero Creek at Budville (10.7.25.211)** | | | | | | | | | |
| 11-04-74 | 0.84 | - | - | - | - | - | - | 0.8 | - |
| 04-20-78 | - | 0.04 | 0.00 | 0.01 | 0.25 | 0.26 | 0.30 | 0.8* | 0.01 |
| 07-25-78 | 0.04 | - | 0.01 | - | - | - | - | 0.9 | T |
| 10-26-78 | 0.01 | 0.05 | - | 0.0 | 0.04 | 0.04 | 0.09 | 0.7 | 0.02 |
| 01-29-79 | 0.05* | 0.07 | - | 0.01 | 0.08 | 0.09 | 0.16 | 1.1 | 0.04 |



350002115

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 400 | - | - | - | - | - | - |
| - | - | 1,000 | - | - | - | - | - | - |
| - | - | 680 | - | - | - | - | - | - |
| - | - | 490 | - | - | - | - | - | - |
| - | - | 570 | - | - | - | - | - | - |
| - | - | 380 | - | - | - | - | - | - |
| - | - | 480 | - | - | - | - | - | - |
| - | - | 540 | - | - | - | - | - | - |
| - | - | 120 | - | - | - | - | - | - |
| - | 0.01 | 50* | - | 2.1 | 0.5 | - | - | 9.6 |
| - | 0.0 | 70 | - | 1.8 | 0.4 | 147 | 245 | 8.5 |
| 0.01 | - | T | - | 1.6 | 0.3 | - | - | 9.7 |
| 0.04 | - | T | - | 2.3 | 0.6 | 9 | 78 | 11.8 |



350002116

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - continued** | | | | | | | | | |
| 06-26-67 | 0.74 | - | - | - | - | - | - | 0.9 | T |
| 05-06-69 | .62 | - | - | - | - | - | - | 1.8 | 0.03 |
| 06- -69 | .25 | - | - | - | - | - | - | 1.4 | .05 |
| 07- -69 | .12 | - | - | - | - | - | - | 1.0 | .14 |
| 08-08-69 | 2.5 | - | - | - | - | - | - | .7 | .06 |
| 09- -69 | .62 | - | - | - | - | - | - | .7 | .01 |
| 10- -69 | .62 | - | - | - | - | - | - | 1.0 | .18 |
| 05-07-70 | .12 | - | - | - | - | - | - | 1.2 | .20 |
| 06- -70 | 1.2 | - | - | - | - | - | - | .8 | .48 |
| 08-05-70 | 2.5 | - | - | - | - | - | - | .6 | T |
| 09- -70 | .12 | - | - | - | - | - | - | .7 | .04 |
| 07-26-71 | 2.0 | - | - | - | - | - | - | .8 | .70 |
| 08- -71 | T | - | - | - | - | - | - | 1.0 | .98 |
| 10-27-71 | 3.1 | - | - | - | - | - | - | .7 | 1.2 |
| 07-10-72 | .25 | - | - | - | - | - | - | 1.2 | T |
| 08-08-72 | 2.5 | - | - | - | - | - | - | .8 | .23 |



350002117

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 280 | - | - | - | - | - | - |
| - | - | 1,100 | - | - | - | - | - | - |
| - | - | 600 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |
| - | - | 300 | - | - | - | - | - | - |
| - | - | 300 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |
| - | - | 700 | - | - | - | - | - | - |
| - | - | 450 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 490 | - | - | - | - | - | - |
| - | - | 680 | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 820 | - | - | - | - | - | - |
| - | - | 680 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |



350002118

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - continued** | | | | | | | | | |
| 09-13-73 | 6.8 | - | - | - | - | - | - | .6 | .13 |
| 01-25-74 | 8.1 | - | - | - | - | - | - | 1.0 | .50 |
| 04-03-74 | 1.9 | - | - | - | - | - | - | 1.1 | .16 |
| 07-01-74 | 3.7 | - | - | - | - | - | - | 1.1 | T |
| 10-21-74 | 6.8 | - | - | - | - | - | - | 1.3 | .14 |
| 03-28-75 | 1.3 | - | - | - | - | - | - | 1.1 | 0.51 |
| 03-25-76 | 0.42 | - | - | - | - | - | - | 0.9 | 0.60 |
| 01-10-77 | 0.28 | - | - | - | - | - | - | 0.6 | 0.02 |
| 04-04-77 | 0.56 | - | - | - | - | - | - | 1.1 | 0.10 |
| 07-07-77 | 0.42 | - | - | - | - | - | - | 1.1 | 0.06 |
| 10-03-77 | 0.42 | - | - | - | - | - | - | 1.0 | 0.43 |
| 01-10-78 | 1.5 | - | - | - | - | - | - | 1.0 | 0.55 |
| 03-01-78 | 0.28 | - | - | - | - | - | - | 0.9 | 0.88 |
| 06-05-78 | 0.07 | - | - | - | - | - | - | 1.4 | 0.03 |
| 09-05-78 | T | - | - | - | - | - | - | 1.2 | 0.03 |
| 01-08-79 | 2.5 | - | - | - | - | - | - | 3.1 | 1.1 |



350002119

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | T | - | - | - | - | - | - |
| - | - | 500 | - | - | - | - | - | - |
| - | - | 350 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 550 | - | - | - | - | - | - |
| - | - | 40 | - | - | - | - | - | - |
| - | - | 540 | - | - | - | - | - | - |
| - | - | 50 | - | - | - | - | - | - |
| - | - | 290 | - | - | - | - | - | - |
| - | - | 460 | - | - | - | - | - | - |
| - | - | 400 | - | - | - | - | - | - |
| - | - | 550 | - | - | - | - | - | - |
| - | - | 610 | - | - | - | - | - | - |
| - | - | 360 | - | - | - | - | - | - |
| - | - | 620 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - concluded** | | | | | | | | | |
| 03-01-79 | 1.1 | - | - | - | - | - | - | 0.8 | 1.7 |
| 06-07-79 | 0.84 | - | - | - | - | - | - | 0.9 | 0.70 |
| **Rio San Jose at New Laguna Dam (9.6.1.322)** | | | | | | | | | |
| 08-07-75 | 0.11 | - | - | - | - | - | - | 0.7 | 0.02 |
| 01-12-77 | 1.8 | - | - | - | - | - | - | 1.3 | 0.72 |
| 04-06-77 | 0.70 | - | - | - | - | - | - | 1.1 | 0.24 |
| 10-04-77 | 0.06 | - | - | - | - | - | - | 0.8 | 0.13 |
| 01-10-78 | 0.70 | - | - | - | - | - | - | 0.9 | 0.50 |
| 03-07-78 | 0.03 | - | - | - | - | - | - | 0.9 | 0.60 |
| 09-06-78 | 0.14 | - | - | - | - | - | - | 1.2 | 0.03 |
| 01-09-79 | 0.70 | - | - | - | - | - | - | 1.3 | 0.74 |
| 03-02-79 | 0.42 | - | - | - | - | - | - | 0.9 | 1.1 |
| 06-08-79 | 0.04 | - | - | - | - | - | - | 0.8 | 0.36 |
| **Rio Paguate upstream from Paguate (11.5.30.234)** | | | | | | | | | |
| 04-21-78 | - | 0.01 | 0.01 | 0.0 | 0.25 | 0.25 | 0.26 | 0.2* | 0.05* |
| 07-19-78 | 0.07 | - | 0.01 | - | - | - | - | 0.3 | 0.01 |



350002121

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 600 | - | - | - | - | - | - |
| - | - | 540 | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 3,730 | - | - | - | - | - | - |
| - | - | 430 | - | - | - | - | - | - |
| - | - | 400 | - | - | - | - | - | - |
| - | - | 780 | - | - | - | - | - | - |
| - | - | 540 | - | - | - | - | - | - |
| - | - | 690 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |
| - | - | 500 | - | - | - | - | - | - |
| - | - | 400 | - | - | - | - | - | - |
| - | 0.03 | 20* | - | 1.2 | 0.7 | - | - | 8.6 |
| - | 0.04 | T | - | 2.4 | 0.7 | - | - | 9.0 |



350002122

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Paguate, New Mexico (11.5.30.234) - continued** | | | | | | | | | |
| 10-30-78 | 0.01* | 0.01 | - | 0.01 | 0.02 | 0.03 | 0.04 | 0.2 | 0.04* |
| 01-30-79 | 0.0* | 0.02 | - | 0.01 | 0.05 | 0.06 | 0.08 | 1.2 | 0.11* |
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | | | |
| 04-01-76 | 0.28 | - | - | - | - | - | - | 0.2 | T |
| 01-13-77 | 0.14 | - | - | - | - | - | - | 0.3 | 0.02 |
| 01-18-77 | - | - | 0.03 | - | - | - | - | 0.3* | - |
| 04-05-77 | 0.01 | - | - | - | - | - | - | 0.4 | 0.01 |
| 01-10-78 | 0.14 | - | - | - | - | - | - | 0.3 | 0.01 |
| 03-07-78 | 0.03 | - | - | - | - | - | - | 0.4 | 0.03 |
| 04-21-78 | - | 0.01 | 0.01 | 0.01 | 0.31 | 0.32 | 0.33 | 0.4* | .03* |
| 06-06-78 | T | - | - | - | - | - | - | 0.4 | T |
| 07-19-78 | 0.01 | - | 0.04 | - | - | - | - | 0.4 | 0.05 |
| 09-06-78 | T | - | - | - | - | - | - | 0.4 | 0.01 |
| 10-26-78 | 0.01* | 0.01 | - | 0.0 | 0.12 | 0.12 | 0.13 | 0.3 | .03* |
| 01-08-79 | 0.04 | - | - | - | - | - | - | 1.6 | 0.03 |
| 01-29-79 | 0.00* | 0.02 | - | 0.01 | 0.05 | 0.06 | 0.07 | 0.9 | 0.05* |



350002123

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| 0.02 | - | T | - | 2.1 | 0.2 | - | - | 8.9 |
| 0.03 | - | T | - | 2.5 | 0.5 | - | - | 10.8 |
| - | - | 120 | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - |
| - | 0.01 | 20* | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 260 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | 0.02 | 30* | - | 1.1 | 0.5 | - | - | 8.6 |
| - | - | 40 | - | - | - | - | - | - |
| - | 0.02 | T | - | 2.1 | 0.5 | - | - | 6.6 |
| - | - | 40 | - | - | - | - | - | - |
| 0.02 | - | T | - | 1.7 | 0.4 | 730 | 1,150 | 8.3 |
| - | - | T | - | - | - | - | - | - |
| 0.03 | - | T | - | 2.4 | 0.9 | - | - | 9.8 |



350002124

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424) - continued** | | | | | | | | | |
| 03-01-79 | 0.01 | - | - | - | - | - | - | 0.4 | 0.01 |
| 06-06-79 | 0.03 | - | - | - | - | - | - | 0.3 | 0.01 |
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344)** | | | | | | | | | |
| 04-01-76 | 0.01 | - | - | - | - | - | - | 0.4 | 0.02 |
| 01-13-77 | 0.56 | - | - | - | - | - | - | 0.6 | T |
| 01-18-77 | - | - | 0.87 | - | - | - | - | 0.4* | - |
| 04-05-77 | 0.14 | - | - | - | - | - | - | 0.6 | T |
| 07-06-77 | 0.03 | - | - | - | - | - | - | 0.6 | T |
| 10-03-77 | T | - | - | - | - | - | - | 0.5 | T |
| 01-10-78 | 0.14 | - | - | - | - | - | - | 0.5 | 0.01 |
| 03-07-78 | 0.03 | - | - | - | - | - | - | 0.6 | 0.03 |
| 04-20-78 | - | 0.01 | 0.01 | 0.01 | 0.39 | 0.40 | 0.41 | 0.6* | 0.01* |
| 06-05-78 | T | - | - | - | - | - | - | 0.8 | T |
| 09-06-78 | 0.03 | - | - | - | - | - | - | 0.7 | 0.01 |
| 11-02-78 | 0.03* | 0.04 | - | 0.01 | 0.99 | 1.0 | 1.0 | 0.5 | 0.00* |
| 01-08-79 | 0.14 | - | - | - | - | - | - | 2.1 | 0.01 |



