



Analytical Chemists
April 22, 2011

Laboratory Report

Introduction: This report package contains total of 5 pages divided into 3 sections:

- Case Narrative (2 pages) : An overview of the work performed at FGL.
- Sample Results (2 pages) : Results for each sample submitted.
- Quality Control (1 page) : Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

| Sample Description | Date Sampled | Date Received | FGL Lab ID # | Matrix |
|----------------------------|--------------|---------------|----------------|--------|
| Bottle 1st Uranium Portion | 04/07/2011 | 04/11/2011 | SP 1103577-001 | DW |
| Bottle 2nd Uranium Portion | 04/07/2011 | 04/11/2011 | SP 1103577-002 | DW |

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding times. All samples arrived at room temperature. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Radio QC

| | |
|-------|--|
| 900.0 | 04/20/2011:205836 All analysis quality controls are within established criteria. |
| | 04/19/2011:204213 All preparation quality controls are within established criteria, except: The following note applies to Gross Beta: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery. |
| 903.0 | 04/19/2011:205787 All analysis quality controls are within established criteria. |
| | 04/18/2011:204162 All preparation quality controls are within established criteria. |
| 908.0 | 04/16/2011:205547 All analysis quality controls are within established criteria. |
| | 04/16/2011:205548 All analysis quality controls are within established criteria. |
| | 04/15/2011:204077 All preparation quality controls are within established criteria. |



Analytical Chemists
April 22, 2011

Sampled On : April 7, 2011-00:00
Sampled By : Not Available
Received On : April 11, 2011-10:15
Matrix : Drinking Water

Description : Bottle 2nd Uranium Portion

Sample Result - Radio

| Constituent | Result ± Error | MDA | Units | MCL/AL | Sample Preparation | | Sample Analysis | |
|--------------------------------------|----------------|------|-------|--------|--------------------|-----------------|-----------------|-----------------|
| | | | | | Method | Date/ID | Method | Date/ID |
| Radio Chemistry^{P:1} | | | | | | | | |
| Gross Beta | 0.000 ± 0.991 | 1.86 | pCi/L | 50 | 900.0 | 04/19/11:204213 | 900.0 | 04/20/11:205836 |
| Total Alpha Radium (226) | 0.000 ± 0.877 | 1.65 | pCi/L | 3 | 903.0 | 04/18/11:204162 | 903.0 | 04/19/11:205787 |
| Uranium | 0.000 ± 2.19 | 1.90 | pCi/L | 20 | 908.0 | 04/15/11:204077 | 908.0 | 04/16/11:205548 |

ND=Non-Detected, PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = (Gross Alpha Result + (0.84 x Error)), CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

April 22, 2011

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.**



Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2011-04-25



APPROVED SOURCE



Analytical Chemists
April 22, 2011

Sampled On : April 12, 2011-00:00
Sampled By : Not Available
Received On : April 12, 2011-10:30
Matrix : Drinking Water

Description : Pitcher Plus

Sample Result - Radio

| Constituent | Result ± Error | MDA | Units | MCL/AL | Sample Preparation | | Sample Analysis | |
|------------------------------------|----------------|-------|-------|--------|--------------------|-----------------|-----------------|-----------------|
| | | | | | Method | Date/ID | Method | Date/ID |
| Radio Chemistry^P | | | | | | | | |
| Gross Beta | 0.697 ± 1.64 | 2.51 | pCi/L | 50 | 900.0 | 04/19/11:204213 | 900.0 | 04/20/11:205836 |
| Total Alpha Radium (226) | 0.000 ± 0.398 | 0.824 | pCi/L | 3 | 903.0 | 04/18/11:204162 | 903.0 | 04/19/11:205787 |
| Uranium | 0.000 ± 0.681 | 0.475 | pCi/L | 20 | 908.0 | 04/15/11:204077 | 908.0 | 04/16/11:205548 |

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers; (P) Plastic Preservatives: N/A * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = (Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following
If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

