Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC1094_100711 **Date / Time Sampled:** 10/07/11 09:26 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-19 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**95.1**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**314000**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Iron**	**949**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**55800**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**3950**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**2970**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**2470**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**3810**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Barium	< 50.0	U	ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**1.18**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**3.64**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**0.554**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.556**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**2.62**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC1131_100711 **Date / Time Sampled:** 10/07/11 09:25 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-22 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**49.1**	J	ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**51000**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**6190**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**126**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**695**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3020**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**561**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**102**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.43**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**5.44**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**1.86**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**12.5**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC198_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-25 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**49.3**	J	ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**38100**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**3910**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**2.91**	J	ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**608**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3630**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**98.8**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**121**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**0.872**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**5.48**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**0.502**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.524**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**17.6**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC275_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-28 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**57.3**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**38500**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4270**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**10.5**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**609**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3560**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**304**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Arsenic**	**2.72**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**121**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**1.80**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**4.81**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**0.853**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.534**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**21.5**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC351_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-31 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**62.1**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**38500**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4270**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**24.2**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**605**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3520**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**349**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Arsenic**	**3.48**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**121**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.44**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Chromium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**3.87**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.526**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**19.5**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC404_100711 **Date / Time Sampled:** 10/07/11 09:13 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-34 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**69.7**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**39200**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4320**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**39.6**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**606**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3550**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**376**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**124**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.29**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**2.88**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**3.27**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.577**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**19.4**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC493_100711 **Date / Time Sampled:** 10/07/11 09:11 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-37 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**58.2**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**39300**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4340**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**41.2**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**599**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3480**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**384**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Arsenic**	**4.27**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**121**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.23**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**3.67**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**3.10**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**21.4**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC699_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-40 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**72.3**		ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**39600**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4390**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**36.9**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**596**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3570**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**367**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Arsenic**	**3.31**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**119**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.20**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**3.83**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**2.86**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Molybdenum**	**0.519**	J	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**20.4**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: SC895_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-A **Matrix:** Surface Water **Lab Number:** C111002-43 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	**Aluminum**	**47.2**	J	ug/L	20.0	1	10/25/2011	SW	1110070
200.7	**Calcium**	**41800**		ug/L	100	1	10/25/2011	SW	1110070
200.7	Iron	< 250	U	ug/L	100	1	10/25/2011	SW	1110070
200.7	**Magnesium**	**4550**		ug/L	100	1	10/25/2011	SW	1110070
200.7	**Manganese**	**26.1**		ug/L	2.00	1	10/25/2011	SW	1110070
200.7	**Potassium**	**595**	J	ug/L	250	1	10/25/2011	SW	1110070
200.7	**Sodium**	**3130**		ug/L	250	1	10/25/2011	SW	1110070
200.7	**Zinc**	**457**		ug/L	10.0	1	10/25/2011	SW	1110070
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Barium**	**109**		ug/L	25.0	5	10/25/2011	SW	1110070
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Cadmium**	**2.36**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Chromium**	**4.43**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Copper	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Lead**	**2.27**		ug/L	0.500	5	10/25/2011	SW	1110070
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	10/25/2011	SW	1110070
200.8	**Nickel**	**3.98**	J	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	**Selenium**	**14.1**		ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Silver	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Thallium	< 5.00	U	ug/L	2.50	5	10/25/2011	SW	1110070
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/25/2011	SW	1110070

"J" Qualifier indicates an estimated value

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: ArgentineShaft455_100311 **Date / Time Sampled:** 10/03/11 15:25 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-02 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 50.0	U	mg/L	20.0	100	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 200	U	mg/L	100	100	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**10.9**	J	mg/L	10.0	100	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**1630**		mg/L	200	100	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: ArgentineShaft475_100311 **Date / Time Sampled:** 10/03/11 15:55 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-04 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 50.0	U	mg/L	20.0	100	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 200	U	mg/L	100	100	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**11.1**	J	mg/L	10.0	100	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**1650**		mg/L	200	100	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: BlaineInflow1_100611 **Date / Time Sampled:** 10/06/11 14:30 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-06 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 50.0	U	mg/L	20.0	100	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 200	U	mg/L	100	100	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**80.9**		mg/L	10.0	100	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**9690**		mg/L	200	100	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: BlaineTunnel_100311 **Date / Time Sampled:** 10/03/11 16:30 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-09 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 50.0	U	mg/L	20.0	100	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 200	U	mg/L	100	100	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**29.2**		mg/L	10.0	100	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**6370**		mg/L	200	100	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: BTD_100311 **Date / Time Sampled:** 10/03/11 14:30 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-12 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 50.0	U	mg/L	20.0	100	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 200	U	mg/L	100	100	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**29.5**		mg/L	10.0	100	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**6240**		mg/L	200	100	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC068_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-15 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**6.4**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**9.0**		mg/L	2.0	1	10/18/2011	NP	1110056

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC068D_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Water **Lab Number:** C111002-18 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**6.5**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**9.1**		mg/L	2.0	1	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC1094_100711 **Date / Time Sampled:** 10/07/11 09:26 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-21 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Bromide	< 5.0	U	mg/L	2.0	10	10/18/2011	NP	1110056
EPA 300.0	Chloride	< 20.0	U	mg/L	10.0	10	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**5.0**		mg/L	1.0	10	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**758**		mg/L	20.0	10	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC1131_100711 **Date / Time Sampled:** 10/07/11 09:25 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-24 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**4.5**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**0.3**		mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**49.4**		mg/L	2.0	1	10/18/2011	NP	1110056

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC198_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-27 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**6.0**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**11.0**		mg/L	2.0	1	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC275_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-30 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**5.9**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**14.3**		mg/L	2.0	1	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC351_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-33 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**5.9**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**0.2**		mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**15.3**		mg/L	2.0	1	10/18/2011	NP	1110056

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC404_100711 **Date / Time Sampled:** 10/07/11 09:13 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-36 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**5.8**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**16.0**		mg/L	2.0	1	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC493_100711 **Date / Time Sampled:** 10/07/11 09:11 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-39 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**5.8**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	**Fluoride**	**0.1**	J	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**16.0**		mg/L	2.0	1	10/18/2011	NP	1110056

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC699_100711 **Date / Time Sampled:** 10/07/11 09:10 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-42 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**5.7**		mg/L	0.2	1	10/18/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/18/2011	NP	1110056
EPA 300.0	Fluoride	< 0.2	U	mg/L	0.1	1	10/18/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**16.0**		mg/L	2.0	1	10/18/2011	NP	1110056