350002125

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 20 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 50 | - | - | - | - | - | - |
| - | - | 180 | - | - | - | - | - | - |
| - | 0.02 | 70* | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 340 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 260 | - | - | - | - | - | - |
| - | 0.0 | 140* | - | 2.6 | 0.5 | - | - | 8.4 |
| - | - | 40 | - | - | - | - | - | - |
| - | - | 260 | - | - | - | - | - | - |
| 0.0 | - | 60 | - | 2.3 | 0.2 | - | - | 9.8 |
| - | - | T | - | - | - | - | - | - |



350002126

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguino upstream from Jackpile-Paguate Mine (11.5.22.344) - continued** | | | | | | | | | |
| 01-30-79 | 0.43* | 0.45 | - | 0.05 | 0.41 | 0.46 | 0.91 | 2.1 | 0.14* |
| 03-01-79 | 0.07 | - | - | - | - | - | - | 0.6 | T |
| 06-06-79 | 0.04 | - | - | - | - | - | - | 0.4 | 0.01 |
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | | | |
| 04-01-76 | 0.01 | - | - | - | - | - | - | 0.6 | T |
| 01-13-77 | 0.28 | - | - | - | - | - | - | 0.5 | 0.02 |
| 01-18-77 | - | - | 0.24 | - | - | - | - | 0.6* | - |
| 01-24-77 | - | 0.18 | 0.16 | - | - | 0.41 | - | 0.6* | 0.26* |
| 04-04-77 | 0.28 | - | - | - | - | - | - | 0.6 | T |
| 07-08-77 | 0.03 | - | - | - | - | - | - | 0.8 | 0.02 |
| 01-10-78 | 0.28 | - | - | - | - | - | - | 0.6 | 0.01 |
| 03-07-78 | 0.03 | - | - | - | - | - | - | 0.6 | 0.01 |
| 04-18-78 | - | 0.01 | 0.0 | 0.0 | 0.29 | 0.29 | 0.30 | 0.7* | 0.03* |
| 06-05-78 | 0.04 | - | - | - | - | - | - | 0.7 | T |
| 07-25-78 | 0.04 | - | 0.01 | - | - | - | - | 1.1 | 0.03 |
| 09-06-78 | T | - | - | - | - | - | - | 0.8 | 0.01 |



350002127

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| 0.02 | - | T | - | 4.3 | 1.0 | - | - | 11.0 |
| - | - | 100 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 50 | - | - | - | - | - | - |
| - | - | 180 | - | - | - | - | - | - |
| - | 0.03 | 70* | - | - | - | - | - | - |
| 0.05 | 0.02 | 80* | 4.3 | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 340 | - | - | - | - | - | - |
| - | - | 50 | - | - | - | - | - | - |
| - | - | 260 | - | - | - | - | - | - |
| - | 0.0 | 120* | 2.1 | 1.6 | 0.5 | 120 | 280 | 8.2 |
| - | - | 150 | - | - | - | - | - | - |
| - | 0.0 | 70 | 3.1 | 2.5 | 0.6 | 1,138 | 532 | 8.3 |
| - | - | 210 | - | - | - | - | - | - |



350002128

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434) - continued** | | | | | | | | | |
| 10-30-78 | 0.01* | 0.02 | - | 0.01 | 2.9 | 3.0 | 3.0 | 0.7 | 0.07* |
| 01-08-79 | 0.14 | - | - | - | - | - | - | 2.4 | 0.01 |
| 01-24-79 | 0.18* | 0.22 | - | 0.03 | 0.36 | 0.39 | 0.61 | 0.7 | 0.15* |
| 03-02-79 | 0.07 | - | - | - | - | - | - | 0.6 | 0.01 |
| 06-07-79 | 0.04 | - | - | - | - | - | - | 0.7 | T |
| **Rio Paguate downstream from Paguate Dam (10.5.25.133)** | | | | | | | | | |
| 09-13-73 | 3.7 | - | - | - | - | - | - | 0.5 | T |
| 01-15-74 | 3.1 | - | - | - | - | - | - | 0.7 | T |
| 04-04-77 | 0.28 | - | - | - | - | - | - | 0.6 | T |
| 07-05-77 | 0.03 | - | - | - | - | - | - | 0.6 | T |
| 01-10-78 | 0.14 | - | - | - | - | - | - | 0.7 | 0.01 |
| 03-07-78 | 0.28 | - | - | - | - | - | - | 0.6 | T |
| 06-06-78 | 0.01 | - | - | - | - | - | - | 1.2 | T |
| 09-06-78 | 0.03 | - | - | - | - | - | - | 0.7 | 0.01 |
| 01-08-79 | 0.14 | - | - | - | - | - | - | 1.9 | 0.01 |
| 03-02-79 | 0.01 | - | - | - | - | - | - | 0.5 | T |
| 06-07-79 | 0.04 | - | - | - | - | - | - | 0.7 | T |



350002129

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| 0.04 | - | 60 | 2.9 | 2.2 | 0.7 | - | - | 9.2 |
| - | - | T | - | - | - | - | - | - |
| 0.03 | - | T | 5.1 | 3.9 | 1.2 | 10 | 275 | 10.9 |
| - | - | 100 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 200 | - | - | - | - | - | - |
| - | - | 220 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 180 | - | - | - | - | - | - |
| - | - | 290 | - | - | - | - | - | - |
| - | - | 40 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |
| - | - | 120 | - | - | - | - | - | - |
| - | - | T | - | - | - | - | - | - |



350002130

**Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued**

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133)** | | | | | | | | | |
| 06-26-67 | 0.74 | - | - | - | - | - | - | 0.9 | T |
| 05-06-69 | .12 | - | - | - | - | - | - | 1.2 | T |
| 06- -69 | .62 | - | - | - | - | - | - | 1.5 | T |
| 08-08-69 | .12 | - | - | - | - | - | - | 1.2 | T |
| 09- -69 | 2.5 | - | - | - | - | - | - | .4 | T |
| 10- -69 | .62 | - | - | - | - | - | - | 1.1 | T |
| 05-08-70 | 1.2 | - | - | - | - | - | - | 1.1 | T |
| 06- -70 | .25 | - | - | - | - | - | - | .9 | 0.03 |
| 08-05-70 | 1.9 | - | - | - | - | - | - | .8 | .04 |
| 09- -70 | 2.5 | - | - | - | - | - | - | .4 | T |
| 07-26-71 | .50 | - | - | - | - | - | - | .8 | .06 |
| 08- -71 | T | - | - | - | - | - | - | 1.0 | .03 |
| 10-27-71 | .25 | - | - | - | - | - | - | .9 | 1.2 |



350002131

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 milliliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 220 | - | - | - | - | - | - |
| - | - | 490 | - | - | - | - | - | - |
| - | - | 1,100 | - | - | - | - | - | - |
| - | - | 200 | - | - | - | - | - | - |
| - | - | 150 | - | - | - | - | - | - |
| - | - | 200 | - | - | - | - | - | - |
| - | - | 640 | - | - | - | - | - | - |
| - | - | 740 | - | - | - | - | - | - |
| - | - | 80 | - | - | - | - | - | - |
| - | - | 270 | - | - | - | - | - | - |
| - | - | 380 | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 600 | - | - | - | - | - | - |



350002132

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Continued

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - continued** | | | | | | | | | |
| 08-31-72 | 1.9 | - | - | - | - | - | - | .8 | .34 |
| 09-13-73 | 7.4 | - | - | - | - | - | - | .6 | T |
| 01-25-74 | .48 | - | - | - | - | - | - | 1.0 | .42 |
| 04-03-74 | .19 | - | - | - | - | - | - | 1.2 | .05 |
| 10-21-74 | 3.7 | - | - | - | - | - | - | .9 | .01 |
| 03-28-75 | 0.70 | - | - | - | - | - | - | 1.1 | 0.19 |
| 03-30-76 | 0.28 | - | - | - | - | - | - | 0.6 | 0.27 |
| 01-10-77 | 1.82 | - | - | - | - | - | - | 1.2 | 0.72 |
| 01-24-77 | - | 0.88 | 0.88 | - | - | 1.5 | - | 0.9* | 0.42* |
| 04-06-77 | 0.42 | - | - | - | - | - | - | 1.1 | 0.12 |
| 07-06-77 | 0.14 | - | - | - | - | - | - | 0.8 | 0.02 |
| 10-04-77 | 0.03 | - | - | - | - | - | - | 0.9 | T |
| 01-10-78 | 0.56 | - | - | - | - | - | - | 1.0 | 0.34 |
| 03-07-78 | 0.14 | - | - | - | - | - | - | 0.9 | 0.51 |
| 04-19-78 | - | 0.02 | 0.02 | 0.01 | 0.48 | 0.49 | 0.51 | 1.2* | 0.10* |
| 06-06-78 | 0.01 | - | - | - | - | - | - | 0.9 | T |



350002133

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 millilliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | T | - | - | - | - | - | - |
| - | - | 40 | - | - | - | - | - | - |
| - | - | 350 | - | - | - | - | - | - |
| - | - | 290 | - | - | - | - | - | - |
| - | - | 250 | - | - | - | - | - | - |
| - | - | 12 | - | - | - | - | - | - |
| - | - | 280 | - | - | - | - | - | - |
| - | - | 840 | - | - | - | - | - | - |
| 0.31 | 0.24 | 380* | 4.4 | - | - | - | - | - |
| - | - | 550 | - | - | - | - | - | - |
| - | - | 760 | - | - | - | - | - | - |
| - | - | 400 | - | - | - | - | - | - |
| - | - | 320 | - | - | - | - | - | - |
| - | - | 540 | - | - | - | - | - | - |
| - | 0.10 | 780* | 5.3 | 4.7 | 0.6 | 1 | 36 | 8.8 |
| - | - | 900 | - | - | - | - | - | - |



350002134

Table 10. Nutrients, bacteria, and selected minor elements in surface water - Concluded

| Date of collection | Nitrate (total as N) | Nitrite plus nitrate (total as N) | Nitrite plus nitrate (dissolved as N) | Nitrogen, ammonia (total as N) | Nitrogen (total organic as N) | Nitrogen (total Kjeldahl as N) | Nitrogen (total as N) | Fluoride (dissolved) | Phosphorus (total as P) |
|---|---|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - concluded** | | | | | | | | | |
| 09-07-78 | 0.03 | - | - | - | - | - | - | 0.7 | 0.01 |
| 01-09-79 | 0.84 | - | - | - | - | - | - | 3.4 | 0.46 |
| 01-24-79 | 1.0* | 1.1 | - | 0.62 | 0.68 | 1.3 | 2.4 | 1.0 | 0.65* |
| 03-06-79 | 0.28 | - | - | - | - | - | - | 0.9 | 0.84 |
| 06-06-79 | 0.04 | - | - | - | - | - | - | 1.0 | 0.14 |



350002135

| Phosphate (total ortho as P) | Phosphate (dissolved ortho as P) | Boron (dissolved) (micrograms per liter) | Carbon (total organic) | Carbon (dissolved organic) | Carbon (suspended organic) | Coliform fecal (membrane filter) (colonies per 100 milliliter) | Streptococci fecal (membrane filter, KF Agar) (colonies per 100 millliter) | Oxygen (dissolved) |
|---|---|---|---|---|---|---|---|---|
| - | - | 500 | - | - | - | - | - | - |
| - | - | 120 | - | - | - | - | - | - |
| 0.51 | - | 300 | 6.6 | 5.6 | 1.0 | 3 | 152 | 12.2 |
| - | - | 480 | - | - | - | - | - | - |
| - | - | 590 | - | - | - | - | - | - |