APPROVED SOURCE



Analytical Chemists

April 22, 2011

Quality Control - Radio

| Constituent | Method | Date/ID | Type | Units | Conc. | QC Data | DQO | Note |
|--------------------------|--------|---|------------------------------------|---|----------------------------------|--|--|------------|
| Radio | | | | | | | | |
| Beta | 900.0 | 04/20/2011:205836 | CCV CCB | cpm cpm | 10150 | 92.9 % 0.3400 | 87 - 106 0.56 | |
| Gross Beta | 900.0 | 04/19/2011:204213 (SP 1103747-001) | Blank LCS MS MSD MSRPD | pCi/L pCi/L pCi/L pCi/L pCi/L | 46.13 92.26 92.26 300.7 | 0.93 107 % 47.6 % 53.3 % 10.5% | 4 75-125 80-130 80-130 <30 | 435 435 |
| Alpha | 903.0 | 04/19/2011:205787 | CCV CCB | cpm cpm | 10150 | 39.8 % 0.0500 | 38 - 46 0.15 | |
| Total Alpha Radium (226) | 903.0 | 04/18/2011:204162 | RgBlk LCS BS BSD BSRPD | pCi/L pCi/L pCi/L pCi/L pCi/L | 18.16 20.89 20.89 20.89 | 0.1 66.3 % 55.1 % 44.6 % 21.1% | 2 52-89 43-92 43-92 ≤35.5 | |
| Alpha | 908.0 | 04/16/2011:205547 | CCV CCB | cpm cpm | 10160 | 41.5 % 0.100 | 38 - 47 0.19 | |
| | 908.0 | 04/16/2011:205548 | CCV CCB | cpm cpm | 10160 | 43.7 % 0.100 | 38 - 47 0.15 | |
| Uranium | 908.0 | 04/15/2011:204077 | RgBlk LRS BS BSD BSRPD | pCi/L pCi/L pCi/L pCi/L pCi/L | 20.86 20.86 20.86 20.86 | 0.32 74.8 % 93.3 % 90.2 % 3.4% | 1 54-105 75-125 75-125 ≤20 | |

| | |
|--------------------|--|
| Definition | |
| CCV | : Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria. |
| CCB | : Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria. |
| Blank | : Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples. |
| RgBlk | : Method Reagent Blank - Prepared to correct for any reagent contributions to sample result. |
| LCS | : Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery. |
| MS | : Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery. |
| MSD | : Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery. |
| BS | : Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery. |
| BSD | : Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery. |
| MSRPD | : MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis. |
| BSRPD | : BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis. |
| DQO | : Data Quality Objective - This is the criteria against which the quality control data is compared. |
| Explanation | |
| 435 | : Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery. |



ENVIRONMENTAL

ANALYTICAL CHEMISTS

GENERAL MINERAL, PHYSICAL, INORGANIC, & RADIOLOGICAL CHEMICAL ANALYSES

Date of Report: July 3, 1996
 Laboratory

Sample ID No. SP 605173-01
 Signature Lab
 Director: *[Signature]*

Name of Sampler: Paul Mead
 Date/Time Sample

Employed By: Environmental Svcs
 Date/Time Sample Date Analyses

Collected: 06/26/1996-1000 Rec. @ Lab: 06/21/1996-1000 Completed: 06/28/1996

System

System
 Number:

Name or Number of Sample Source: 49606151-3 (Un-Filtered)

| | |
|---|---|
| User ID: | Station Number: |
| Date/Time of Sample: 9 6 0 6 2 6 1 0 0 0 Y Y M M D D T T T T | Laboratory Code: 5 8 6 7 Phone #(805) 659-0910 |

RADIOLOGICAL CHEMICALS

| MCL | UNITS | CHEMICAL | ENTRY | RESULT | DLR |
|-----|-------|--------------------------|-------|--------|-----------------|
| | pCi/L | Radon 222 | 82303 | 540 | ← <i>Before</i> |
| | pCi/L | Radon 222 Counting Error | 82302 | ± 30 | |