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods

Station ID: SC895_100711 **Date / Time Sampled:** 10/07/11 09:20 **Workorder:** C111002
EPA Tag No.: 8-C **Matrix:** Surface Water **Lab Number:** C111002-45 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 300.0	**Bromide**	**4.9**		mg/L	0.2	1	10/19/2011	NP	1110056
EPA 300.0	**Chloride**	**1.1**	J	mg/L	1.0	1	10/19/2011	NP	1110056
EPA 300.0	**Fluoride**	**0.1**	J	mg/L	0.1	1	10/19/2011	NP	1110056
EPA 300.0	**Sulfate as SO4**	**23.2**		mg/L	2.0	1	10/19/2011	NP	1110056

"J" Qualifier indicates an estimated value

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ICPMS-PE DRC-II									
Batch 1110088 - No Lab Prep Reqd			*Water*						**ICPMS-PE DRC-II**
Method Blank (1110088-BLK1)		Dilution Factor: 1				Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 0.100	0.200	ug/L						
Vanadium	< 1.00	2.00	"						
Chromium	< 0.500	1.00	"						
Cobalt	< 0.100	0.200	"						
Nickel	< 0.500	1.00	"						
Copper	< 0.500	1.00	"						
Arsenic	< 0.500	2.00	"						
Selenium	< 0.500	1.00	"						
Molybdenum	< 0.100	0.200	"						
Silver	< 0.500	1.00	"						
Cadmium	< 0.100	0.200	"						
Antimony	< 0.500	1.00	"						
Barium	< 5.00	10.0	"						
Thallium	< 0.500	1.00	"						
Lead	< 0.100	0.200	"						
Method Blank Spike (1110088-BS1)		Dilution Factor: 1				Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	92.4	0.200	ug/L	100		92	85-115		
Vanadium	106	2.00	"	100		106	85-115		
Chromium	109	1.00	"	100		109	85-115		
Cobalt	109	0.200	"	100		109	85-115		
Nickel	106	1.00	"	100		106	85-115		
Copper	104	1.00	"	100		104	85-115		
Arsenic	99.8	2.00	"	100		100	85-115		
Selenium	510	1.00	"	500		102	85-115		
Molybdenum	99.2	0.200	"	100		99	85-115		
Silver	101	1.00	"	100		101	85-115		
Cadmium	98.9	0.200	"	100		99	85-115		
Antimony	98.6	1.00	"	100		99	85-115		
Barium	97.8	10.0	"	100		98	85-115		
Thallium	94.3	1.00	"	100		94	85-115		
Lead	95.6	0.200	"	100		96	85-115		

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110088 - No Lab Prep Reqd			*Water*						ICPMS-PE DRC-II
Duplicate (1110088-DUP1)		Dilution Factor: 1		Source: C111002-14		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 0.100	0.200	ug/L		< 0.100				20
Vanadium	1.02	2.00	"		1.13			11	20
Chromium	2.89	1.00	"		3.46			18	20
Cobalt	< 0.100	0.200	"		< 0.100				20
Nickel	< 0.500	1.00	"		< 0.500				20
Copper	< 0.500	1.00	"		< 0.500				20
Arsenic	12.9	2.00	"		13.6			5	20
Selenium	57.2	1.00	"		60.3			5	20
Molybdenum	0.519	0.200	"		0.509			2	20
Silver	< 0.500	1.00	"		< 0.500				20
Cadmium	< 0.100	0.200	"		< 0.100				20
Antimony	< 0.500	1.00	"		< 0.500				20
Barium	122	10.0	"		121			0.7	20
Thallium	< 0.500	1.00	"		< 0.500				20
Lead	0.101	0.200	"		0.221			74	20
Matrix Spike (1110088-MS1)		Dilution Factor: 1		Source: C111002-14		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	96.0	0.200	ug/L	100	< 0.100	96	75-125		
Vanadium	99.9	2.00	"	100	1.13	99	75-125		
Chromium	104	1.00	"	100	3.46	100	75-125		
Cobalt	101	0.200	"	100	< 0.100	101	75-125		
Nickel	99.0	1.00	"	100	< 0.500	99	75-125		
Copper	95.6	1.00	"	100	< 0.500	96	75-125		
Arsenic	121	2.00	"	100	13.6	108	75-125		
Selenium	595	1.00	"	500	60.3	107	75-125		
Molybdenum	102	0.200	"	100	0.509	102	75-125		
Silver	86.6	1.00	"	100	< 0.500	87	75-125		
Cadmium	98.4	0.200	"	100	< 0.100	98	75-125		
Antimony	104	1.00	"	100	< 0.500	104	75-125		
Barium	220	10.0	"	100	121	98	75-125		
Thallium	97.6	1.00	"	100	< 0.500	98	75-125		
Lead	95.7	0.200	"	100	0.221	95	75-125		

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110088 - No Lab Prep Reqd			*Water*						ICPMS-PE DRC-II
Matrix Spike Dup (1110088-MSD1)		Dilution Factor: 1		**Source: C111002-14**		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	101	0.200	ug/L	100	< 0.100	101	75-125	5	20
Vanadium	106	2.00	"	100	1.13	105	75-125	6	20
Chromium	107	1.00	"	100	3.46	103	75-125	3	20
Cobalt	105	0.200	"	100	< 0.100	105	75-125	3	20
Nickel	103	1.00	"	100	< 0.500	103	75-125	4	20
Copper	101	1.00	"	100	< 0.500	101	75-125	6	20
Arsenic	126	2.00	"	100	13.6	112	75-125	3	20
Selenium	625	1.00	"	500	60.3	113	75-125	5	20
Molybdenum	105	0.200	"	100	0.509	105	75-125	3	20
Silver	88.0	1.00	"	100	< 0.500	88	75-125	2	20
Cadmium	101	0.200	"	100	< 0.100	101	75-125	3	20
Antimony	107	1.00	"	100	< 0.500	107	75-125	3	20
Barium	223	10.0	"	100	121	102	75-125	2	20
Thallium	99.0	1.00	"	100	< 0.500	99	75-125	1	20
Lead	99.4	0.200	"	100	0.221	99	75-125	4	20
Batch 1110091 - 1110088			*Water*						ICPMS-PE DRC-II
Serial Dilution (1110091-SRD1)		Dilution Factor: 5		**Source: C111002-14**		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 0.500	1.00	ug/L		< 0.10				10
Vanadium	< 5.00	10.0	"		1.13				10
Chromium	2.72	5.00	"		3.46			24	10
Cobalt	< 0.500	1.00	"		< 0.10				10
Nickel	< 2.50	5.00	"		< 0.50				10
Copper	< 2.50	5.00	"		< 0.50				10
Arsenic	13.9	10.0	"		13.6			2	10
Selenium	61.6	5.00	"		60.3			2	10
Molybdenum	0.570	1.00	"		0.509			11	10
Silver	< 2.50	5.00	"		< 0.50				10
Cadmium	< 0.500	1.00	"		< 0.10				10
Antimony	< 2.50	5.00	"		< 0.50				10
Barium	124	50.0	"		121			3	10
Thallium	< 2.50	5.00	"		< 0.50				10
Lead	< 0.500	1.00	"		0.221				10