350002136

Table 11.--Selected trace elements in surface water

Notes: All constituents reported in micrograms per liter. All constituents are reported as "total" concentrations unless noted otherwise. Analyses were performed by both U.S. Bureau of Indian Affairs (BIA) laboratory and the U.S. Geological Survey (USGS) laboratory. Concentrations less than the detection limit of a particular analytical technique are indicated by "T" by BIA lab and "<" by USGS lab.

| Date of collection | Arsenic | Barium | Cadmium | Chromium | Cobalt | Copper | Iron | Iron (dissolved) | Lead |
|---|---|---|---|---|---|---|---|---|---|
| **Cubero Creek at Budville (10.7.25.211)** | | | | | | | | | |
| 04-20-78 | 4 | - | 50 | - | - | - | - | 30 | - |
| 07-25-78 | 3 | 53 | T | T | - | - | 150 | T | T |
| 10-26-78 | 1 | 200 | <1 | <10 | - | - | 250 | T | T |
| 01-29-79 | 2 | 100 | 3 | T | - | - | 110 | 10 | T |
| **Rio Paguate upstream from Paguate, New Mexico (11.5.30.234)** | | | | | | | | | |
| 04-21-78 | 5 | - | - | - | - | - | - | 20 | - |
| 07-19-78 | T | 42 | T | T | - | - | 100 | 10 | T |
| 10-26-78 | <1 | 220 | <2 | <10 | - | - | 80 | T | T |
| 01-30-79 | 1 | T | 10 | T | - | - | 50 | 10 | 20 |
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | | | |
| 04-21-78 | - | - | - | - | - | - | - | 40 | - |
| 07-19-78 | 1 | 110 | T | T | - | - | 290 | 10 | 38 |
| 10-26-78 | <1 | 220 | <1 | <10 | - | - | 370 | T | T |
| 01-29-79 | 1 | T | 3 | T | - | - | 500 | 50 | T |



350002137

| Lithium | Manganese | Mercury | Molybdenum | Selenium | Silver | Strontium | Vanadium (dissolved) | Zinc |
|---|---|---|---|---|---|---|---|---|
| - | - | - | 10 | 1 | - | - | 4.0 | - |
| - | - | T | - | 5 | T | - | 3.8 | - |
| - | - | 2 | - | T | <10 | - | 5.4 | - |
| - | 32 | 3 | - | T | T | - | 4.9 | - |
| - | - | - | 5 | 0 | - | - | 4.0 | - |
| - | - | T | - | T | T | - | 4.5 | - |
| - | - | <2 | - | T | <10 | - | 5.8 | - |
| - | T | <2 | - | T | T | - | 3.3 | - |
| - | - | - | 6 | 3 | - | - | 0.0 | - |
| - | - | T | - | T | T | - | 0.0 | - |
| - | - | <2 | - | T | <10 | - | 0.0 | - |
| - | 78 | <2 | - | T | T | - | 1.6 | - |



350002138

Table 11.--Selected trace elements in surface water - Concluded

| Date of collection | Arsenic | Barium | Cadmium | Chromium | Cobalt | Copper | Iron | Iron (dissolved) | Lead |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | | | |
| 01-24-77 | <5 | 100 | 10 | 1 | <50 | 10 | 7,500 | 70 | <100 |
| 04-18-78 | 4 | - | 2 | 20 | 3 | 4 | 1,600 | 10 | 23 |
| 07-25-78 | T | 42 | T | T | - | - | T | T | 21 |
| 10-30-78 | <10 | 240 | 2 | <10 | - | - | 1,990 | T | T |
| 01-24-79 | 3 | 61 | T | 6 | - | - | 2,660 | T | - |
| **Rio San Jose at Mesita Diversion (0.5.12.133)** | | | | | | | | | |
| 01-24-77 | 4 | 0 | <10 | 0 | <50 | 10 | 3,600 | 40 | <100 |
| 04-19-78 | 5 | - | 2 | 0 | 1 | 8 | 310 | 40 | 90 |
| 01-24-79 | 5 | 41 | T | T | - | - | 930 | T | - |
| **Rio Puerco at Rt. 66 bridge (9.1.4.412)** | | | | | | | | | |
| 08-24-78 | 1 | 700 | T | T | - | - | 70 | 40 | 13 |



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| Lithium | Manganese | Mercury | Molybdenum | Selenium | Silver | Strontium | Vanadium (dissolved) | Zinc |
|---|---|---|---|---|---|---|---|---|
| 50 | 180 | 0 | 2 | 8 | <10 | 1,500 | 0.3 | - |
| - | 50 | 0 | 7 | 9 | - | - | 0.0 | 20 |
| - | - | T | - | T | T | - | 0.0 | - |
| - | - | <2 | - | T | <10 | - | 0.0 | - |
| - | 110 | <2 | - | T | T | - | 0.5 | - |
| 290 | 110 | 0 | 3 | 4 | <10 | 2,100 | 3.4 | - |
| - | 140 | 0 | 8 | 1 | - | - | 5.0 | 20 |
| - | 88 | <2 | - | T | T | - | 3.5 | - |
| - | - | T | - | T | - | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality

Note: All measurements were performed onsite.
An Asterisk indicates discharge measurement was the mean value for the day recorded at a streamflow-gaging station. All other discharge measurements were of instantaneous flow.

