



State of California - Health and Human Services Agency

California Department of Public Health

Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804

Phone: (510) 620-2911 Fax: (510) 620-2940



Q2

FINAL Analysis Results Report for Task ID. 14-0540

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0540-01</b> <b>Sample ID: Second quart</b> <b>Time Collected: 6/13/2014 13:30</b> <b>Sampling Point: Eureka</b> <b>Sample Type: Air Composite</b>				
Beryllium-7	HASL Ga-01-R	0.0550 +/- 0.00212	0.00219	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00101 +/- 0.000547	0.00262	pCi/m3
Niobium-95	HASL Ga-01-R	0.00000192 +/- 0.0000601	0.000275	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000471 +/- 0.0000489	0.000231	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000910 +/- 0.0000497	0.000214	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.00000463 +/- 0.000124	0.000559	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000255 +/- 0.0000118	0.0000573	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000333 +/- 0.0000880	0.000359	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000135 +/- 0.0000713	0.000316	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the aquare root of the instrument background count rate.



State of California - Health and Human Services Agency

California Department of Public Health

Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804

Phone: (510) 620-2911 Fax: (510) 620-2940



FINAL Analysis Results Report for Task ID. 14-0541

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 14-0541-01	Sample ID: Second quart Sample Type: Air Composite	Time Collected: 5/16/2014 13:47	Sampling Point: Humboldt Bay	
Beryllium-7	HASL Ga-01-R	0.0532 +/- 0.00203	0.00203	pCi/m3
Potassium-40	HASL Ga-01-R	0.000656 +/- 0.000514	0.00238	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000137 +/- 0.0000551	0.000248	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000530 +/- 0.0000414	0.000183	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000312 +/- 0.0000445	0.000198	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000223 +/- 0.000109	0.000504	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000776 +/- 0.0000113	0.0000529	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000283 +/- 0.0000752	0.000305	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000406 +/- 0.0000639	0.000284	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



State of California - Health and Human Services Agency

California Department of Public Health

Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804

Phone: (510) 620-2911 Fax: (510) 620-2940



**FINAL Analysis Results Report for Task ID. 14-0543**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0543-01</b> Sample ID: Second quart    Time Collected: 5/13/2014 9:25    Sampling Point: Richmond Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0651 +/- 0.00254	0.00233	pCi/m3
Potassium-40	HASL Ga-01-R	0.00125 +/- 0.000587	0.00270	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000341 +/- 0.0000716	0.000320	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000242 +/- 0.0000552	0.000257	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000443 +/- 0.0000548	0.000254	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000151 +/- 0.000133	0.000625	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000255 +/- 0.0000136	0.0000622	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000135 +/- 0.000105	0.000463	pCi/m3
Cerium-144	HASL Ga-01-R	0.000163 +/- 0.0000838	0.000379	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where  $S_b$  is the square root of the instrument background count rate.



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804  
Phone: (510) 620-2911 Fax: (510) 620-2940

FINAL Analysis Results Report for Task ID. 14-0542

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 14-0542-01	Sample ID: Second quart Sample Type: Air Composite	Time Collected: 5/13/2014 9:33	Sampling Point: Livermore	
Beryllium-7	HASL Ga-01-R	0.107 +/- 0.00407	0.00237	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000323 +/- 0.000626	0.00297	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000508 +/- 0.0000798	0.000353	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000284 +/- 0.0000567	0.000258	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000347 +/- 0.0000538	0.000251	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000780 +/- 0.000142	0.000638	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000335 +/- 0.0000147	0.0000669	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000110 +/- 0.000203	0.000955	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000493 +/- 0.0000778	0.000336	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radionuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where  $S_b$  is the square root of the instrument background count rate.