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ICPOE - PE Optima									
Batch 1110087 - No Lab Prep Reqd			*Water*						**ICPOE - PE Optima**
Method Blank (1110087-BLK1)		Dilution Factor: 1				Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	< 20.0	50.0	ug/L						
Calcium	< 100	250	"						
Iron	< 100	250	"						
Potassium	< 250	1000	"						
Magnesium	< 100	250	"						
Manganese	< 2.00	5.00	"						
Sodium	< 250	500	"						
Zinc	< 10.0	20.0	"						
Method Blank Spike (1110087-BS1)		Dilution Factor: 1				Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	10460	50.0	ug/L	10100		104	85-115		
Calcium	10570	250	"	10100		105	85-115		
Iron	10600	250	"	10100		105	85-115		
Potassium	10700	1000	"	10100		106	85-115		
Magnesium	10630	250	"	10100		105	85-115		
Manganese	99.01	5.00	"	100		99	85-115		
Sodium	10640	500	"	10100		105	85-115		
Zinc	105.4	20.0	"	100		105	85-115		
Duplicate (1110087-DUP1)		Dilution Factor: 1	Source: C111002-14			Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	32.03	50.0	ug/L		40.84			24	20
Calcium	37030	250	"		36130			2	20
Iron	< 100	250	"		< 100				20
Potassium	580.8	1000	"		577.8			0.5	20
Magnesium	3702	250	"		3633			2	20
Manganese	3.675	5.00	"		3.772			3	20
Sodium	3722	500	"		3667			2	20
Zinc	10.98	20.0	"		< 10.0				20

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110087 - No Lab Prep Reqd			*Water*						ICPOE - PE Optima
Matrix Spike (1110087-MS1)		Dilution Factor: 1		Source: C111002-14		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	10250	50.0	ug/L	10100	40.84	101	75-125		
Calcium	46590	250	"	10100	36130	104	75-125		
Iron	10250	250	"	10100	< 100	102	75-125		
Potassium	11010	1000	"	10100	577.8	103	75-125		
Magnesium	13950	250	"	10100	3633	102	75-125		
Manganese	100.5	5.00	"	100	3.772	97	75-125		
Sodium	14040	500	"	10100	3667	103	75-125		
Zinc	109.9	20.0	"	100	< 10.0	110	75-125		
Matrix Spike Dup (1110087-MSD1)		Dilution Factor: 1		Source: C111002-14		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	10600	50.0	ug/L	10100	40.84	105	75-125	3	20
Calcium	46970	250	"	10100	36130	107	75-125	0.8	20
Iron	10690	250	"	10100	< 100	106	75-125	4	20
Potassium	11360	1000	"	10100	577.8	107	75-125	3	20
Magnesium	14300	250	"	10100	3633	106	75-125	3	20
Manganese	104.0	5.00	"	100	3.772	100	75-125	3	20
Sodium	14390	500	"	10100	3667	106	75-125	2	20
Zinc	112.6	20.0	"	100	< 10.0	113	75-125	2	20
Batch 1110089 - 1110087			*Water*						ICPOE - PE Optima
Serial Dilution (1110089-SRD1)		Dilution Factor: 5		Source: C111002-14		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	< 100	250	ug/L		40.84				10
Calcium	36700	1250	"		36130			2	10
Iron	< 500	1250	"		< 100.00				10
Potassium	< 1250	5000	"		577.8				10
Magnesium	3684	1250	"		3633			1	10
Manganese	< 10.0	25.0	"		3.772				10
Sodium	3751	2500	"		3667			2	10
Zinc	< 50.0	100	"		< 10.00				10

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ICPMS-PE DRC-II									
Batch 1110070 - 200.2 - TR Metals			*Water*						**ICPMS-PE DRC-II**
Method Blank (1110070-BLK2)		Dilution Factor: 5				Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 0.500	1.00	ug/L						
Vanadium	< 5.00	10.0	"						
Chromium	3.263	5.00	"						
Cobalt	< 0.500	1.00	"						
Nickel	< 2.50	5.00	"						
Copper	< 2.50	5.00	"						
Arsenic	< 2.50	10.0	"						
Selenium	3.797	5.00	"						
Molybdenum	< 0.500	1.00	"						
Silver	< 2.50	5.00	"						
Cadmium	1.206	1.50	"						
Antimony	< 2.50	5.00	"						
Barium	< 25.0	50.0	"						
Thallium	< 2.50	5.00	"						
Lead	< 0.500	1.00	"						
Duplicate (1110070-DUP2)		Dilution Factor: 5	**Source: C111002-13**			Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 0.500	1.00	ug/L		< 0.500				20
Vanadium	< 5.00	10.0	"		< 5.00				20
Chromium	7.423	5.00	"		6.905			7	20
Cobalt	< 0.500	1.00	"		< 0.500				20
Nickel	< 2.50	5.00	"		< 2.50				20
Copper	< 2.50	5.00	"		< 2.50				20
Arsenic	3.783	10.0	"		3.563			6	20
Selenium	22.67	5.00	"		24.97			10	20
Molybdenum	< 0.500	1.00	"		< 0.500				20
Silver	< 2.50	5.00	"		< 2.50				20
Cadmium	1.899	1.50	"		3.158			50	20
Antimony	< 2.50	5.00	"		< 2.50				20
Barium	122.3	50.0	"		120.3			2	20
Thallium	< 2.50	5.00	"		< 2.50				20
Lead	< 0.500	1.00	"		< 0.500				20