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242)** | | | | | | | |
| 10-02-73 | - | 3,100 | - | 13.0 | - | - | - |
| 11-01-73 | - | 3,500 | - | 8.0 | - | - | - |
| 12-03-73 | - | 6,000 | - | 2.0 | - | - | - |
| 02-11-74 | - | 1,400 | - | 5.0 | - | - | - |
| 03-14-74 | - | 1,700 | - | 7.0 | - | - | - |
| 05-06-74 | - | 2,000 | - | 18.0 | - | - | - |
| 06-13-74 | - | 3,250 | - | 26.0 | - | - | - |
| 08-09-74 | - | 3,000 | - | 24.0 | - | - | - |
| 09-20-74 | - | 3,500 | - | 17.5 | - | - | - |
| 11-04-74 | - | 2,900 | - | 7.0 | - | - | - |
| 01-14-75 | - | 1,540 | - | 2.0 | - | - | - |
| 03-05-75 | - | 1,900 | - | 6.0 | - | - | - |
| 04-07-75 | - | 1,800 | - | 10.0 | - | - | - |
| 05-06-75 | - | 2,060 | - | 8.0 | - | - | - |
| 06-09-75 | - | 3,200 | - | 24.0 | - | - | - |
| 08-04-75 | - | 3,000 | - | 25.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242) - Continued** | | | | | | | |
| 12-05-75 | - | 6,050 | - | 2.0 | - | - | - |
| 01-02-76 | - | 4,000 | - | 3.0 | - | - | - |
| 02-15-76 | - | 1,950 | - | 3.0 | - | - | - |
| 05-05-76 | - | 3,000 | - | 16.0 | - | - | - |
| 06-02-76 | - | 3,000 | - | 22.0 | - | - | - |
| 07-06-76 | - | 5,000 | - | 18.0 | - | - | - |
| 08-03-76 | - | 1,550 | - | 24.0 | - | - | - |
| 09-02-76 | - | 2,200 | - | 17.0 | - | - | - |
| 10-15-76 | - | 4,000 | - | 8.0 | - | - | - |
| 11-02-76 | - | 2,300 | - | 4.0 | - | - | - |
| 12-06-76 | - | 2,100 | - | -1.0 | - | - | - |
| 02-02-77 | - | 1,850 | - | 3.0 | - | - | - |
| 03-01-77 | - | 1,800 | - | 5.0 | - | - | - |
| 05-02-77 | - | 2,000 | - | 11.5 | - | - | - |
| 06-01-77 | - | 3,000 | - | 16.0 | - | - | - |
| 08-01-77 | - | 3,500 | - | 18.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Seama Diversion (10.7.34.242) - Concluded** | | | | | | | |
| 09-07-77 | - | 1,300 | - | 19.0 | - | - | - |
| 10-31-77 | - | 1,800 | - | 11.0 | - | - | - |
| 11-02-77 | - | 1,600 | - | 5.0 | - | - | - |
| 12-05-77 | - | 2,100 | - | 4.0 | - | - | - |
| 01-02-78 | - | 2,200 | - | 4.0 | - | - | - |
| 02-07-78 | - | 2,000 | - | 5.0 | - | - | - |
| 04-03-78 | - | 2,400 | - | 10.0 | - | - | - |
| 05-01-78 | - | 5,000 | - | 11.0 | - | - | - |
| 07-05-78 | - | 3,000 | - | 14.0 | - | - | - |
| 08-01-78 | - | 2,100 | - | 17.0 | - | - | - |
| 10-02-78 | - | 3,000 | - | 14.0 | - | - | - |
| 11-01-78 | - | 2,500 | - | 11.0 | - | - | - |
| 12-01-78 | - | 2,000 | - | 4.0 | - | - | - |
| 02-05-79 | - | 1,900 | - | 1.0 | - | - | - |
| 04-05-79 | - | 1,700 | - | 15.0 | - | - | - |
| 05-01-79 | - | 2,800 | - | 10.0 | - | - | - |
| 07-02-79 | - | 1,300 | - | 16.0 | - | - | - |
| 08-06-79 | - | 6,000 | - | 20.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Acomita Ditch at Laguna-Acoma Boundary (10.7.35.411)** | | | | | | | |
| 05-27-76 | 0.89 | 2,120 | - | 21.0 | - | - | - |
| 06-16-76 | 0.21 | 1,720 | - | 24.0 | - | - | - |
| 07-20-76 | 0.07 | 1,900 | - | 26.0 | - | - | - |
| 09-02-76 | 0.93 | 1,700 | - | - | - | - | - |
| **New York Ditch at Laguna-Acoma Boundary (10.7.35.213)** | | | | | | | |
| 05-24-78 | 0.23 | 1,600 | 8.6 | 24.0 | 252 | 13 | - |
| **Paraje and Acomita Ditches at Acoma-Laguna Boundary (10.7.35.244)** | | | | | | | |
| 05-24-78 | 2.02 | 1,800 | 8.5 | 17.5 | 287 | 16 | - |
| 06-21-78 | 0.45 | 2,030 | 8.4 | 21.0 | 338 | 8 | 9.9 |
| 07-26-78 | 4.0 | 1,700 | 8.3 | 18.0 | 320 | 0 | 8.2 |
| 08-30-78 | 0.91 | 1,900 | 8.2 | 15.0 | 316 | 0 | 9.0 |
| 09-27-78 | 1.7 | 1,870 | 8.4 | 13.0 | 310 | 6 | 8.3 |
| **Rio San Jose at Laguna-Acoma Boundary (10.7.35.231)** | | | | | | | |
| 04-01-76 | 7.2 | 1,970 | - | - | - | - | - |
| 04-29-76 | 4.7 | 2,200 | - | 8.5 | - | - | - |
| 05-27-76 | 0.10 | 5,040 | - | 21.0 | - | - | - |
| 06-16-76 | 0.43 | 5,890 | - | 21.5 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality — Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Laguna-Acoma Boundary (10.7.35.231) - Concluded** | | | | | | | |
| 07-20-76 | 0.02 | 3,000 | - | 26.5 | - | - | - |
| 09-02-76 | 1.04 | 2,700 | - | - | - | - | - |
| 10-04-76 | 3.9 | 2,310 | 8.3 | 12.5 | - | - | - |
| 01-18-77 | 4.6 | 2,000 | - | 0.0 | - | - | - |
| 02-18-77 | 6.5 | 2,300 | - | 9.5 | - | - | - |
| 03-17-77 | 10.2 | 2,000 | - | 5.5 | - | - | - |
| 04-13-77 | 9.4 | 2,000 | - | 10.5 | - | - | - |
| 05-12-77 | 0.67 | 2,300 | - | 13.0 | - | - | - |
| 05-24-78 | 0.76 | 3,500 | 8.3 | 22.0 | 449 | 0 | - |
| 06-21-78 | 0.02 | 5,500 | 8.5 | 28.0 | 456 | 12 | 9.9 |
| 07-26-78 | 0.55 | 1,900 | 8.2 | 20.0 | 324 | 0 | 7.6 |
| 08-30-78 | 0.68 | 2,000 | 8.1 | 16.0 | 320 | 0 | 7.8 |
| 09-27-78 | 0.63 | 3,000 | 8.4 | 13.5 | 386 | 8 | 8.0 |
| 11-02-78 | 4.7 | 2,080 | 8.5 | 12.0 | 344 | 8 | 9.8 |
| 01-03-79 | 6.0 | 2,130 | - | 0.5 | - | - | - |
| 01-30-79 | 7.9 | 2,200 | 8.3 | 0.0 | 352 | 0 | 11.0 |
| 02-28-79 | 7.3 | 1,830 | 8.5 | 5.5 | 328 | 6 | 11.1 |
| 03-27-79 | 7.8 | 2,000 | 8.3 | 11.0 | 328 | 0 | 8.3 |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Paraje Ditch at Laguna-Acoma Boundary (10.7.35.233)** | | | | | | | |
| 05-27-76 | 0.66 | 3,570 | - | 21.0 | - | - | - |
| 06-16-76 | 1.54 | 3,270 | - | 21.5 | - | - | - |
| 07-20-76 | 1.24 | 2,300 | - | 26.0 | - | - | - |
| 09-02-76 | 1.99 | 2,600 | - | - | - | - | - |
| 05-12-77 | 1.17 | 2,100 | - | 13.0 | - | - | - |
| **Cubero Creek at Budville (10.7.25.211)** | | | | | | | |
| 12-17-74 | 0.40 | 750 | - | 9.0 | - | - | - |
| 03-28-75 | - | 740 | - | 10.0 | - | - | - |
| 05-26-78 | 0.26 | 700 | 7.9 | 12.0 | 290 | 0 | - |
| 06-27-78 | 0.34 | 650 | 8.3 | 20.5 | 310 | 0 | 7.8 |
| 08-29-78 | 0.23 | 740 | 8.2 | 29.5 | 280 | 0 | 6.9 |
| 09-26-78 | 0.23 | 780 | 8.4 | 26.0 | 300 | 4 | 7.3 |
| 12-29-78 | 0.38 | 650 | 8.7 | 9.0 | 280 | 10 | 9.2 |
| 02-28-79 | 0.27 | 700 | 8.8 | 12.0 | 250 | 16 | 10.4 |
| 03-28-79 | 0.22 | 680 | 8.75 | 10.5 | 270 | 12 | 9.7 |
| 05-14-79 | 0.25 | 700 | 8.9 | 23.0 | 260 | 8 | 8.9 |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222)** | | | | | | | |
| 10-02-73 | - | 3,500 | - | 13.5 | - | - | - |
| 11-01-73 | - | 3,000 | - | 6.5 | - | - | - |
| 12-03-73 | - | 5,000 | - | 2.0 | - | - | - |
| 01-14-74 | - | 2,400 | - | 3.0 | - | - | - |
| 02-11-74 | - | 1,500 | - | 2.0 | - | - | - |
| 03-14-74 | - | 1,800 | - | 7.0 | - | - | - |
| 05-06-74 | - | 2,200 | - | 18.5 | - | - | - |
| 06-13-74 | - | 2,600 | - | 27.0 | - | - | - |
| 08-09-74 | - | 2,400 | - | 27.0 | - | - | - |
| 09-20-74 | - | 3,000 | - | 19.0 | - | - | - |
| 11-04-74 | - | 2,000 | - | 6.0 | - | - | - |
| 11-22-74 | - | 1,800 | - | 7.0 | - | - | - |
| 01-14-75 | - | 1,560 | - | 1.0 | - | - | - |
| 03-05-75 | - | 1,900 | - | 5.5 | - | - | - |
| 04-07-75 | - | 1,650 | - | 11.0 | - | - | - |
| 05-06-75 | - | 3,000 | - | 11.0 | - | - | - |
| 06-09-75 | - | 3,000 | - | 26.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality — Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - Continued** | | | | | | | |
| 08-04-75 | - | 2,000 | - | 25.0 | - | - | - |
| 12-05-75 | - | 5,050 | - | 3.0 | - | - | - |
| 01-02-76 | - | 3,000 | - | 4.0 | - | - | - |
| 02-25-76 | - | 1,850 | - | 5.0 | - | - | - |
| 05-05-76 | - | 2,800 | - | 15.0 | - | - | - |
| 06-02-76 | - | 3,100 | - | 20.0 | - | - | - |
| 07-06-76 | - | 2,200 | - | 22.0 | - | - | - |
| 08-03-76 | - | 1,600 | - | 22.0 | - | - | - |
| 09-02-76 | - | 2,300 | - | 18.0 | - | - | - |
| 10-12-76 | - | 2,600 | - | 10.0 | - | - | - |
| 11-02-76 | - | 2,300 | - | 4.0 | - | - | - |
| 12-06-76 | - | 2,100 | - | 0.0 | - | - | - |
| 02-02-77 | - | 1,800 | - | 2.0 | - | - | - |
| 03-01-77 | - | 2,100 | - | 5.0 | - | - | - |
| 05-02-77 | - | 1,700 | - | 12.5 | - | - | - |
| 06-01-77 | - | 2,200 | - | 16.0 | - | - | - |
| 08-01-77 | - | 2,450 | - | 19.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Casa Blanca Diversion (9.6.6.222) - Concluded** | | | | | | | |
| 09-07-77 | - | 2,000 | - | 20.0 | - | - | - |
| 12-05-77 | - | 2,100 | - | 4.0 | - | - | - |
| 01-02-78 | - | 2,400 | - | 4.0 | - | - | - |
| 02-07-78 | - | 2,200 | - | 5.0 | - | - | - |
| 04-03-78 | - | 2,800 | - | 10.0 | - | - | - |
| 05-01-78 | - | 3,500 | - | 13.0 | - | - | - |
| 07-05-78 | 0 | 2,800 | - | 22.0 | - | - | - |
| 08-01-78 | - | 2,000 | - | 26.0 | - | - | - |
| 10-02-78 | - | 2,200 | - | 15.0 | - | - | - |
| 11-01-78 | - | 2,200 | - | 11.0 | - | - | - |
| 12-01-78 | - | 2,000 | - | 4.0 | - | - | - |
| 02-05-79 | - | 1,900 | - | 2.0 | - | - | - |
| 03-01-79 | - | 1,500 | - | 5.0 | - | - | - |
| 04-05-79 | - | 2,000 | - | 16.0 | - | - | - |
| 05-01-79 | - | 1,600 | - | 14.0 | - | - | - |
| 07-02-79 | - | 2,200 | - | 20.0 | - | - | - |
| 08-06-79 | - | 2,000 | - | 22.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at New Laguna Dam (9.6.1.322)** | | | | | | | |
| 12-03-73 | - | 3,000 | - | 4.0 | - | - | - |
| 01-18-74 | - | 2,100 | - | 4.0 | - | - | - |
| 02-15-74 | - | 1,800 | - | 5.0 | - | - | - |
| 03-11-74 | - | 1,800 | - | 10.0 | - | - | - |
| 04-03-74 | - | 2,100 | - | 7.0 | - | - | - |
| 05-06-74 | - | 2,200 | - | 22.0 | - | - | - |
| 08-09-74 | - | 800 | - | 20.0 | - | - | - |
| 10-21-74 | - | 1,600 | - | 12.0 | - | - | - |
| 11-04-74 | - | 1,700 | - | 10.0 | - | - | - |
| 01-14-75 | - | 2,040 | - | 1.0 | - | - | - |
| 02-12-75 | - | 1,800 | - | 6.0 | - | - | - |
| 03-05-75 | - | 1,900 | - | 5.5 | - | - | - |
| 03-28-75 | - | 2,100 | - | 7.0 | - | - | - |
| 04-15-75 | - | 2,000 | - | 12.0 | - | - | - |
| 05-06-75 | - | 3,000 | - | 12.0 | - | - | - |
| 12-05-75 | - | 2,020 | - | 2.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at New Laguna Dam (9.6.1.322) - Continued** | | | | | | | |
| 01-04-76 | - | 2,000 | - | 3.0 | - | - | - |
| 03-25-76 | - | 2,000 | - | 9.0 | - | - | - |
| 05-05-76 | - | 3,600 | - | 14.0 | - | - | - |
| 08-03-76 | - | 1,400 | - | 22.0 | - | - | - |
| 09-02-76 | - | 1,100 | - | 26.0 | - | - | - |
| 10-04-76 | - | 2,600 | - | 17.0 | - | - | - |
| 11-01-76 | - | 2,400 | - | 8.0 | - | - | - |
| 12-07-76 | - | 2,200 | - | 0.0 | - | - | - |
| 02-02-77 | - | 1,500 | - | 7.0 | - | - | - |
| 03-01-77 | - | 1,000 | - | 3.0 | - | - | - |
| 05-03-77 | - | 2,100 | - | 15.0 | - | - | - |
| 06-02-77 | - | 5,000 | - | 23.0 | - | - | - |
| 08-01-77 | - | 1,400 | - | 30.0 | - | - | - |
| 09-08-77 | - | 1,130 | - | 22.0 | - | - | - |
| 10-31-77 | - | 2,000 | - | 9.0 | - | - | - |
| 12-07-77 | - | 2,000 | - | 3.0 | - | - | - |
| 01-03-78 | - | 2,200 | - | 2.0 | - | - | - |
| 02-08-78 | - | 1,750 | - | 7.0 | - | - | - |



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Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at New Laguna Dam (9.6.1.322) - Concluded** | | | | | | | |
| 04-04-78 | - | 2,600 | - | 9.0 | - | - | - |
| 05-01-78 | - | 3,100 | - | 11.0 | - | - | - |
| 10-03-78 | - | 2,400 | - | 14.0 | - | - | - |
| 11-01-78 | - | 2,200 | - | 12.0 | - | - | - |
| 12-05-78 | - | 1,900 | - | 2.0 | - | - | - |
| 02-06-79 | - | 1,800 | - | 0.0 | - | - | - |
| 04-05-79 | - | 2,000 | - | 14.0 | - | - | - |
| 05-03-79 | - | 3,000 | - | 9.0 | - | - | - |
| 07-05-79 | - | 4,000 | - | 22.0 | - | - | - |
| **Rio Paguate upstream from Paguate, New Mexico (11.5.30.234)** | | | | | | | |
| 05-25-78 | 1.07 | 330 | 8.1 | 17.0 | 190 | 0 | - |
| 06-27-78 | 0.44 | 320 | 8.1 | 16.0 | 190 | 0 | 8.4 |
| 08-28-78 | 0.40 | 330 | 8.5 | 19.5 | 160 | 8 | 8.8 |
| 09-28-78 | 0.70 | 330 | 8.6 | 16.0 | 180 | 6 | 8.1 |
| 01-02-79 | 2.0 | 460 | 8.3 | 1.0 | 250 | 0 | 10.8 |
| 02-27-79 | 1.1 | 300 | 8.3 | 4.0 | 200 | 0 | 10.2 |
| 03-28-79 | 0.97 | 380 | 8.6 | 6.5 | 180 | 4 | 9.2 |
| 05-10-79 | 1.1 | 370 | 8.6 | 8.0 | 190 | 4 | 9.2 |



350002152

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | |
| 02-04-74 | - | 900 | - | - | - | - | - |
| 04-04-74 | - | 780 | - | 8.5 | - | - | - |
| 11-22-74 | 0.57 | 700 | - | 8.5 | - | - | - |
| 12-05-74 | - | 850 | - | 8.0 | - | - | - |
| 12-17-74 | 0.47 | - | - | 3.0 | - | - | - |
| 02-10-75 | - | 870 | - | 7.5 | - | - | - |
| 03-18-75 | - | 850 | - | 10.0 | - | - | - |
| 03-28-75 | - | 900 | - | 5.0 | - | - | - |
| 04-14-75 | - | 700 | - | 13.0 | - | - | - |
| 05-07-75 | - | 540 | - | 13.0 | - | - | - |
| 06-12-75 | - | 550 | - | 13.0 | - | - | - |
| 08-06-75 | - | 830 | - | 19.0 | - | - | - |
| 12-03-75 | - | 780 | - | 4.0 | - | - | - |
| 01-06-76 | - | 700 | - | 4.0 | - | - | - |
| 01-30-76 | - | 1,000 | - | 9.0 | - | - | - |
| 04-29-76 | 0.67 | 890 | - | 10.5 | - | - | - |



