



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. 12-0552

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0552-01	Sample ID: 3rd qtr 2012	Time Collected: 8/16/2012 08:30	Sampling Point: Eureka	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0424 +/- 0.00127	0.00196	pCi/m3
Potassium-40	HASL Ga-01-R	0.000972 +/- 0.000483	0.00222	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000310 +/- 0.000100	0.000300	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000217 +/- 0.000137	0.000290	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000364 +/- 0.0000842	0.000220	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000823 +/- 0.000358	0.000818	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000977 +/- 0.0000316	0.0000932	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000890 +/- 0.000137	0.000383	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000239 +/- 0.000159	0.000443	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.



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FINAL Analysis Results Report for Task ID. 12-0553

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0553-01	Sample ID: 3rd qtr 2012 Sample Type: Air Composite	Time Collected: 8/20/2012 13:16	Sampling Point: Humboldt Bay Power Plant	
Beryllium-7	HASL Ga-01-R	0.0469 +/- 0.00156	0.00359	pCi/m3
Potassium-40	HASL Ga-01-R	0.000912 +/- 0.000638	0.00296	pCi/m3
Niobium-95	HASL Ga-01-R	0.0000302 +/- 0.000127	0.000390	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000148 +/- 0.000188	0.000383	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000157 +/- 0.000120	0.000303	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.0000840 +/- 0.000471	0.00120	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000765 +/- 0.0000445	0.000124	pCi/m3
Cerium-141	HASL Ga-01-R	0.000125 +/- 0.000179	0.000502	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000205 +/- 0.000213	0.000603	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. 12-0556

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0556-01	Sample ID: 3rd qtr 2012	Time Collected: 8/21/2012 09:20	Sampling Point: Richmond	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0553 +/- 0.00172	0.00307	pCi/m3
Potassium-40	HASL Ga-01-R	0.000868 +/- 0.000749	0.00348	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000668 +/- 0.000167	0.000434	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000295 +/- 0.000192	0.000422	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000238 +/- 0.000123	0.000316	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000304 +/- 0.000434	0.00124	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000360 +/- 0.0000435	0.000126	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000957 +/- 0.000183	0.000562	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000199 +/- 0.000243	0.000739	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. 12-0554

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0554-01	Sample ID: 3rd qtr 2012	Time Collected: 8/15/2012 14:23	Sampling Point: Livermore	
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.119 +/- 0.00318	0.00227	pCi/m3
Potassium-40	HASL Ga-01-R	0.00000163 +/- 0.000541	0.00254	pCi/m3
Niobium-95	HASL Ga-01-R	-0.0000284 +/- 0.000125	0.000345	pCi/m3
Zirconium-95	HASL Ga-01-R	0.000217 +/- 0.000149	0.000323	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.000139 +/- 0.0000901	0.000276	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000110 +/- 0.000326	0.000921	pCi/m3
Cesium-137	HASL Ga-01-R	-0.0000123 +/- 0.0000353	0.0000971	pCi/m3
Cerium-141	HASL Ga-01-R	0.000261 +/- 0.000145	0.000478	pCi/m3
Cerium-144	HASL Ga-01-R	-0.0000467 +/- 0.000174	0.000555	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. 12-0558

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0558-01	Sample ID: 3rd qtr 2012	Time Collected: 8/17/2012 09:10	Sampling Point: San Luis Obispo	Sample Type: Air Composite
Beryllium-7	HASL Ga-01-R	0.0687 +/- 0.00195	0.00212	pCi/m3
Potassium-40	HASL Ga-01-R	-0.000997 +/- 0.000598	0.00285	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000217 +/- 0.000122	0.000345	pCi/m3
Niobium-95	HASL Ga-01-R	0.00000361 +/- 0.000127	0.000356	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000541 +/- 0.000100	0.000286	pCi/m3
Ruthenium-106	HASL Ga-01-R	-0.000149 +/- 0.000367	0.00100	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000283 +/- 0.0000358	0.000103	pCi/m3
Cerium-141	HASL Ga-01-R	0.000280 +/- 0.000143	0.000475	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000416 +/- 0.000180	0.000543	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. 12-0551