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110070 - 200.2 - TR Metals			*Water*						ICPMS-PE DRC-II
Matrix Spike (1110070-MS2)		Dilution Factor: 5		Source: C111002-13		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	179.8	1.00	ug/L	200	< 0.500	90	75-125		
Vanadium	302.7	10.0	"	300	< 5.00	101	75-125		
Chromium	418.2	5.00	"	400	6.905	103	75-125		
Cobalt	202.4	1.00	"	200	< 0.500	101	75-125		
Nickel	499.4	5.00	"	500	< 2.50	100	75-125		
Copper	297.9	5.00	"	300	< 2.50	99	75-125		
Arsenic	816.0	10.0	"	800	3.563	102	75-125		
Selenium	2094	5.00	"	2000	24.97	103	75-125		
Molybdenum	396.6	1.00	"	400	< 0.500	99	75-125		
Silver	71.83	5.00	"	75.0	< 2.50	96	75-125		
Cadmium	199.1	1.50	"	200	3.158	98	75-125		
Antimony	807.6	5.00	"	800	< 2.50	101	75-125		
Barium	328.7	50.0	"	200	120.3	104	75-125		
Thallium	2048	5.00	"	2000	< 2.50	102	75-125		
Lead	985.8	1.00	"	1000	< 0.500	99	75-125		
Matrix Spike Dup (1110070-MSD2)		Dilution Factor: 5		Source: C111002-13		Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	188.9	1.00	ug/L	200	< 0.500	94	75-125	5	20
Vanadium	312.6	10.0	"	300	< 5.00	104	75-125	3	20
Chromium	422.2	5.00	"	400	6.905	104	75-125	1	20
Cobalt	209.2	1.00	"	200	< 0.500	105	75-125	3	20
Nickel	526.4	5.00	"	500	< 2.50	105	75-125	5	20
Copper	318.8	5.00	"	300	< 2.50	106	75-125	7	20
Arsenic	821.3	10.0	"	800	3.563	102	75-125	0.6	20
Selenium	2077	5.00	"	2000	24.97	103	75-125	0.9	20
Molybdenum	400.6	1.00	"	400	< 0.500	100	75-125	1	20
Silver	72.76	5.00	"	75.0	< 2.50	97	75-125	1	20
Cadmium	205.7	1.50	"	200	3.158	101	75-125	3	20
Antimony	827.3	5.00	"	800	< 2.50	103	75-125	2	20
Barium	330.5	50.0	"	200	120.3	105	75-125	0.5	20
Thallium	2064	5.00	"	2000	< 2.50	103	75-125	0.8	20
Lead	987.9	1.00	"	1000	< 0.500	99	75-125	0.2	20

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TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110070 - 200.2 - TR Metals			*Water*						ICPMS-PE DRC-II
Post Spike (1110070-PS2)		Dilution Factor: 5	Source: C111002-13			Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	92.11		ug/L	100	-0.2354	92	80-120		
Vanadium	94.43		"	100	-14.64	109	80-120		
Chromium	105.3		"	100	6.905	98	80-120		
Cobalt	95.66		"	100	-0.4741	96	80-120		
Nickel	94.70		"	100	-0.4948	95	80-120		
Copper	94.17		"	100	0.07515	94	80-120		
Arsenic	105.0		"	100	3.563	101	80-120		
Selenium	523.7		"	500	24.97	100	80-120		
Molybdenum	96.16		"	100	0.4216	96	80-120		
Silver	94.13		"	100	-0.09545	94	80-120		
Cadmium	98.88		"	100	3.158	96	80-120		
Antimony	97.91		"	100	0.1516	98	80-120		
Barium	222.9		"	100	120.3	103	80-120		
Thallium	112.2		"	100	0.1290	112	80-120		
Lead	98.75		"	100	0.2965	98	80-120		
Reference (1110070-SRM2)		Dilution Factor: 2				Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	923.4	4.00	ug/L	1000		92	80-120		
Vanadium	996.4	40.0	"	1000		100	80-120		
Chromium	1039	20.0	"	1000		104	80-120		
Cobalt	1035	4.00	"	1000		103	80-120		
Nickel	1035	20.0	"	1000		103	80-120		
Copper	1063	20.0	"	1000		106	80-120		
Arsenic	1982	40.0	"	2000		99	80-120		
Selenium	994.7	20.0	"	1000		99	80-120		
Molybdenum	986.6	4.00	"	1000		99	80-120		
Silver	241.7	20.0	"	250		97	80-120		
Cadmium	1002	6.00	"	1000		100	80-120		
Antimony	2027	20.0	"	2000		101	80-120		
Barium	1012	200	"	1000		101	80-120		
Thallium	4827	20.0	"	5000		97	80-120		
Lead	1970	4.00	"	2000		98	80-120		

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110092 - 1110070			*Water*						ICPMS-PE DRC-II
Serial Dilution (1110092-SRD1)		Dilution Factor: 2	Source: C111002-13			Prepared: 10/24/11 Analyzed: 10/25/11			
Beryllium	< 12.5	50.0	ug/L		< 2.50				10
Vanadium	< 12.5	50.0	"		< 2.50				10
Chromium	< 12.5	50.0	"		6.905				10
Cobalt	< 12.5	50.0	"		< 2.50				10
Nickel	< 12.5	50.0	"		< 2.50				10
Copper	< 12.5	50.0	"		< 2.50				10
Arsenic	< 12.5	50.0	"		3.563				10
Selenium	28.94	50.0	"		24.97			15	10
Molybdenum	< 12.5	50.0	"		< 2.50				200
Silver	< 12.5	50.0	"		< 2.50				10
Cadmium	< 2.50	7.50	"		3.158				10
Antimony	< 12.5	50.0	"		< 2.50				10
Barium	124.4	50.0	"		120.3			3	10
Thallium	< 12.5	50.0	"		< 2.50				10
Lead	< 12.5	50.0	"		< 2.50				10

ICPOE - PE Optima

Batch 1110070 - 200.2 - TR Metals			*Water*						ICPOE - PE Optima
Method Blank (1110070-BLK1)		Dilution Factor: 1				Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	< 20.0	50.0	ug/L						
Calcium	< 100	250	"						
Iron	< 100	250	"						
Potassium	< 250	1000	"						
Magnesium	< 100	250	"						
Manganese	< 2.00	5.00	"						
Sodium	< 250	500	"						
Zinc	14.90	20.0	"						

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110070 - 200.2 - TR Metals			*Water*						ICPOE - PE Optima
Duplicate (1110070-DUP1)		Dilution Factor: 1		Source: C111002-13		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	31.78	50.0	ug/L		29.48			8	20
Calcium	36470	250	"		37020			1	20
Iron	< 100	250	"		< 100				20
Potassium	606.8	1000	"		618.6			2	20
Magnesium	3643	250	"		3688			1	20
Manganese	3.591	5.00	"		3.681			2	20
Sodium	3679	500	"		3739			2	20
Zinc	28.86	20.0	"		35.64			21	20
Matrix Spike (1110070-MS1)		Dilution Factor: 1		Source: C111002-13		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	1988	50.0	ug/L	2000	29.48	98	75-125		
Calcium	37850	250	"	1000	37020	83	75-125		
Iron	3023	250	"	3000	< 100	101	75-125		
Potassium	10710	1000	"	10000	618.6	101	75-125		
Magnesium	5698	250	"	2000	3688	100	75-125		
Manganese	204.9	5.00	"	200	3.681	101	75-125		
Sodium	6794	500	"	3000	3739	102	75-125		
Zinc	223.7	20.0	"	200	35.64	94	75-125		
Matrix Spike Dup (1110070-MSD1)		Dilution Factor: 1		Source: C111002-13		Prepared: 10/24/11 Analyzed: 10/25/11			
Aluminum	2002	50.0	ug/L	2000	29.48	99	75-125	0.7	20
Calcium	37960	250	"	1000	37020	94	75-125	0.3	20
Iron	3042	250	"	3000	< 100	101	75-125	0.6	20
Potassium	10780	1000	"	10000	618.6	102	75-125	0.6	20
Magnesium	5717	250	"	2000	3688	101	75-125	0.3	20
Manganese	206.6	5.00	"	200	3.681	101	75-125	0.8	20
Sodium	6830	500	"	3000	3739	103	75-125	0.5	20
Zinc	222.7	20.0	"	200	35.64	94	75-125	0.5	20

