



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. 13-0932

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0932-01</b> Sample ID: 3rd Qtr, 2013    Time Collected: 8/20/2013 10:15    Sampling Point: Eureka Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0383 +/- 0.00134	0.00251	pCi/m3
Potassium-40	HASL Ga-01-R	0.00151 +/- 0.000667	0.00306	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000106 +/- 0.0000852	0.000389	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000146 +/- 0.0000652	0.000295	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.00000898 +/- 0.0000585	0.000268	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000166 +/- 0.000162	0.000745	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000715 +/- 0.0000162	0.0000750	pCi/m3
Cerium-141	HASL Ga-01-R	0.000110 +/- 0.000200	0.000936	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000132 +/- 0.0000771	0.000340	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.



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**FINAL Analysis Results Report for Task ID. 13-0933**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0933-01</b> Sample ID: 3rd Qtr, 2013    Time Collected: 8/16/2013 15:27    Sampling Point: Humboldt Bay Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0402 +/- 0.00123	0.00175	pCi/m3
Potassium-40	HASL Ga-01-R	0.00170 +/- 0.000370	0.00192	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000232 +/- 0.0000568	0.000261	pCi/m3
Zirconium-95	HASL Ga-01-R	0.00000258 +/- 0.0000445	0.000205	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000290 +/- 0.0000388	0.000179	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000114 +/- 0.000115	0.000539	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000669 +/- 0.0000115	0.000538	pCi/m3
Cerium-141	HASL Ga-01-R	0.000284 +/- 0.0000871	0.000395	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000143 +/- 0.0000617	0.000276	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.



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**FINAL Analysis Results Report for Task ID. 13-0935**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0935-01</b> Sample ID: 3rd Qtr, 2013    Time Collected: 8/13/2013 09:15    Sampling Point: Richmond Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0413 +/- 0.00138	0.00263	pCi/m3
Potassium-40	HASL Ga-01-R	0.00226 +/- 0.000598	0.00270	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000617 +/- 0.0000801	0.000373	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.0000494 +/- 0.0000574	0.000255	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000675 +/- 0.0000504	0.000226	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000356 +/- 0.000135	0.000615	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000594 +/- 0.0000137	0.0000635	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000379 +/- 0.000200	0.000936	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000253 +/- 0.0000871	0.000355	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.



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**FINAL Analysis Results Report for Task ID. 13-0934**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0934-01</b>	Sample ID: 3rd Qtr, 2013	Time Collected: 8/8/2013 11:16	Sampling Point: Livermore	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0845 +/- 0.00259	0.00256	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00292 +/- 0.000642	0.00312	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000510 +/- 0.0000778	0.000350	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000111 +/- 0.0000592	0.000272	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000273 +/- 0.0000582	0.000262	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.00000853 +/- 0.000142	0.000647	pCi/m3
Cesium-137	HASL Ga-01-R	0.000000817 +/- 0.0000142	0.0000650	pCi/m3
Cerium-141	HASL Ga-01-R	0.000166 +/- 0.000173	0.000804	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000556 +/- 0.0000894	0.000392	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.



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**FINAL Analysis Results Report for Task ID. 13-0937**

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 13-0937-01	Sample ID: 3rd Qtr, 2013	Time Collected: 8/16/2013 12:15	Sampling Point: San Luis Obispo	Sample Type: Air Composite
Beryllium-7	HASL Ga-01-R	0.0555 +/- 0.00164	0.00212	pCi/m3
Potassium-40	HASL Ga-01-R	0.00107 +/- 0.000495	0.00227	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000174 +/- 0.0000701	0.000296	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000544 +/- 0.0000488	0.000233	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000254 +/- 0.0000424	0.000197	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.00000180 +/- 0.000131	0.000602	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000371 +/- 0.0000162	0.0000739	pCi/m3
Cerium-141	HASL Ga-01-R	0.000285 +/- 0.000125	0.000576	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000856 +/- 0.0000714	0.000315	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

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FINAL Analysis Results Report for Task ID. 13-0931

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0931-01</b>	Sample ID: 3rd Qtr 2013	Time Collected: 8/16/2013 10:00	Sampling Point: Diablo Canyon	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0445 +/- 0.00147	0.00230	pCi/m3
Potassium-40	HASL Ga-01-R	0.00156 +/- 0.000617	0.00282	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000209 +/- 0.0000852	0.000391	pCi/m3
Zirconium-95	HASL Ga-01-R	0.00000654 +/- 0.0000594	0.000274	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000191 +/- 0.0000602	0.000273	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000197 +/- 0.000149	0.000651	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000954 +/- 0.0000151	0.0000691	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000484 +/- 0.000208	0.000972	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000105 +/- 0.0000725	0.000319	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.



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**FINAL Analysis Results Report for Task ID. 13-0938**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0938-01</b>	Sample ID: 3rd Qtr, 2013	Time Collected: 8/9/2013	16:00	Sampling Point: San Onofre
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0582 +/- 0.00198	0.00315	pCi/m3
Potassium-40	HASL Ga-01-R	-0.00549 +/- 0.000815	0.00399	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000303 +/- 0.000100	0.000456	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000105 +/- 0.0000693	0.000301	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000721 +/- 0.0000775	0.000357	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000150 +/- 0.000158	0.000739	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000253 +/- 0.0000156	0.0000717	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000128 +/- 0.000148	0.000640	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000225 +/- 0.000101	0.000426	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.



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**FINAL Analysis Results Report for Task ID. 13-0936**

Parameter	Method	Result +/- CE	MDA 95	Units
<b>Lab No: 13-0936-01</b> Sample ID: 3rd Qtr, 2013    Time Collected: 8/16/2013 14:02    Sampling Point: San Diego Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0790 +/- 0.00233	0.00294	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000770 +/- 0.000674	0.00320	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000464 +/- 0.0000874	0.000388	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000107 +/- 0.0000626	0.000303	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000652 +/- 0.0000587	0.000268	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000204 +/- 0.000159	0.000727	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000139 +/- 0.0000156	0.0000726	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000304 +/- 0.000231	0.00109	pCi/m3
Cerium-144	HASL Ga-01-R	0.0000904 +/- 0.0000964	0.000430	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.