Name or Number of Sample Source: 49606151-4 (Filtered)

| | |
|---|---|
| User ID: | Station Number: |
| Date/Time of Sample: 9 6 0 6 2 6 1 0 0 0 Y Y M M D D T T T T | Laboratory Code: 5 8 6 7 Phone #(805) 659-0910 |
| Submitted by: FGL Environmental | |

RADIOLOGICAL CHEMICALS

| MCL | UNITS | CHEMICAL | ENTRY | RESULT | DLR |
|-----|-------|--------------------------|-------|--------|----------------|
| | pCi/L | Radon 222 | 82303 | 0.0 | ← <i>After</i> |
| | pCi/L | Radon 222 Counting Error | 82302 | ± 10 | |

MCL - Maximum Contaminate Level DLR - Detection Limit for Reporting purposes ND - Not Detected at or above DLR
 + Indicates Secondary Drinking Water Standards



Analytical Chemists
April 22, 2011

Sampled On : April 7, 2011-00:00
Sampled By : Not Available
Received On : April 11, 2011-10:15
Matrix : Drinking Water

Description : Bottle 1st Uranium Portion

Sample Result - Radio

Table with 7 columns: Constituent, Result ± Error, MDA, Units, MCL/AL, Sample Preparation Method Date/ID, Sample Analysis Method Date/ID. Rows include Radio Chemistry, Gross Beta, Total Alpha Radium (226), and Uranium.

ND=Non-Detected. PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: HNO3 pH < 2 * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.
MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).
AV = (Gross Alpha Result + (0.84 x Error)). CCR Section 64442; Drinking Water Compliance Note: Do the following
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Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L.
Uranium is less than or equal to 20 pCi/L.
Radium 226 + Radium 228 is less than or equal to 5 pCi/L.

Note: Samples are held for 3-6 months prior to disposal.

Note: Cs-137 utilized in Gross Beta Radioactivity removal test.
In each portion of Cs-137 added 100% was removed.
Michel M. Franco, Radiochemistry Technical Advisor