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1110070 - 200.2 - TR Metals			*Water*						ICPOE - PE Optima
Post Spike (1110070-PS1)		Dilution Factor: 1	Source: C111002-13			Prepared: 10/24/11	Analyzed: 10/25/11		
Aluminum	10160		ug/L	10100	29.48	100	80-120		
Calcium	46700		"	10100	37020	96	80-120		
Iron	10320		"	10100	11.95	102	80-120		
Potassium	10950		"	10100	618.6	102	80-120		
Magnesium	13850		"	10100	3688	101	80-120		
Manganese	101.8		"	100	3.681	98	80-120		
Sodium	13990		"	10100	3739	101	80-120		
Zinc	120.6		"	100	35.64	85	80-120		
Reference (1110070-SRM1)		Dilution Factor: 1				Prepared: 10/24/11	Analyzed: 10/25/11		
Aluminum	993.0	50.0	ug/L	1000		99	80-120		
Calcium	962.8	250	"	1000		96	80-120		
Iron	1001	250	"	1000		100	80-120		
Potassium	4932	1000	"	5000		99	80-120		
Magnesium	1010	250	"	1000		101	80-120		
Manganese	1024	5.00	"	1000		102	80-120		
Sodium	961.2	500	"	1000		96	80-120		
Zinc	1056	20.0	"	1000		106	80-120		
Batch 1110090 - 1110070			*Water*						ICPOE - PE Optima
Serial Dilution (1110090-SRD1)		Dilution Factor: 5	Source: C111002-13			Prepared: 10/24/11	Analyzed: 10/25/11		
Aluminum	< 100	250	ug/L		29.48				10
Calcium	37480	1250	"		37020			1	10
Iron	< 500	1250	"		< 100.00				10
Potassium	< 1250	5000	"		618.6				10
Magnesium	3757	1250	"		3688			2	10
Manganese	< 10.0	25.0	"		3.681				10
Sodium	3761	2500	"		3739			0.6	10
Zinc	< 50.0	100	"		35.64				10

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

Classical Chemistry by EPA/ASTM/APHA Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
ESAT Dionex IC									
Batch 1110056 - No Prep Req			*Water*						ESAT Dionex IC
Method Blank (1110056-BLK1)		Dilution Factor: 1				Prepared & Analyzed: 10/18/11			
Fluoride	< 0.1	0.2	mg/L						
Chloride	< 1.0	2.0	"						
Bromide	< 0.2	0.5	"						
Sulfate as SO4	< 2.0	5.0	"						
Method Blank Spike (1110056-BS1)		Dilution Factor: 1				Prepared & Analyzed: 10/18/11			
Fluoride	4.5	0.2	mg/L	5.00		90	80-120		
Chloride	23.9	2.0	"	25.0		95	80-120		
Bromide	9.7	0.5	"	10.0		97	80-120		
Sulfate as SO4	23.9	5.0	"	25.0		96	80-120		
Duplicate (1110056-DUP1)		Dilution Factor: 1	Source: C111002-15			Prepared & Analyzed: 10/18/11			
Fluoride	< 0.1	0.2	mg/L		< 0.1				20
Chloride	1.1	2.0	"		1.1			0.05	20
Bromide	6.4	0.5	"		6.4			0.7	20
Sulfate as SO4	9.0	5.0	"		9.0			0.03	20
Matrix Spike (1110056-MS1)		Dilution Factor: 1	Source: C111002-15			Prepared & Analyzed: 10/18/11			
Fluoride	4.6	0.2	mg/L	5.00	< 0.1	92	80-120		
Chloride	24.4	2.0	"	25.0	1.1	93	80-120		
Bromide	16.0	0.5	"	10.0	6.4	96	80-120		
Sulfate as SO4	32.9	5.0	"	25.0	9.0	96	80-120		
Matrix Spike Dup (1110056-MSD1)		Dilution Factor: 1	Source: C111002-15			Prepared & Analyzed: 10/18/11			
Fluoride	4.6	0.2	mg/L	5.00	< 0.1	92	80-120	0.2	20
Chloride	24.4	2.0	"	25.0	1.1	93	80-120	0.006	20
Bromide	16.0	0.5	"	10.0	6.4	96	80-120	0.04	20
Sulfate as SO4	33.0	5.0	"	25.0	9.0	96	80-120	0.1	20

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.
RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Instrument: ICPOE - PE Optima Work Order: Nu C111002

Analytical Sequence: 1110089 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Aluminum	-2.52	1	2	3	4	1110087-BLK1	NA	50.00
		1.31	0.76	1.49	0.31	4.55	NA	
		5	6	7	8			
Calcium	-1.17	1	2	3	4	1110087-BLK1	NA	250.00
		2.94	4.70	4.44	2.41	11.35	NA	
		5	6	7	8			
Iron	-4.88	1	2	3	4	1110087-BLK1	NA	250.00
		11.12	17.89	28.37	26.63	7.69	NA	
		5	6	7	8			
Potassium	15.83	1	2	3	4	1110087-BLK1	NA	1,000.00
		17.47	25.90	26.11	25.94	41.67	NA	
		5	6	7	8			
Magnesium	0.31	1	2	3	4	1110087-BLK1	NA	250.00
		0.80	0.95	1.36	1.49	0.77	NA	
		5	6	7	8			
Manganese	0.04	1	2	3	4	1110087-BLK1	NA	5.00
		-0.01	0.09	0.17	0.12	-0.04	NA	
		5	6	7	8			
Sodium	-0.32	1	2	3	4	1110087-BLK1	NA	500.00
		-1.47	1.45	-0.85	-2.99	4.83	NA	
		5	6	7	8			
Zinc	1.14	1	2	3	4	1110087-BLK1	NA	20.00
		0.57	3.07	4.73	3.62	0.82	NA	
		5	6	7	8			

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Instrument: ICPOE - PE Optima Work Order: Nu C111002