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0551-01	Sample ID: 3rd qtr 2012 Sample Type: Air Composite	Time Collected: 8/17/2012 09:53	Sampling Point: Diablo Canyon	
Beryllium-7	HASL Ga-01-R	0.0430 +/- 0.00139	0.00273	pCi/m3
Potassium-40	HASL Ga-01-R	0.000585 +/- 0.000805	0.00376	pCi/m3
Zirconium-95	HASL Ga-01-R	-0.000463 +/- 0.000171	0.000455	pCi/m3
Niobium-95	HASL Ga-01-R	0.000184 +/- 0.000154	0.000471	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.000125 +/- 0.000145	0.000359	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000167 +/- 0.000468	0.00139	pCi/m3
Cesium-137	HASL Ga-01-R	0.00000984 +/- 0.0000503	0.000148	pCi/m3
Cerium-141	HASL Ga-01-R	-0.000234 +/- 0.000216	0.000585	pCi/m3
Cerium-144	HASL Ga-01-R	0.000000273 +/- 0.000278	0.000767	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.



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FINAL Analysis Results Report for Task ID. 12-0555

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0555-01				
Sample ID: 3rd qtr 2012 Time Collected: 8/6/2012 09:30 Sampling Point: Los Angeles				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0909 +/- 0.00268	0.00408	pCi/m3
Potassium-40	HASL Ga-01-R	0.00127 +/- 0.000701	0.00323	pCi/m3
Niobium-95	HASL Ga-01-R	0.000117 +/- 0.000183	0.000529	pCi/m3
Zirconium-95	HASL Ga-01-R	0.00000342 +/- 0.000210	0.000451	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.000266 +/- 0.000126	0.000396	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000104 +/- 0.000430	0.00121	pCi/m3
Cesium-137	HASL Ga-01-R	0.000101 +/- 0.0000419	0.000131	pCi/m3
Cerium-141	HASL Ga-01-R	0.0000181 +/- 0.000254	0.000616	pCi/m3
Cerium-144	HASL Ga-01-R	0.000300 +/- 0.000228	0.000572	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. 12-0559

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0559-01	Sample ID: 3rd qtr 2012	Time Collected: 8/3/2012	16:00	Sampling Point: San Onofre
	Sample Type: Air Composite			
Beryllium-7	HASL Ga-01-R	0.0672 +/- 0.00195	0.00238	pCi/m3
Potassium-40	HASL Ga-01-R	0.0000493 +/- 0.000646	0.00304	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000380 +/- 0.000164	0.000363	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000127 +/- 0.000136	0.000359	pCi/m3
Ruthenium-103	HASL Ga-01-R	-0.0000135 +/- 0.0000958	0.000278	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.0000392 +/- 0.000394	0.00111	pCi/m3
Cesium-137	HASL Ga-01-R	0.0000518 +/- 0.0000389	0.000116	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000164 +/- 0.000221	0.000521	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. 12-0557

Parameter	Method	Result +/- CE	MDA 95	Units
Lab No: 12-0557-01				
Sample ID: 3rd qtr 2012 Time Collected: 8/17/2012 13:22 Sampling Point: San Diego				
Sample Type: Air Composite				
Beryllium-7	HASL Ga-01-R	0.0950 +/- 0.00265	0.00369	pCi/m3
Potassium-40	HASL Ga-01-R	0.00311 +/- 0.000691	0.00312	pCi/m3
Zirconium-95	HASL Ga-01-R	0.0000277 +/- 0.000135	0.000398	pCi/m3
Niobium-95	HASL Ga-01-R	-0.000250 +/- 0.000144	0.000399	pCi/m3
Ruthenium-103	HASL Ga-01-R	0.0000342 +/- 0.000120	0.000311	pCi/m3
Ruthenium-106	HASL Ga-01-R	0.000287 +/- 0.000380	0.00114	pCi/m3
Cesium-137	HASL Ga-01-R	0.000105 +/- 0.0000383	0.000122	pCi/m3
Cerium-141	HASL Ga-01-R	0.00000822 +/- 0.000194	0.000536	pCi/m3
Cerium-144	HASL Ga-01-R	-0.000551 +/- 0.000252	0.000660	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.