350002153

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424) - Continued** | | | | | | | |
| 05-05-76 | - | 830 | - | 14.0 | - | - | - |
| 05-27-76 | 0.15 | 1,060 | - | 23.0 | - | - | - |
| 06-04-76 | - | 700 | - | 18.0 | - | - | - |
| 06-16-76 | 0.32 | 830 | - | 24.5 | - | - | - |
| 07-15-76 | - | 830 | - | 22.0 | - | - | - |
| 08-03-76 | - | 930 | - | 20.0 | - | - | - |
| 09-02-76 | 0.10 | 900 | - | - | - | - | - |
| 09-03-76 | - | 950 | - | 15.0 | - | - | - |
| 10-04-76 | - | 970 | - | 13.0 | - | - | - |
| 10-06-76 | - | 950 | - | 11.0 | - | - | - |
| 11-01-76 | - | 850 | - | 8.0 | - | - | - |
| 12-08-76 | - | 680 | - | 2.0 | - | - | - |
| 01-12-77 | - | 580 | - | 0.0 | - | - | - |
| 02-02-77 | - | 540 | - | 5.0 | - | - | - |
| 03-01-77 | - | 800 | - | 3.0 | - | - | - |
| 05-03-77 | - | 750 | - | 9.0 | - | - | - |
| 06-01-77 | - | 930 | - | 24.0 | - | - | - |



350002154

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424) - Continued** | | | | | | | |
| 07-08-77 | - | 950 | - | 19.0 | - | - | - |
| 08-02-77 | - | 930 | - | 15.0 | - | - | - |
| 09-07-77 | - | 900 | - | 26.0 | - | - | - |
| 10-05-77 | - | 560 | - | 15.0 | - | - | - |
| 10-31-77 | - | 900 | - | 9.0 | - | - | - |
| 12-06-77 | - | 730 | - | 8.0 | - | - | - |
| 01-04-78 | - | 680 | - | 2.0 | - | - | - |
| 02-09-78 | - | 800 | - | 2.0 | - | - | - |
| 04-04-78 | - | 800 | - | 19.0 | - | - | - |
| 05-04-78 | - | 900 | - | 14.0 | - | - | - |
| 05-25-78 | 0.21 | 800 | 7.8 | 19.0 | 340 | 0 | - |
| 06-27-78 | 0.19 | 850 | 8.1 | 18.5 | 380 | 0 | 8.8 |
| 07-07-78 | - | 850 | - | 13.0 | - | - | - |
| 08-03-78 | - | 830 | - | 19.0 | - | - | - |
| 08-28-78 | 0.12 | 820 | 8.0 | 21.5 | 350 | 0 | 6.9 |
| 09-29-78 | 0.13 | 800 | 8.2 | 20.5 | 350 | 0 | 7.2 |



350002155

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424) - Concluded** | | | | | | | |
| 10-02-78 | - | 830 | - | 19.0 | - | - | - |
| 11-01-78 | - | 850 | - | 14.0 | - | - | - |
| 12-04-78 | - | 900 | - | 4.0 | - | - | - |
| 01-03-79 | 0.50 | 630 | 8.35 | 1.0 | 320 | 2 | 11.0 |
| 01-08-79 | - | 950 | - | 0.0 | - | - | - |
| 02-05-79 | - | 750 | - | 0.0 | - | - | - |
| 02-27-79 | 0.35 | 800 | 8.4 | 10.0 | 390 | 6 | 8.8 |
| 03-26-79 | 0.28 | 780 | 8.3 | 12.0 | 370 | 0 | 8.3 |
| 04-05-79 | - | 800 | - | 17.0 | - | - | - |
| 05-02-79 | - | 630 | - | 10.0 | - | - | - |
| 05-11-79 | 0.40 | 730 | 8.4 | 10.0 | 350 | 4 | 8.3 |
| 07-03-79 | - | 800 | - | 15.0 | - | - | - |
| 08-02-79 | - | 750 | - | 14.0 | - | - | - |
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344)** | | | | | | | |
| 02-04-74 | - | 1,700 | - | - | - | - | - |
| 04-04-74 | - | 1,900 | - | 4.0 | - | - | - |
| 11-22-74 | 0.57 | 1,550 | - | 11.5 | - | - | - |



350002156

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344) - Continued** | | | | | | | |
| 12-05-74 | - | 1,850 | - | 7.0 | - | - | - |
| 12-17-74 | 0.84 | - | - | 0.0 | - | - | - |
| 02-10-75 | - | 1,300 | - | 7.5 | - | - | - |
| 03-18-75 | - | 1,600 | - | 14.0 | - | - | - |
| 03-28-75 | - | 2,300 | - | 1.0 | - | - | - |
| 04-14-75 | - | 1,400 | - | 18.0 | - | - | - |
| 05-07-75 | - | 2,000 | - | 12.0 | - | - | - |
| 06-12-75 | - | 2,030 | - | 13.0 | - | - | - |
| 08-06-75 | - | 2,020 | - | 24.0 | - | - | - |
| 12-03-75 | - | 2,000 | - | 2.0 | - | - | - |
| 01-06-76 | - | 2,050 | - | 3.0 | - | - | - |
| 03-30-76 | - | 2,000 | - | 7.0 | - | - | - |
| 04-29-76 | 0.11 | 2,200 | - | 16.0 | - | - | - |
| 05-05-76 | - | 2,150 | - | 20.0 | - | - | - |
| 05-27-76 | - | 2,110 | - | 26.0 | - | - | - |
| 06-04-76 | - | 2,000 | - | 22.0 | - | - | - |
| 06-16-76 | 0.04 | 2,600 | - | 24.0 | - | - | - |
| 07-15-76 | - | 1,700 | - | 27.0 | - | - | - |



350002157

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344) - Continued** | | | | | | | |
| 08-03-76 | - | 2,200 | - | 26.0 | - | - | - |
| 09-02-76 | 0.22 | 2,600 | - | - | - | - | - |
| 09-03-76 | - | 2,100 | - | 14.0 | - | - | - |
| 10-04-76 | - | 2,190 | 7.9 | 15.0 | - | - | - |
| 10-06-76 | - | 2,100 | - | 18.0 | - | - | - |
| 11-01-76 | - | 1,950 | - | 14.0 | - | - | - |
| 12-08-76 | - | 2,100 | - | 0.0 | - | - | - |
| 02-02-77 | - | 1,900 | - | 10.0 | - | - | - |
| 03-01-77 | - | 2,000 | - | 2.0 | - | - | - |
| 05-02-77 | - | 2,400 | - | 25.0 | - | - | - |
| 09-06-77 | - | 1,500 | - | 32.0 | - | - | - |
| 10-31-77 | - | 2,000 | - | 6.0 | - | - | - |
| 12-07-77 | - | 2,400 | - | 10.0 | - | - | - |
| 01-04-78 | - | 1,500 | - | 0.0 | - | - | - |
| 02-09-78 | - | 1,900 | - | 0.0 | - | - | - |
| 04-04-78 | - | 1,700 | - | 17.0 | - | - | - |
| 05-04-78 | - | 1,800 | - | 13.0 | - | - | - |
| 05-26-78 | 0.52 | 2,000 | 8.0 | 17.0 | 270 | 0 | - |



350002158

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344) - Concluded** | | | | | | | |
| 08-03-78 | - | 3,500 | - | 25.0 | - | - | - |
| 08-28-78 | 0.30 | 3,150 | 8.2 | 28.5 | 284 | 0 | 6.2 |
| 09-29-78 | 0.22 | 2,550 | 8.4 | 25.0 | 256 | 2 | 7.8 |
| 10-02-78 | - | 2,400 | - | 23.0 | - | - | - |
| 11-01-78 | - | 1,450 | - | 17.0 | - | - | - |
| 12-04-78 | - | 2,200 | - | 1.0 | - | - | - |
| 01-02-79 | 0.40 | 2,480 | 8.4 | 0.5 | 452 | 4 | 13.1 |
| 02-05-79 | - | 2,000 | - | 0.0 | - | - | - |
| 02-27-79 | 1.2 | 1,500 | 8.6 | 8.5 | 326 | 6 | 10.1 |
| 03-26-79 | 1.0 | 1,580 | 8.6 | 19.0 | 300 | 10 | 7.6 |
| 04-05-79 | - | 1,700 | - | 22.0 | - | - | - |
| 05-02-79 | - | 1,500 | - | 10.0 | - | - | - |
| 07-02-79 | - | 2,100 | - | 31.0 | - | - | - |
| 08-02-79 | - | 2,800 | - | 18.0 | - | - | - |
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | |
| 02-12-74 | 1.7 | 1,700 | - | 9.0 | - | - | - |
| 04-04-74 | - | 2,400 | - | 11.0 | - | - | - |
| 11-22-74 | 1.4 | 2,000 | - | 9.0 | - | - | - |
| 12-05-74 | - | 2,000 | - | 8.0 | - | - | - |



350002159

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434) - Continued** | | | | | | | |
| 12-17-74 | 1.4 | - | - | 1.0 | - | - | - |
| 02-10-75 | - | 1,600 | - | 7.5 | - | - | - |
| 03-18-75 | - | 2,000 | - | 18.0 | - | - | - |
| 03-28-75 | - | 2,700 | - | 0.5 | - | - | - |
| 04-14-75 | - | 1,400 | - | 18.0 | - | - | - |
| 05-07-75 | - | 2,000 | - | 21.0 | - | - | - |
| 06-12-75 | - | 2,030 | - | 22.0 | - | - | - |
| 08-06-75 | - | 2,020 | - | 22.0 | - | - | - |
| 12-03-75 | - | 1,580 | - | 5.0 | - | - | - |
| 01-06-76 | - | 2,000 | - | 6.0 | - | - | - |
| 03-25-76 | - | 1,950 | - | 19.0 | - | - | - |
| 04-29-76 | 0.93 | 1,800 | - | 13.5 | - | - | - |
| 05-27-76 | 1.1 | 1,930 | - | 29.5 | - | - | - |
| 06-16-76 | 0.37 | 2,170 | - | 24.0 | - | - | - |
| 07-15-76 | 0.46* | 1,700 | - | 26.0 | - | - | - |
| 08-03-76 | 0.50* | 2,500 | - | 26.0 | - | - | - |



350002160

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434) - Continued** | | | | | | | |
| 09-03-76 | 0.87* | 3,000 | - | 28.0 | - | - | - |
| 10-04-76 | 0.37* | 2,800 | - | 24.0 | - | - | - |
| 11-01-76 | 1.1* | 2,200 | - | 13.0 | - | - | - |
| 12-08-76 | 1.2* | 1,900 | - | 0.0 | - | - | - |
| 01-10-77 | 2.0* | 1,850 | - | 0.0 | - | - | - |
| 02-02-77 | 2.0* | 1,650 | - | 5.0 | - | - | - |
| 03-01-77 | 1.8* | 1,900 | - | 0.0 | - | - | - |
| 05-03-77 | 2.3* | 1,800 | - | 12.0 | - | - | - |
| 06-02-77 | 1.0* | 2,400 | - | 16.0 | - | - | - |
| 08-02-77 | 0.05* | 3,000 | - | 25.0 | - | - | - |
| 09-07-77 | 2.0* | 3,000 | - | 30.0 | - | - | - |
| 10-05-77 | 0.54* | 1,750 | - | 15.0 | - | - | - |
| 10-31-77 | 0.48* | 2,200 | - | 9.0 | - | - | - |
| 12-06-77 | 0.52* | 2,800 | - | 10.0 | - | - | - |
| 01-04-78 | 1.8* | 1,800 | - | 0.0 | - | - | - |
| 02-09-78 | 2.3* | 2,000 | - | 0.0 | - | - | - |
| 04-04-78 | 0.61* | 2,300 | - | 19.0 | - | - | - |
| 05-05-78 | 1.1* | 1,500 | - | 10.0 | - | - | - |