Analytical Sequence: 1110090 **Total Recoverable** Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Aluminum	-2.52	1	2	3	4	1110070-BLK1	NA	50.00
		1.31	0.76	1.49	0.31	2.10	NA	
		5	6	7	8			
		-0.50	0.27					
Calcium	-1.17	1	2	3	4	1110070-BLK1	NA	250.00
		2.94	4.70	4.44	2.41	6.86	NA	
		5	6	7	8			
		7.18	5.11					
Iron	-4.88	1	2	3	4	1110070-BLK1	NA	250.00
		11.12	17.89	28.37	26.63	47.20	NA	
		5	6	7	8			
		8.27	13.57					
Potassium	15.83	1	2	3	4	1110070-BLK1	NA	1,000.00
		17.47	25.90	26.11	25.94	20.50	NA	
		5	6	7	8			
		24.39	33.67					
Magnesium	0.31	1	2	3	4	1110070-BLK1	NA	250.00
		0.80	0.95	1.36	1.49	0.93	NA	
		5	6	7	8			
		2.32	1.21					
Manganese	0.04	1	2	3	4	1110070-BLK1	NA	5.00
		-0.01	0.09	0.17	0.12	0.28	NA	
		5	6	7	8			
		0.20	0.06					
Sodium	-0.32	1	2	3	4	1110070-BLK1	NA	500.00
		-1.47	1.45	-0.85	-2.99	1.21	NA	
		5	6	7	8			
		-4.82	-3.84					
Zinc	1.14	1	2	3	4	1110070-BLK1	NA	20.00
		0.57	3.07	4.73	3.62	14.90	NA	
		5	6	7	8			
		1.82	3.33					

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8
INORGANIC ANALYSES DATA SHEET
Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C111002

Analytical Sequence: 1110091 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Beryllium	0.00	1	2	3	4	1110088-BLK1	NA	0.20
		-0.02	-0.02	-0.02	0.04	0.01	NA	
		5	6	7	8			
Vanadium	-0.01	1	2	3	4	1110088-BLK1	NA	2.00
		0.01	-0.01	0.04	0.04	0.02	NA	
		5	6	7	8			
Chromium	-0.10	1	2	3	4	1110088-BLK1	NA	1.00
		-0.09	-0.07	0.01	-0.05	-0.10	NA	
		5	6	7	8			
Cobalt	0.01	1	2	3	4	1110088-BLK1	NA	0.20
		0.01	0.01	0.01	0.01	0.01	NA	
		5	6	7	8			
Nickel	0.00	1	2	3	4	1110088-BLK1	NA	1.00
		0.00	0.00	0.01	0.00	0.07	NA	
		5	6	7	8			
Copper	0.01	1	2	3	4	1110088-BLK1	NA	1.00
		0.01	0.12	0.09	0.05	0.02	NA	
		5	6	7	8			
Arsenic	0.05	1	2	3	4	1110088-BLK1	NA	2.00
		-0.03	0.04	0.07	0.01	-0.04	NA	
		5	6	7	8			
Selenium	-0.02	1	2	3	4	1110088-BLK1	NA	1.00
		-0.17	0.19	0.26	0.02	-0.11	NA	
		5	6	7	8			

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C111002

Analytical Sequence: 1110091 Dissolved Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Molybdenum	0.01	1	2	3	4	1110088-BLK1	NA	0.20
		0.02	0.01	0.01	0.02	0.02	NA	
		5	6	7	8			
Silver	0.19	1	2	3	4	1110088-BLK1	NA	1.00
		0.23	0.24	0.18	0.22	0.06	NA	
		5	6	7	8			
Cadmium	0.00	1	2	3	4	1110088-BLK1	NA	0.20
		-0.01	0.01	0.01	-0.01	-0.01	NA	
		5	6	7	8			
Antimony	0.02	1	2	3	4	1110088-BLK1	NA	1.00
		0.04	0.04	0.03	0.05	0.13	NA	
		5	6	7	8			
Barium	0.01	1	2	3	4	1110088-BLK1	NA	10.00
		0.01	0.01	0.01	0.01	0.02	NA	
		5	6	7	8			
Thallium	0.01	1	2	3	4	1110088-BLK1	NA	1.00
		0.00	0.01	0.01	0.37	0.04	NA	
		5	6	7	8			
Lead	0.01	1	2	3	4	1110088-BLK1	NA	0.20
		0.01	0.01	0.01	0.01	0.04	NA	
		5	6	7	8			

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INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C111002

Analytical Sequence: 1110092 **Total Recoverable** Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Beryllium	0.00	1	2	3	4	NA	1110070-BLK2	0.20
		-0.02	-0.02	-0.02	0.04	NA	-0.02	
		5	6	7	8			
		-0.02	0.00					
Vanadium	-0.01	1	2	3	4	NA	1110070-BLK2	2.00
		0.01	-0.01	0.04	0.04	NA	-0.79	
		5	6	7	8			
		-0.03	0.02					
Chromium	-0.10	1	2	3	4	NA	1110070-BLK2	1.00
		-0.09	-0.07	0.01	-0.05	NA	0.65	
		5	6	7	8			
		-0.11	-0.08					
Cobalt	0.01	1	2	3	4	NA	1110070-BLK2	0.20
		0.01	0.01	0.01	0.01	NA	0.00	
		5	6	7	8			
		0.00	0.00					
Nickel	0.00	1	2	3	4	NA	1110070-BLK2	1.00
		0.00	0.00	0.01	0.00	NA	-0.01	
		5	6	7	8			
		-0.01	-0.02					
Copper	0.01	1	2	3	4	NA	1110070-BLK2	1.00
		0.01	0.12	0.09	0.05	NA	0.07	
		5	6	7	8			
		0.02	0.01					
Arsenic	0.05	1	2	3	4	NA	1110070-BLK2	2.00
		-0.03	0.04	0.07	0.01	NA	0.07	
		5	6	7	8			
		0.06	-0.01					
Selenium	-0.02	1	2	3	4	NA	1110070-BLK2	1.00
		-0.17	0.19	0.26	0.02	NA	0.76	
		5	6	7	8			
		-0.01	0.01					

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TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Instrument: ICPMS-PE DRC-II Work Order: Nu C111002

Analytical Sequence: 1110092 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Molybdenum	0.01	1	2	3	4	NA	1110070-BLK2	0.20
		0.02	0.01	0.01	0.02	NA	0.00	
		5	6	7	8			
		0.00	0.00					
Silver	0.19	1	2	3	4	NA	1110070-BLK2	1.00
		0.23	0.24	0.18	0.22	NA	-0.04	
		5	6	7	8			
		0.21	0.18					
Cadmium	0.00	1	2	3	4	NA	1110070-BLK2	0.30
		-0.01	0.01	0.01	-0.01	NA	0.24	
		5	6	7	8			
		-0.02	-0.01					
Antimony	0.02	1	2	3	4	NA	1110070-BLK2	1.00
		0.04	0.04	0.03	0.05	NA	-0.01	
		5	6	7	8			
		0.03	0.03					
Barium	0.01	1	2	3	4	NA	1110070-BLK2	10.00
		0.01	0.01	0.01	0.01	NA	0.02	
		5	6	7	8			
		0.01	0.00					
Thallium	0.01	1	2	3	4	NA	1110070-BLK2	1.00
		0.00	0.01	0.01	0.37	NA	0.01	
		5	6	7	8			
		0.08	0.04					
Lead	0.01	1	2	3	4	NA	1110070-BLK2	0.20
		0.01	0.01	0.01	0.01	NA	0.02	
		5	6	7	8			
		0.00	0.00					