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804  
Phone: (510) 620-2911 Fax: (510) 620-2940

**FINAL Analysis Results Report for Task ID. 14-0545**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0545-01</b>				
Sample ID: Second quart Time Collected: 5/16/2014 15:00 Sampling Point: San Luis Obispo				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0784 +/- 0.00294	0.00204	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000189 +/- 0.000487	0.00230	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000169 +/- 0.0000592	0.000249	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000655 +/- 0.0000473	0.000208	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000253 +/- 0.0000402	0.000179	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000126 +/- 0.000118	0.000558	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000732 +/- 0.0000124	0.0000580	pCi/m3
Cerium-141	HASL Ga-01-R	0.000132 +/- 0.0000884	0.000409	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000426 +/- 0.0000675	0.000301	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



**Drinking Water and Radiation Laboratory Branch**

850 Marina Bay Parkway, Richmond, CA 94804  
 Phone: (510) 620-2911 Fax: (510) 620-2940

**FINAL Analysis Results Report for Task ID. 14-0539**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0539-01</b> Sample ID: Second quart    Time Collected: 5/16/2014 10:40    Sampling Point: Diablo Canyon Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0652 +/- 0.00200	0.00188	pCi/m3
Potassium-40	HASL Ga-01-R	0.000594 +/- 0.000500	0.00232	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000733 +/- 0.0000620	0.000294	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000835 +/- 0.0000476	0.000204	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000206 +/- 0.0000448	0.000207	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000129 +/- 0.000125	0.000557	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000149 +/- 0.0000122	0.0000555	pCi/m3
Cerium-141	HASL Ga-01-R	0.000163 +/- 0.000137	0.000635	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000104 +/- 0.0000792	0.000338	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804  
 Phone: (510) 620-2911 Fax: (510) 620-2940

**FINAL Analysis Results Report for Task ID. 14-0546**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0546-01</b>				
Sample ID: Second quart Time Collected: 5/20/2014 16:00 Sampling Point: San Onofre				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.104 +/- 0.00390	0.00160	pCi/m3
Potassium-40	HASL Ga-01-R	0.000664 +/- 0.000475	0.00220	pCi/m3
Niobium-95	HASL Ga-01-R	0.00000139 +/- 0.0000430	0.000197	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000424 +/- 0.0000379	0.000166	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000358 +/- 0.0000380	0.000179	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000504 +/- 0.000101	0.000455	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000589 +/- 0.0000103	0.0000481	pCi/m3
Cerium-141	HASL Ga-01-R	-0.0000248 +/- 0.0000569	0.000250	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000984 +/- 0.0000537	0.000226	pCi/m3

- Precision criteria for these method were determined to be acceptable.
- CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.



Drinking Water and Radiation Laboratory Branch

850 Marina Bay Parkway, Richmond, CA 94804  
 Phone: (510) 620-2911 Fax: (510) 620-2940

**FINAL Analysis Results Report for Task ID. 14-0544**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 14-0544-01</b> Sample ID: Second quart    Time Collected: 5/16/2014 11:58    Sampling Point: san Diego Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.114 +/- 0.00334	0.00221	pCi/m3
Potassium-40	HASL Ga-01-R	0.000618 +/- 0.000558	0.00259	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000894 +/- 0.0000699	0.000305	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000486 +/- 0.0000518	0.000229	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000255 +/- 0.0000505	0.000227	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000123 +/- 0.000138	0.000631	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000148 +/- 0.0000138	0.0000649	pCi/m3
Cerium-141	HASL Ga-01-R	0.000312 +/- 0.000161	0.000742	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000340 +/- 0.0000913	0.000402	pCi/m3

- (1) Precision criteria for these method were determined to be acceptable.
- (2) CE is the counting error at the 95% confidence level as defined in Prescribed Procedures for Measurement of Radioactivity in Drinking Water, EPA-600/4-80-032, August 1980.
- (3) MDA95 is the sample specific minimum detectable activity at the 95% confidence level which is the LLD95 divided by 2.22, the efficiency, and the yield, and may include factors for abundance, decay, and ingrowth, dependent on the particular radio-nuclide. LLD95 is defined in section 7010G, Standard Methods for the Examination of Water and Wastewater, American Water Works Association, 21st Ed., 2005, where Sb is the square root of the instrument background count rate.