350002161

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434) - Concluded** | | | | | | | |
| 05-25-78 | 0.76 | 2,300 | 8.0 | 16.0 | 290 | 0 | - |
| 06-27-78 | 0.14 | 3,000 | 8.2 | 24.0 | 330 | 0 | 7.4 |
| 07-07-78 | 0.50* | 3,000 | - | 22.0 | - | - | - |
| 08-03-78 | 0.07* | 3,000 | - | 27.0 | - | - | - |
| 08-28-78 | 0.22 | 3,150 | 8.0 | 23.0 | 350 | 0 | 6.9 |
| 09-28-78 | 0.34 | 3,050 | 8.4 | 17.0 | 350 | 4 | 7.9 |
| 10-02-78 | 0.12* | 3,000 | - | 22.0 | - | - | - |
| 11-03-78 | 6.0* | 850 | - | 10.0 | - | - | - |
| 12-04-78 | 0.99* | 1,900 | - | 2.0 | - | - | - |
| 01-03-79 | 1.0* | 2,800 | 8.3 | 0.0 | 410 | 0 | 10.6 |
| 02-05-79 | 2.4* | 1,400 | - | 0.0 | - | - | - |
| 02-27-79 | 1.4 | 1,750 | 8.6 | 14.0 | 330 | 12 | 8.0 |
| 03-26-79 | 1.7 | 1,750 | 8.4 | 14.5 | 320 | 8 | 7.7 |
| 04-05-79 | 1.3* | 2,000 | - | 22.0 | - | - | - |
| 05-02-79 | 1.7* | 1,600 | - | 14.0 | - | - | - |
| 05-11-79 | 1.0 | 1,950 | 8.5 | 20.0 | 290 | 6 | 6.9 |
| 07-03-79 | 0.23* | 3,000 | - | 20.0 | - | - | - |
| 08-02-79 | 0.07* | 2,600 | - | 25.0 | - | - | - |



350002162

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Paguate Dam (10.5.25.133)** | | | | | | | |
| 09-13-73 | - | 1,300 | - | 15.0 | - | - | - |
| 01-15-74 | - | 2,800 | - | 2.0 | - | - | - |
| 02-11-74 | - | 3,000 | - | 8.0 | - | - | - |
| 03-11-74 | - | 2,500 | - | 4.0 | - | - | - |
| 04-04-74 | - | 3,000 | - | 6.5 | - | - | - |
| 08-02-74 | - | 2,200 | - | 16.0 | - | - | - |
| 10-21-74 | - | 2,200 | - | 16.0 | - | - | - |
| 01-14-75 | - | 3,050 | - | 2.0 | - | - | - |
| 02-10-75 | - | 2,000 | - | 8.0 | - | - | - |
| 03-03-75 | - | 1,900 | - | 14.0 | - | - | - |
| 03-18-75 | - | 1,800 | - | 15.0 | - | - | - |
| 04-14-75 | - | 2,200 | - | 17.0 | - | - | - |
| 05-12-75 | - | 1,560 | - | 23.0 | - | - | - |
| 12-04-75 | - | 2,090 | - | 7.0 | - | - | - |
| 01-06-76 | - | 3,000 | - | 9.0 | - | - | - |
| 03-25-76 | - | 2,600 | - | 13.0 | - | - | - |
| 05-05-76 | - | 2,250 | - | 13.0 | - | - | - |



350002163

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Paguate Dam (10.5.25.133) - Continued** | | | | | | | |
| 09-02-76 | - | 3,000 | - | 27.0 | - | - | - |
| 10-04-76 | - | 3,030 | - | 16.0 | - | - | - |
| 12-07-76 | - | 3,000 | - | 4.0 | - | - | - |
| 02-03-77 | - | 1,600 | - | 3.0 | - | - | - |
| 03-01-77 | - | 1,280 | - | 1.0 | - | - | - |
| 05-03-77 | - | 2,400 | - | 13.0 | - | - | - |
| 08-02-77 | - | 2,400 | - | 23.0 | - | - | - |
| 09-07-77 | - | 2,150 | - | 28.0 | - | - | - |
| 10-04-77 | - | 2,100 | - | 25.0 | - | - | - |
| 01-04-78 | - | 1,200 | - | 0.0 | - | - | - |
| 02-09-78 | - | 2,100 | - | 6.0 | - | - | - |
| 04-05-78 | - | 1,900 | - | 6.0 | - | - | - |
| 05-05-76 | - | 2,100 | - | 8.0 | - | - | - |
| 08-03-78 | 0 | 3,030 | - | 27.0 | - | - | - |
| 10-02-78 | - | 1,500 | - | 22.0 | - | - | - |
| 11-03-78 | - | 1,700 | - | 13.0 | - | - | - |
| 12-04-78 | - | 1,600 | - | 4.0 | - | - | - |



350002164

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Paguate Dam (10.5.25.133) - Concluded** | | | | | | | |
| 02-05-79 | - | 2,000 | - | 0.0 | - | - | - |
| 04-05-79 | - | 1,650 | - | 11.0 | - | - | - |
| 05-02-79 | - | 1,900 | - | 16.0 | - | - | - |
| 07-02-79 | - | 2,400 | - | 27.0 | - | - | - |
| 08-02-79 | - | 3,030 | - | 26.0 | - | - | - |
| **Rio San Jose at Mesita Diversion (9.5.12.133)** | | | | | | | |
| 11-01-73 | - | 5,200 | - | 13.0 | - | - | - |
| 12-03-73 | - | 4,000 | - | 2.0 | - | - | - |
| 01-14-74 | - | 3,000 | - | 1.0 | - | - | - |
| 02-14-74 | - | 1,900 | - | 7.0 | - | - | - |
| 03-08-74 | - | 2,200 | - | 5.0 | - | - | - |
| 05-06-74 | - | 3,300 | - | 28.0 | - | - | - |
| 11-05-74 | - | 2,300 | - | 5.0 | - | - | - |
| 01-14-75 | - | 2,080 | - | 2.0 | - | - | - |
| 02-14-75 | - | 2,000 | - | 10.0 | - | - | - |
| 03-05-75 | - | 2,400 | - | 12.0 | - | - | - |
| 04-15-75 | - | 2,200 | - | 10.0 | - | - | - |



350002165

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Continued

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - Continued** | | | | | | | |
| 05-15-75 | - | 3,500 | - | 21.0 | - | - | - |
| 08-05-75 | - | 1,560 | - | 20.0 | - | - | - |
| 12-03-75 | - | 2,050 | - | 2.0 | - | - | - |
| 01-04-76 | - | 2,050 | - | 2.0 | - | - | - |
| 02-20-76 | - | 2,300 | - | 2.5 | - | - | - |
| 05-05-76 | - | 2,000 | - | 12.0 | - | - | - |
| 07-12-76 | 0 | 3,000 | - | 27.0 | - | - | - |
| 08-03-76 | 0 | 4,050 | - | 23.0 | - | - | - |
| 09-02-76 | - | 3,200 | - | 28.0 | - | - | - |
| 10-04-76 | - | 3,050 | - | 14.0 | - | - | - |
| 11-01-76 | - | 2,800 | - | 6.0 | - | - | - |
| 12-07-76 | - | 2,500 | - | 0.0 | - | - | - |
| 02-03-77 | - | 3,000 | - | 0.0 | - | - | - |
| 03-01-77 | - | 2,000 | - | 0.0 | - | - | - |
| 05-04-77 | - | 4,000 | - | 10.0 | - | - | - |
| 06-01-77 | - | 4,500 | - | 21.0 | - | - | - |
| 09-07-77 | - | 950 | - | 18.0 | - | - | - |
| 11-01-77 | - | 2,400 | - | 10.0 | - | - | - |



350002166

Table 12. Miscellaneous onsite measurements of streamflow and water quality -- Concluded

| Date of collection | Discharge (cubic feet per second) | Specific conductance (micromhos per centimeter at 25° celsius) | pH (units) | Temperature (degrees celsius) | Bicarbonate (milligrams per liter as $HCO_3$) | Carbonate (milligrams per liter as $CO_3$) | Dissolved oxygen (milligrams per liter) |
|---|---|---|---|---|---|---|---|
| **Rio San Jose at Mesita Diversion (9.5.12.133) - Concluded** | | | | | | | |
| 12-05-77 | - | 2,600 | - | 9.0 | - | - | - |
| 01-02-78 | - | 2,600 | - | 7.0 | - | - | - |
| 02-09-78 | - | 2,600 | - | 2.0 | - | - | - |
| 04-04-78 | - | 3,500 | - | 6.0 | - | - | - |
| 05-04-78 | - | 4,000 | - | 19.0 | - | - | - |
| 05-26-78 | .30 | 4,750 | 8.0 | 19.0 | 282 | 0 | - |
| 07-07-78 | 0 | 5,000 | - | 27.0 | - | - | - |
| 08-03-78 | - | 850 | - | 19.0 | - | - | - |
| 10-03-78 | 0 | 3,500 | - | 20.0 | - | - | - |
| 11-03-78 | 0 | 3,000 | - | 11.0 | - | - | - |
| 12-04-78 | - | 2,050 | - | 0.0 | - | - | - |
| 12-28-78 | 5.0 | 2,300 | 8.7 | 0.0 | 320 | 10 | 15.4 |
| 02-07-79 | - | 2,000 | - | 1.0 | - | - | - |
| 02-28-79 | 7.1 | 2,200 | 8.8 | 2.0 | 300 | 16 | 15.5 |
| 04-05-79 | - | 2,400 | - | 13.0 | - | - | - |
| 05-03-79 | - | 4,000 | - | 13.0 | - | - | - |
| 05-14-79 | 0.41 | 4,200 | - | 12.5 | 390 | 0 | 3.5 |
| 07-05-79 | - | 2,400 | - | 24.0 | - | - | - |
| 08-06-79 | 0 | 4,000 | - | 30.0 | - | - | - |



350002167

Table 13. Selected radiochemicals in surface water

Notes: All analyses are in picocuries per liter unless noted otherwise. All analyses were performed by U.S. Geological Survey. Concentrations less than the detection limit of a particular analytical method are marked "<".