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

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TechLaw Inc., ESAT Region 8

INORGANIC ANALYSES DATA SHEET

Intial and Continuing Calibration Blanks

Analytical Method: EPA 300.0 Analysis Name: WC - Anions by Ion Chromatography

Instrument: ESAT Dionex IC Work Order: Nu C111002

Analytical Sequence: 1110100 Dissolved Concentration Units: mg/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
Fluoride	0.00	1	2	3	4	1110056-BLK1	NA	0.20
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
Chloride	0.00	1	2	3	4	1110056-BLK1	NA	2.00
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
Bromide	0.00	1	2	3	4	1110056-BLK1	NA	0.50
		0.14	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			
Sulfate as SO4	0.00	1	2	3	4	1110056-BLK1	NA	5.00
		0.00	0.00	0.00	0.00	0.00	NA	
		5	6	7	8			

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1110089 Work Order: C111002 Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Aluminum	1000	983.1	98.3		1			2			3	
				12500	12800	102.4	12500	12780	102.2	12500	12780	102.2
					4			5			6	
				12500	12810	102.5						
					7			8			9	
Calcium	1000	952.1	95.2		1			2			3	
				12500	13130	105.0	12500	13080	104.6	12500	13130	105.0
					4			5			6	
				12500	13180	105.4						
					7			8			9	
Iron	1000	957.0	95.7		1			2			3	
				12500	13140	105.1	12500	12980	103.8	12500	13050	104.4
					4			5			6	
				12500	13110	104.9						
					7			8			9	
Magnesium	1000	1013	101.3		1			2			3	
				12500	12940	103.5	12500	12920	103.4	12500	12900	103.2
					4			5			6	
				12500	12920	103.4						
					7			8			9	
Manganese	1000	1026	102.6		1			2			3	
				1000	1039	103.9	1000	1036	103.6	1000	1040	104.0
					4			5			6	
				1000	1037	103.7						
					7			8			9	
Potassium	5000	4935	98.7		1			2			3	
				25000	25370	101.5	25000	25380	101.5	25000	25290	101.2
					4			5			6	
				25000	25350	101.4						
					7			8			9	

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TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1110089 Work Order: C111002 Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Sodium	1000	948.3	94.8		1			2			3	
				12500	12770	102.2	12500	12820	102.6	12500	12790	102.3
					4			5			6	
				12500	12840	102.7						
					7			8			9	
Zinc	1000	1032	103.2		1			2			3	
				2500	2608	104.3	2500	2625	105.0	2500	2653	106.1
					4			5			6	
				2500	2655	106.2						
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

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TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1110090 Work Order: C111002 Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Aluminum	1000	983.1	98.3		1			2			3	
				12500	12800	102.4	12500	12780	102.2	12500	12780	102.2
					4			5			6	
				12500	12810	102.5	12500	12820	102.6	12500	12800	102.4
					7			8			9	
Calcium	1000	952.1	95.2		1			2			3	
				12500	13130	105.0	12500	13080	104.6	12500	13130	105.0
					4			5			6	
				12500	13180	105.4	12500	13120	105.0	12500	13210	105.7
					7			8			9	
Iron	1000	957.0	95.7		1			2			3	
				12500	13140	105.1	12500	12980	103.8	12500	13050	104.4
					4			5			6	
				12500	13110	104.9	12500	13040	104.3	12500	13120	105.0
					7			8			9	
Magnesium	1000	1013	101.3		1			2			3	
				12500	12940	103.5	12500	12920	103.4	12500	12900	103.2
					4			5			6	
				12500	12920	103.4	12500	12940	103.5	12500	12930	103.4
					7			8			9	
Manganese	1000	1026	102.6		1			2			3	
				1000	1039	103.9	1000	1036	103.6	1000	1040	104.0
					4			5			6	
				1000	1037	103.7	1000	1043	104.3	1000	1030	103.0
					7			8			9	
Potassium	5000	4935	98.7		1			2			3	
				25000	25370	101.5	25000	25380	101.5	25000	25290	101.2
					4			5			6	
				25000	25350	101.4	25000	25420	101.7	25000	25320	101.3
					7			8			9	

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TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1110090 Work Order: C111002 Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Sodium	1000	948.3	94.8		1			2			3	
				12500	12770	102.2	12500	12820	102.6	12500	12790	102.3
					4			5			6	
				12500	12840	102.7	12500	12900	103.2	12500	12860	102.9
					7			8			9	
Zinc	1000	1032	103.2		1			2			3	
				2500	2608	104.3	2500	2625	105.0	2500	2653	106.1
					4			5			6	
				2500	2655	106.2	2500	2645	105.8	2500	2624	105.0
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1110091 Work Order: C111002 Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Antimony	50.0	49.5	99.0		1			2			3	
				50.0	50.1	100.2	50.0	51.0	102.0	50.0	50.4	100.8
					4			5			6	
				50.0	50.6	101.2						
					7			8			9	
Arsenic	50.0	50.5	101.0		1			2			3	
				50.0	48.8	97.6	50.0	50.1	100.2	50.0	50.6	101.2
					4			5			6	
				50.0	50.7	101.4						
					7			8			9	
Barium	50.0	49.9	99.8		1			2			3	
				50.0	49.6	99.2	50.0	49.1	98.2	50.0	50.6	101.2
					4			5			6	
				50.0	50.5	101.0						
					7			8			9	
Beryllium	50.0	46.4	92.8		1			2			3	
				50.0	48.3	96.6	50.0	47.3	94.6	50.0	50.8	101.6
					4			5			6	
				50.0	51.6	103.2						
					7			8			9	
Cadmium	50.0	49.5	99.0		1			2			3	
				50.0	50.9	101.8	50.0	51.4	102.8	50.0	51.4	102.8
					4			5			6	
				50.0	51.4	102.8						
					7			8			9	
Chromium	50.0	53.0	106.0		1			2			3	
				50.0	54.9	109.8	50.0	54.2	108.4	50.0	53.7	107.4
					4			5			6	
				50.0	53.9	107.8						
					7			8			9	