THE PERIODIC TABLE

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---|--|---|--|--|--|---------------------------------------|---|--|---------------------------------------|--|--|--|--|--------------------------------------|---|--|---------------------------------------|---|---|--|--|---------------------------------------|---|--|--|---|--|--------------------------------------|--|---------------------------------------|
| 1 H Hydrogen 1.008 | 2 He Helium 4.00 | | | | | | | | | | | | | | | | | 18 Ar Argon 39.95 | | | | | | | | | | | | | | | | |
| 3 Li Lithium 6.94 | 4 Be Beryllium 9.01 | 5 B Boron 10.81 | 6 C Carbon 12.01 | 7 N Nitrogen 14.01 | 8 O Oxygen 16.00 | 9 F Fluorine 19.00 | 10 Ne Neon 20.18 | | | | | | | | | | | | | | | | | 17 Cl Chlorine 35.45 | | | | | | | | | | |
| 11 Na Sodium 22.99 | 12 Mg Magnesium 24.31 | 13 Al Aluminum 26.98 | 14 Si Silicon 28.09 | 15 P Phosphorus 30.97 | 16 S Sulfur 32.07 | 17 Cl Chlorine 35.45 | 18 Ar Argon 39.95 | 19 K Potassium 39.10 | 20 Ca Calcium 40.08 | 21 Sc Scandium 44.96 | 22 Ti Titanium 47.88 | 23 V Vanadium 50.94 | 24 Cr Chromium 52.00 | 25 Mn Manganese 54.94 | 26 Fe Iron 55.85 | 27 Co Cobalt 58.93 | 28 Ni Nickel 58.69 | 29 Cu Copper 63.55 | 30 Zn Zinc 65.39 | 31 Ga Gallium 69.72 | 32 Ge Germanium 72.61 | 33 As Arsenic 74.92 | 34 Se Selenium 78.96 | 35 Br Bromine 79.90 | 36 Kr Krypton 83.80 | | | | | | | | | |
| 37 Rb Rubidium 85.47 | 38 Sr Strontium 87.62 | 39 Y Yttrium 88.91 | 40 Zr Zirconium 91.22 | 41 Nb Niobium 92.91 | 42 Mo Molybdenum 95.94 | 43 Tc Technetium (97.9) | 44 Ru Ruthenium 101.07 | 45 Rh Rhodium 102.91 | 46 Pd Palladium 106.42 | 47 Ag Silver 107.87 | 48 Cd Cadmium 112.41 | 49 In Indium 114.82 | 50 Sn Tin 118.71 | 51 Sb Antimony 121.76 | 52 Te Tellurium 127.60 | 53 I Iodine 126.90 | 54 Xe Xenon 131.29 | 55 Cs Cesium 132.91 | 56 Ba Barium 137.33 | 57 La Lanthanum 138.91 | 58 Ce Cerium 140.12 | 59 Pr Praseodymium 140.91 | 60 Nd Neodymium 144.24 | 61 Pm Promethium (145) | 62 Sm Samarium 150.36 | 63 Eu Europium 152.97 | 64 Gd Gadolinium 157.25 | 65 Tb Terbium 158.93 | 66 Dy Dysprosium 162.50 | 67 Ho Holmium 164.93 | 68 Er Erbium 167.26 | 69 Tm Thulium 168.93 | 70 Yb Ytterbium 173.04 | 71 Lu Lutetium 174.97 |
| 87 Fr Francium 223.02 | 88 Ra Radium 226.03 | 89 Ac Actinium 227.03 | 90 Th Thorium 232.04 | 91 Pa Protactinium 231.04 | 92 U Uranium 238.03 | 93 Np Neptunium 237.05 | 94 Pu Plutonium (240) | 95 Am Americium 243.06 | 96 Cm Curium (247) | 97 Bk Berkelium (248) | 98 Cf Californium (251) | 99 Es Einsteinium 252.08 | 100 Fm Fermium 257.10 | 101 Md Mendelevium (257) | 102 No Nobelium 259.10 | 103 Lr Lawrencium 262.11 | 104 Rf Rutherfordium (261) | 105 Db Dubnium (262) | 106 Sg Seaborgium (263) | 107 Bh Bohrium (262) | 108 Hs Hassium (265) | 109 Mt Meitnerium (266) | 110 Ds Darmstadtium (271) | 111 Rg Roentgenium (272) | 112 Cn Copernicium (285) | 113 Nh Nihonium (284) | 114 Fl Flerovium (289) | 115 Mc Moscovium (288) | 116 Lv Livermorium (293) | 117 Ts Tennessine (294) | 118 Og Oganesson (294) | | | |

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ATOMIC WEIGHT
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ACTINOIDS

| | | | | | | | | | | | | | | |
|---------------------------------------|--------------------------------------|---|-------------------------------------|--|---------------------------------------|--|------------------------------------|---------------------------------------|---|--|---------------------------------------|--|--|--|
| 89 Ac Actinium 227.03 | 90 Th Thorium 232.04 | 91 Pa Protactinium 231.04 | 92 U Uranium 238.03 | 93 Np Neptunium 237.05 | 94 Pu Plutonium (240) | 95 Am Americium 243.06 | 96 Cm Curium (247) | 97 Bk Berkelium (248) | 98 Cf Californium (251) | 99 Es Einsteinium 252.08 | 100 Fm Fermium 257.10 | 101 Md Mendelevium (257) | 102 No Nobelium 259.10 | 103 Lr Lawrencium 262.11 |
|---------------------------------------|--------------------------------------|---|-------------------------------------|--|---------------------------------------|--|------------------------------------|---------------------------------------|---|--|---------------------------------------|--|--|--|

ACTINOIDS

NOBLE
GASES