| Date of collection | Gross alpha, dissolved (micrograms per liter) | Gross alpha, suspended (micrograms per liter) | Gross beta, dissolved as Cs 137 | Gross beta, dissolved as Sr/Yt-90 | Gross beta, suspended as Cs 137 | Gross beta, suspended as Sr/Yt-90 | Radium 226, dissolved radon method | Uranium, dissolved as U (micrograms per liter) | Potassium 40, dissolved |
|---|---|---|---|---|---|---|---|---|---|
| **Cubero Creek at Budville (10.7.25.211)** | | | | | | | | | |
| 04-20-78 | - | - | - | - | - | - | .14 | 6.4 | - |
| 07-25-78 | 7.9 | <0.4 | 7.8 | 7.3 | <0.4 | 0.4 | .06 | 5.4 | 6.1 |
| 10-26-78 | 14.0 | <0.4 | 6.6 | 6.1 | 0.5 | 0.5 | .07 | 5.4 | 5.1 |
| 01-29-79 | 12.0 | <0.4 | 8.5 | 7.8 | 0.5 | 0.5 | .10 | 6.7 | 5.2 |
| 05-14-79 | 11.0 | <0.4 | 5.4 | 5.0 | 0.4 | 0.4 | .08 | 5.7 | 5.5 |
| **Rio Paguate upstream from Paguate (11.5.30.234)** | | | | | | | | | |
| 04-21-78 | - | - | - | - | - | - | .06 | .65 | - |
| 07-19-78 | <2.8 | <0.4 | 3.1 | 2.8 | <0.4 | <0.4 | .04 | .60 | 3.6 |
| 10-30-78 | 3.5 | <0.4 | 4.0 | 3.8 | <0.4 | <0.4 | .09 | .80 | 3.6 |
| 01-30-79 | <4.4 | <0.4 | 2.7 | 2.5 | <0.4 | <0.4 | .07 | 1.60 | 3.4 |
| 05-10-79 | 3.5 | 0.4 | 5.2 | 4.8 | <0.4 | <0.4 | .07 | .80 | 3.6 |
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | | | |
| 04-21-78 | - | - | - | - | - | - | .08 | 2.1 | - |
| 07-19-78 | <4.7 | <0.4 | 3.8 | 3.6 | <0.4 | <0.4 | .08 | 1.4 | 5.1 |
| 10-26-78 | <5.0 | <0.4 | 8.2 | 7.5 | <0.4 | <0.4 | .07 | 0.7 | 4.6 |
| 01-29-79 | <5.8 | 1.1 | 4.0 | 3.7 | 0.7 | 0.7 | .08 | 2.2 | 3.5 |
| 05-14-79 | 7.3 | <0.4 | 4.6 | 4.2 | 0.4 | 0.4 | .07 | 1.4 | 4.0 |
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344)** | | | | | | | | | |
| 04-20-78 | - | - | - | - | - | - | .12 | 8.3 | - |
| 11-02-78 | 21 | <0.4 | 9.5 | 8.7 | <0.4 | <0.4 | .11 | 6.1 | 6.8 |
| 01-30-79 | <35 | 12 | <9.5 | <8.7 | 9.3 | 8.7 | .12 | 7.4 | 7.5 |
| 05-11-79 | <24 | 0.4 | <8.1 | <8.7 | 0.4 | 0.4 | .08 | 4.7 | 6.0 |



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Table 13. Selected radiochemicals in surface water - Concluded

| Date of collection | Gross alpha, dissolved (micrograms per liter) | Gross alpha, suspended (micrograms per liter) | Gross beta, dissolved as Cs 137 | Gross beta, dissolved as Sr/Yt-90 | Gross beta, suspended as Cs 137 | Gross beta, suspended as Sr/Yt-90 | Radium 226, dissolved radon method | Uranium, dissolved as U (micrograms per liter) | Potassium 40, dissolved |
|---|---|---|---|---|---|---|---|---|---|
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | | | |
| 06-17-76 | 360 | 3.2 | 44 | 39 | 2.1 | 1.7 | 4.6 | 210 | 3.4 |
| 01-24-77 | 120 | 150 | 20 | 17 | 56 | 47 | 1.7 | 73 | 5.2 |
| 04-18-78 | 77 | 28 | 23 | 22 | 16 | 16 | 2.2 | 78 | - |
| 07-25-78 | 590 | 18 | 70 | 63 | 44 | 43 | 3.6 | 330 | 9.0 |
| 10-30-78 | 410 | 120 | 67 | 61 | 50 | 44 | 8.3 | 220 | 7.5 |
| 01-24-79 | 230 | 62 | 58 | 58 | 39 | 37 | 3.4 | 110 | 6.6 |
| 05-11-79 | 180 | 36 | 20 | 18 | 22 | 20 | 2.3 | 78 | 6.7 |
| **Rio San Jose at Mesita Diversion (9.5.12.133)** | | | | | | | | | |
| 01-24-77 | 140 | 6.0 | 21 | 16 | 30 | 24 | .11 | 91 | 6.4 |
| 04-19-78 | < 34 | 0.5 | 11 | 9.7 | 1.9 | 1.9 | .26 | 11 | - |
| 01-24-79 | < 32 | 3.5 | 10 | 9.4 | 4.0 | 3.8 | .07 | 10 | 1.3 |
| 05-14-79 | < 66 | <0.4 | <20 | <18 | 1.4 | 1.5 | .07 | 41 | 8.2 |



350002169

# Table 14.—Summary of selected geologic units and their water-bearing properties

| System | Series | Group | Stratigraphic unit | Thickness (feet) | Lithology | Occurrence | Water supply |
|---|---|---|---|---|---|---|---|
| Quaternary | Holocene and Pleistocene | | Alluvium | 0-150 | Unconsolidated and interbedded silt, clay, sand, and gravel. | Rio San Jose, Rio Puerco, and tributary valleys. | Yields of 450 gallons per minute possible near mouth of Cubero wash. Capable of yielding 50 to 300 gallons per minute between western boundary and New Laguna and near Paguate. |
| | | | Basalt | 0- 55 | Dense to vesicular basalt extruded as lava flows. Highly fractured in some areas. | Two flows: one underlies much of the Rio San Jose valley and crops out between New Laguna and Mesita; the other covers a large area near Correo. | Springs at base of lava flow near Laguna yield less than 5 gallons per minute. Springs from lava flow near Suwanee contribute over 500 gallons per minute to Rio San Jose. |
| Quaternary or Tertiary | | | Basalt | 0-100+ | Dense to vesicular basalt extruded as lava flows, or dense basalt intruded as dikes, sills, or plugs. | Flows cap Mesa Lucero, Tsidu-Weza, and mesas flanking Mt. Taylor. Dikes, sills, and plugs are common and widely distributed. | Springs issue from the base of lava flows at numerous places on the flanks of Mt. Taylor. The largest, Encinal public supply spring, yields 100 gallons per minute. |
| Quaternary and Tertiary | Pleistocene Pliocene and Miocene | Santa Fe | Undivided | 0-500+ | Unconsolidated silt, clay, sand, and gravel. | Occurs extensively east of Rio Puerco fault zone. May be greater than 500 feet thick under parts of Sedillo Grant. | Yields adequate for stock use. Water quality generally unsuitable for public supply. Potable water occurs in places north of Sedillo Grant. |
| Cretaceous | Upper Cretaceous | Mesaverde | Undivided | 2,500± | Predominantly shale, siltstone, and sandstone with thin layers of coal and limestone. The lowest unit in this group is the Gallup Sandstone with a thickness of 80 feet or more. | Exposed on the flanks of Mt. Taylor and on Sedillo and Montaño Grants. | Yields from sandstone units adequate for stock use. Water quality generally unsuitable for public supply except in areas near Mt. Taylor. |
| | Upper and Lower Cretaceous | | Mancos Shale and Dakota Sandstone Undivided | 1,100 | Predominantly gray shale. Lower 350 feet include four Dakota Sandstone beds each up to 100 feet thick separated by shale. Sandstone is fine to medium-grained, strongly cemented by calcite and clay, and composed predominantly of quartz with some feldspar. Basal sandstone mostly fine to medium-grained, very strongly cemented by silica, and composed of angular to rounded quartz. Pebble conglomerates are common near base. | Exposed on the flanks of Mt. Taylor on Sedillo and Montaño Grants. Sandstone units form prominent cliffs in canyons and on slopes of Mt. Taylor and many mesas. | Yields from Dakota Sandstone units generally adequate for stock use, ranging from 3 to 14 gallons per minute. Water quality generally unsuitable for public supply except near Encinal and Paguate. |
| Jurassic | Upper Jurassic | | Morrison Formation | 0-600 | Predominantly grayish-green mudstone with discontinuous sandstone layers. The uranium ore-bearing Jackpile sandstone bed, with a thickness up to 200 feet, occurs at the top of this formation near Paguate. | Exposed on sides of mesas north and south of the Rio San Jose valley between the west boundary and Laguna. Also on Mesa Gigante and in the Rio Puerco fault zone near Suwanee. Thins southward from the Rio San Jose valley and pinches out near the southwest corner of the Pueblo Proper. | Yields from sandstone units near Paguate generally adequate for stock and domestic use, ranging from 5 to 50 gallons per minute. Yields of several hundred gallons per minute may be possible on Major's Ranch area. Water suitable for public supply near Paguate; water unsuitable for stock use on Montaño Grant; quality unknown on Major's Ranch area. |
| | Middle Jurassic | San Rafael | Bluff Sandstone (Includes overlying Zuni Sandstone in some areas) | 0-400 | Fine to medium-grained sandstone, well sorted, well to moderately well cemented by calcite, composed mainly of quartz grains. Crossbedding characteristic of the sandstone, especially in the upper part. Sandstone pipes are common. | Cliff-forming unit at or near the surface from the south side of Mesa Gigante to the southwest corner of the Pueblo Proper. Also exposed in the Puerco fault zone near Suwanee. Underlies valley fill between New Laguna and Seama. Unit thins southward. | Yields generally adequate for stock use ranging from ½ to 20 gallons per minute. Specific capacities generally less than 1 gallon per minute per foot. |



350002170

## Table 14.—Summary of selected geologic units and their water-bearing properties – Concluded

| System | Series | Group | Stratigraphic unit | Thickness (feet) | Lithology | Occurrence | Water supply |
|---|---|---|---|---|---|---|---|
| | | San Rafael | Summerville Formation | 90- 185 | Interstratified, sandy mudstone and sandstone. Sandstone is fine to very-fine grained, well sorted, and friable to well cemented with calcite. The unit thins and coarsens southward containing conglomerate beds under Jack Ward area. | Exposed in buttes and mesas west and south of Laguna and Mesita and at south end of Mesa Gigante. | Yielded no water to test wells 9.5.9.231 and 9.6.26.443. |
| Jurassic | Middle Jurassic | | Todilto Formation | 0- 85 | Thin layer of laminated limestone overlain by gypsum (or anhydrite at depth). | Exposed near Mesita, at south end of Mesa Gigante, and in buttes and mesas south of Laguna and Mesita. Gypsum unit pinches out southward and is absent at south end of Pueblo Proper. Limestone unit pinches out south of Pueblo. Gypsum and limestone are exposed in the Puerco fault zone near Suwanee. | Yields and quality generally poor. May be productive where fractured. Test well 9.5.9.231 produced 50 gallons per minute near Laguna of poor-quality water. |
| | | | Entrada Sandstone | 0- 265 | Predominantly very fine to coarse-grained, crossbedded, quartzose sandstone with thinner siltstone units. Sandstone generally strongly cemented by calcite. Formation coarsens southward; conglomerate beds are common near the base between Petoch Butte and Jack Ward area. | Exposed near Mesita, at the south end of Mesa Gigante, and in buttes and mesas south of Laguna and Mesita. Pinches out abruptly in Jack Ward area. | Yields generally adequate for stock use, ranging from 4 to 20 gallons per minute. Specific capacities probably less than 1 gallon per minute per foot. |
| Triassic | Upper Triassic | | Chinle Formation | 1,500-2,000 | Predominantly red, purple, and gray shale. Arkosic sandstone unit up to 100 feet thick at or near top between Mesita and Correo. Sandstone up to 100 feet thick exposed at base of formation on east side of Mesa Lucero. | Underlies all of study area except small area on Sedillo Grant. At or near surface in Big Sandy and Arroyo Colorado drainage areas. | Yields barely adequate to inadequate for stock use except Mesita area where sandstone unit yields adequate quantities for stock and domestic use. Yields in this area range from 8 to 40 gallons per minute with specific capacities less than ½ gallon per minute per foot. Elsewhere yields generally less than 10 gallons per minute; several dry holes reported. |
| Permian | Lower Permian | | San Andres Limestone | 250- 300 | Limestone, gray, fetid, and sandstone, white, medium-grained, well sorted, and moderately cemented. Massive gypsum comprises more than half of unit in exposures on Mesa Lucero. | Underlies all of study area except where exposed with other Permian units on east side of Mesa Lucero. | Little data available for study area. Mesita test well, which penetrated upper part, flowed 15 gallons per minute with a shut-in pressure of 170 pounds per square inch. Deep test well by Sohio north of Pueblo yielded less than 5 gallons per minute with 390 feet of drawdown. Water quality probably poor throughout Pueblo. |
| | | | Glorieta Sandstone | 150- 250 | Sandstone, white, medium to coarse-grained, well sorted moderately cemented by calcite. Some layers silty and gypsiferous. | do. | Reportedly very dense with low permeability in Sohio test well. Water quality probably poor. |
| | | | Yeso Formation | 1,000± | Predominantly siltstone interbedded with gypsum, limestone, and sandstone. | do. | No data available. |



350002171

Table 15. Estimated magnitude and frequency of 1-day flood, peak-flow discharge, and total annual streamflow for tributaries of Rio San Jose.

Note: Magnitude and frequencies calculated at mouth of stream according to techniques in Borland (1970) and Scott (1971).

| Stream | 2-Year Flood | | 5-Year Flood | | 10-Year Flood | | 25-Year Flood | | 50-Year Flood | | Total annual stream-flow (acre-feet) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1-Day flood volume (acre-feet) | Peak flow (cubic feet per second) | 1-Day flood volume (acre-feet) | Peak flow (cubic feet per second) | 1-Day flood volume (acre-feet) | Peak flow (cubic feet per second) | 1-Day flood volume (acre-feet) | Peak flow (cubic feet per second) | 1-Day flood volume (acre-feet) | Peak flow (cubic feet per second) | |
| Rio Paguate | 170 | 1,400 | 380 | 2,800 | 560 | 4,000 | 830 | 6,000 | 1,100 | 7,900 | 4,600 |
| Cañon Seama | 8 | 430 | 22 | 930 | 34 | 1,400 | 58 | 2,200 | 79 | 3,000 | 72 |
| Encinal Creek | 32 | 640 | 79 | 1,400 | 120 | 2,000 | 180 | 3,100 | 240 | 4,200 | 640 |
| Cañon Largo | 69 | 1,100 | 180 | 2,200 | 260 | 3,100 | 420 | 4,800 | 580 | 6,300 | 940 |
| Arroyo Conchas | 130 | 1,500 | 340 | 3,000 | 500 | 4,300 | 810 | 6,500 | 1,100 | 8,600 | 2,800 |
| Cubero Creek | 58 | 770 | 130 | 1,600 | 190 | 2,400 | 300 | 3,600 | 380 | 4,900 | 720 |
| Acoma Creek | 160 | 1,900 | 430 | 3,700 | 670 | 5,200 | 1,100 | 7,700 | 1,600 | 10,000 | 1,100 |
| Arroyo Lucero | 34 | 990 | 99 | 2,000 | 160 | 2,900 | 280 | 4,500 | 400 | 6,000 | 3,000 |
| Arroyo Colorado | 240 | 2,700 | 670 | 5,100 | 1,100 | 7,200 | 2,000 | 11,000 | 3,000 | 14,000 | 4,000 |
| Standard error, in percent | 59 | 92 | 55 | 83 | 55 | 82 | 60 | 87 | 66 | 91 | 53 |



350002172

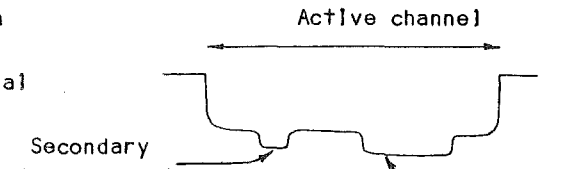
Table 16. Chemical analyses of bed material in Rio Paguate and Rio Moquino

Note: Location number - see text for explanation. All analyses were performed by U.S. Geological Survey. Discharge, temperature, pH, specific conductance, were measured onsite.

| Date of collection | Water discharge (cubic feet per second) | Water temperature (degrees centigrade) | Water pH | Water specific conductance (micromhos per centimeter at 25° Celsius) | Suspended solids (milligrams per liter) | Arsenic in bed material (micrograms per gram) | Cyanide in bed material (micrograms per gram) | Lead in bed material (micrograms per gram) |
|---|---|---|---|---|---|---|---|---|
| **Rio Paguate upstream from Jackpile-Paguate Mine (11.5.32.424)** | | | | | | | | |
| 07-06-79 | .25 | 14.0 | 8.2 | 700 | - | 11 | 0 | 15 |
| **Rio Moquino upstream from Jackpile-Paguate Mine (11.5.22.344)** | | | | | | | | |
| 07-06-79 | .10 | 21.0 | 8.4 | 2,900 | - | 11 | 0 | 12 |
| **Rio Paguate downstream from Jackpile-Paguate Mine (10.5.2.434)** | | | | | | | | |
| 04-18-78 | 1.1 | 14.0 | 8.5 | 2,200 | 98 | 5 | 0 | 5 |
| 04-18-78 | 1.1 | 14.0 | 8.5 | 2,200 | 98 | 3 | 0 | 7 |
| 04-18-78 | 0 | - | - | - | - | 4 | 0 | 7 |
| 07-25-78 | .14 | 23.0 | 8.3 | 3,000 | 65 | 6 | 0 | 0 |
| 07-25-78 | 0 | - | - | - | - | 4 | 0 | 0 |
| 07-25-78 | 0 | - | - | - | - | 4 | 0 | 0 |
| 10-30-78 | .51 | 12.0 | 8.3 | 2,600 | 174 | 0 | 0 | 10 |
| 10-30-78 | 0 | - | - | - | - | 4 | 0 | 10 |
| 10-30-78 | 0 | - | - | - | - | 0 | 0 | 8 |
| 01-24-79 | - | - 0.5 | 8.3 | 1,700 | - | 3 | 0 | 20 |
| 01-24-79 | - | - 0.5 | 8.3 | 1,700 | - | 4 | 0 | 20 |
| 01-24-79 | 0 | - | - | - | - | 5 | 0 | 20 |
| **Rio Paguate 1.5 miles downstream from Jackpile-Paguate Mine (10.5.12.334)** | | | | | | | | |
| 05-11-79 | - | 25.0 | - | 2,100 | - | 1 | 0 | 6 |
| **Rio Paguate 3 miles downstream from Jackpile-Paguate Mine (10.5.24.123)** | | | | | | | | |
| 05-11-79 | - | 25.0 | - | 2,130 | - | 2 | 0 | 4 |
| **Rio Paguate 4 miles downstream from Jackpile-Paguate Mine (10.5.24.413)** | | | | | | | | |
| 05-11-79 | - | 25.0 | - | 2,250 | - | 5 | 0 | - |



350002173

| Molybdenum in bed material (micrograms per gram) | Selenium in bed material (micrograms per gram) | Vanadium in bed material (micrograms per gram) | Uranium in bed material (micrograms per gram) | Radium in bed material 226 (pCi per gram) | Remarks on sampling |
|---|---|---|---|---|---|
| | | | | |   |
| 0 | 0.2 | - | 8.9 | 1.33 | Composite across channel |
| 0 | 0.2 | - | .31 | .23 | Composite across channel |
| 0 | 0.0 | 8.0 | 16.0 | 8.4 | Primary - flow channel |
| 0 | 1.0 | 7.0 | 2.5 | 2.7 | Secondary - flow channel |
| 0 | 0.0 | 5.0 | 5.4 | 1.9 | Center of active channel |
| 4 | 1.0 | - | 17.0 | 2.0 | Primary - flow channel |
| 3 | 1.0 | - | 5.0 | 4.3 | 6 ft from left bank of active channel |
| 5 | 2.0 | - | 17.0 | 4.3 | 50 ft from left bank active channel |
| 3 | 1.0 | 5.9 | 4.6 | 3.9 | Primary - flow channel |
| 5 | 3.0 | 7.1 | 10.0 | 2.4 | Center of active channel |
| 4 | 1.0 | 5.0 | 5.1 | 2.4 | 15 ft from left bank active channel |
| 0 | 0.6 | 6.7 | 10.0 | 4.5 | Primary - flow channel |
| 0 | 0.5 | 3.8 | 4.9 | 2.8 | Secondary - flow channel |
| 0 | 0.6 | 4.8 | 8.3 | 3.1 | 50 ft from left bank active channel |
| 0 | 1.0 | - | 293 | 124 | Composite across channel |
| 0 | 0.0 | - | 194 | 121 | Composite across channel |
| 0 | 0.0 | - | 308 | 153 | Composite across channel |



350002174

**Table 17. Selected water-quality standards and criteria for public water supply, freshwater aquatic life, livestock, and irrigation**

**PUBLIC-WATER SUPPLY**

Selected primary standards from the U.S. Environmental Protection Agency interim drinking water standards (1976a). The maximum allowable limits for these constituents are set according to health criteria.

| Constituent | Maximum concentration (milligrams per liter) |
|---|---|
| Arsenic | 0.05 |
| Barium | 1.00 |
| Cadmium | 0.01 |
| Chromium | 0.05 |
| Lead | 0.05 |
| Mercury | 0.002 |
| Nitrate (as N) | 10.0 |
| Selenium | 0.01 |
| Silver | 0.05 |

Recommended quality-criteria for secondary constituents in public-supply water (modified from U.S Environmental Protection Agency, 1976b). The recommended limits were set mainly to provide esthetic and taste characteristics.

| Constituent | Maximum recommended concentration (milligrams per liter) |
|---|---|
| Bicarbonate | 700 |
| Calcium | 75-200 |
| Carbonate | 350 |
| Chloride | 250 |
| Specific conductance | 1,000 micromhos |
| Copper | 3 |
| Hardness | 250 |
| Iron | 0.3 |
| Manganese | 125 |
| pH | 0.5 |
| Potassium | 6.0-8.5 |
| Sodium | 1,000 |
| Sulfate | 200 |
| Zinc | 5 |



350002175

Table 17. Selected water-quality standards and criteria for public water supply, freshwater aquatic life, livestock, and irrigation - Continued

## FRESHWATER AQUATIC LIFE

The following are some selected water-quality criteria for freshwater aquatic life recommended by the U.S. Environmental Protection Agency, 1976a. An asterisk next to the concentration value indicates the value was estimated based on 96-hour bioassay data for rainbow trout survival.

| Constituent | Maximum recommended concentration (milligrams per liter) |
|---|---|
| Alkalinity | Greater than 20 |
| Ammonia | 0.02 |
| Beryllium | 1.10 |
| Cadmium | 0.0012* |
| Chromium | 0.10 |
| Copper | 0.09* |
| Cyanide | 0.005 |
| Dissolved Oxygen | 5.0 |
| Iron | 1.0 |
| Lead | 0.05* |
| Mercury | 0.0003 |
| pH | 6.5-9.0 |
| Zinc | 0.72* |

## LIVESTOCK

The following are selected water-quality criteria for livestock recommended by the Federal Water Pollution Control Administration, 1968.

| Constituent | | Maximum recommended concentration (micromhos per centimeter at 25° Celsius)) |
|---|---|---|
| Specific conductance for: | poultry | 4,000 |
| | swine | 6,000 |
| | horses | 9,000 |
| | dairy cattle | 10,000 |
| | beef cattle | 14,000 |
| | sheep | 17,000 |



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Table 17. **Selected water-quality standards and criteria for public water supply, freshwater aquatic life, livestock, and irrigation–Concluded**

IRRIGATION

The following are some selected water-quality criteria for irrigation. Values with asterisks were recommended by the U.S. Environmental Protection Agency, 1976a. All other values are from the Federal Water Pollution Control Administration, 1968.

| Constituent | Maximum recommended concentration (milligrams per liter) |
|---|---|
| Arsenic | 0.10* |
| Beryllium: | |
| (Continuous irrigation on all soils) | 0.10* |
| (Neutral to alkaline soils) | 0.50* |
| Boron: | |
| (Continuous irrigation of sensitive crops) | 0.75* |
| (Semitolerant crops) | 1.0–2.0 |
| (Tolerant crops) | 2.0–4.0 |
| Dissolved solids: | |
| (Usually no detrimental effects to crops) | less than 500 |
| (May have detrimental effects on sensitive crops) | 500–1,000 |
| (May have adverse effects on many crops. May require careful management practices) | 1,000–2,000 |
| (May be used for tolerant plants on permeable soils if careful management practices are followed) | 2,000–5,000 |



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