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1110091 Work Order: C111002 Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Cobalt	50.0	53.5	107.0		1			2			3	
				50.0	51.4	102.8	50.0	54.6	109.2	50.0	51.8	103.6
					4			5			6	
				50.0	52.7	105.4						
					7			8			9	
Copper	50.0	52.4	104.8		1			2			3	
				50.0	53.9	107.8	50.0	53.8	107.6	50.0	51.3	102.6
					4			5			6	
				50.0	52.4	104.8						
					7			8			9	
Lead	50.0	49.5	99.0		1			2			3	
				50.0	51.1	102.2	50.0	49.9	99.8	50.0	49.7	99.4
					4			5			6	
				50.0	48.0	96.0						
					7			8			9	
Molybdenum	50.0	50.1	100.2		1			2			3	
				50.0	50.0	100.0	50.0	51.6	103.2	50.0	50.2	100.4
					4			5			6	
				50.0	49.6	99.2						
					7			8			9	
Nickel	50.0	52.8	105.6		1			2			3	
				50.0	54.4	108.8	50.0	53.8	107.6	50.0	52.1	104.2
					4			5			6	
				50.0	52.3	104.6						
					7			8			9	
Selenium	250	259	103.6		1			2			3	
				50.0	51.0	102.0	50.0	50.9	101.8	50.0	53.9	107.8
					4			5			6	
				50.0	53.1	106.2						
					7			8			9	

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1110091 Work Order: C111002 Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Silver	50.0	51.1	102.2		1			2			3	
				50.0	50.9	101.8	50.0	50.6	101.2	50.0	49.5	99.0
					4			5			6	
				50.0	49.8	99.6						
					7			8			9	
Thallium	50.0	49.9	99.8		1			2			3	
				50.0	51.4	102.8	50.0	49.6	99.2	50.0	48.9	97.8
					4			5			6	
				50.0	48.7	97.4						
					7			8			9	
Vanadium	50.0	52.0	104.0		1			2			3	
				50.0	52.2	104.4	50.0	51.4	102.8	50.0	50.9	101.8
					4			5			6	
				50.0	52.1	104.2						
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1110092 Work Order: C111002 Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Antimony	50.0	49.50	99.0		1			2			3	
				50.0	50.12	100.2	50.0	50.98	102.0	50.0	50.42	100.8
					4			5			6	
				50.0	50.62	101.2	50.0	49.93	99.9	50.0	50.95	101.9
					7			8			9	
Arsenic	50.0	50.49	101.0		1			2			3	
				50.0	48.78	97.6	50.0	50.10	100.2	50.0	50.63	101.3
					4			5			6	
				50.0	50.72	101.4	50.0	49.83	99.7	50.0	51.43	102.9
					7			8			9	
Barium	50.0	49.88	99.8		1			2			3	
				50.0	49.56	99.1	50.0	49.13	98.3	50.0	50.61	101.2
					4			5			6	
				50.0	50.52	101.0	50.0	50.55	101.1	50.0	50.24	100.5
					7			8			9	
Beryllium	50.0	46.42	92.8		1			2			3	
				50.0	48.34	96.7	50.0	47.34	94.7	50.0	50.75	101.5
					4			5			6	
				50.0	51.64	103.3	50.0	49.18	98.4	50.0	48.55	97.1
					7			8			9	
Cadmium	50.0	49.48	99.0		1			2			3	
				50.0	50.92	101.8	50.0	51.41	102.8	50.0	51.43	102.9
					4			5			6	
				50.0	51.42	102.8	50.0	50.80	101.6	50.0	51.53	103.1
					7			8			9	
Chromium	50.0	53.00	106.0		1			2			3	
				50.0	54.93	109.9	50.0	54.22	108.4	50.0	53.69	107.4
					4			5			6	
				50.0	53.94	107.9	50.0	52.13	104.3	50.0	52.84	105.7
					7			8			9	

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1110092 Work Order: C111002 Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Cobalt	50.0	53.47	106.9		1			2			3	
				50.0	51.42	102.8	50.0	54.55	109.1	50.0	51.77	103.5
					4			5			6	
				50.0	52.73	105.5	50.0	53.24	106.5	50.0	53.33	106.7
					7			8			9	
Copper	50.0	52.38	104.8		1			2			3	
				50.0	53.93	107.9	50.0	53.85	107.7	50.0	51.32	102.6
					4			5			6	
				50.0	52.35	104.7	50.0	50.26	100.5	50.0	53.05	106.1
					7			8			9	
Lead	50.0	49.45	98.9		1			2			3	
				50.0	51.08	102.2	50.0	49.88	99.8	50.0	49.69	99.4
					4			5			6	
				50.0	48.02	96.0	50.0	52.90	105.8	50.0	49.38	98.8
					7			8			9	
Molybdenum	50.0	50.08	100.2		1			2			3	
				50.0	49.99	100.0	50.0	51.64	103.3	50.0	50.17	100.3
					4			5			6	
				50.0	49.64	99.3	50.0	48.81	97.6	50.0	50.04	100.1
					7			8			9	
Nickel	50.0	52.82	105.6		1			2			3	
				50.0	54.37	108.7	50.0	53.81	107.6	50.0	52.06	104.1
					4			5			6	
				50.0	52.27	104.5	50.0	52.48	105.0	50.0	53.06	106.1
					7			8			9	
Selenium	250	258.6	103.4		1			2			3	
				50.0	51.01	102.0	50.0	50.89	101.8	50.0	53.90	107.8
					4			5			6	
				50.0	53.13	106.3	50.0	52.05	104.1	50.0	53.80	107.6
					7			8			9	

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1110092 Work Order: C111002 Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Silver	50.0	51.09	102.2		1			2			3	
				50.0	50.92	101.8	50.0	50.64	101.3	50.0	49.52	99.0
					4			5			6	
				50.0	49.79	99.6	50.0	48.89	97.8	50.0	49.77	99.5
					7			8			9	
Thallium	50.0	49.94	99.9		1			2			3	
				50.0	51.42	102.8	50.0	49.57	99.1	50.0	48.89	97.8
					4			5			6	
				50.0	48.72	97.4	50.0	50.99	102.0	50.0	47.93	95.9
					7			8			9	
Vanadium	50.0	51.99	104.0		1			2			3	
				50.0	52.25	104.5	50.0	51.43	102.9	50.0	50.95	101.9
					4			5			6	
				50.0	52.15	104.3	50.0	51.67	103.3	50.0	51.15	102.3
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ESAT Dionex IC Method: EPA 300.0 Analysis Name: WC - Anions by Ion Chromatography 2010

Sequence: 1110100 Work Order: C111002 Units: mg/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Bromide	50.1	49.2	98.2		1			2			3	
				10.0	10.1	101.0	10.0	10.1	101.0	10.0	10.1	101.0
					4			5			6	
				10.0	10.1	101.0						
					7			8			9	
Chloride	15.1	14.2	94.0		1			2			3	
				40.0	40.2	100.5	40.0	40.3	100.8	40.0	40.0	100.0
					4			5			6	
				40.0	40.2	100.5						
					7			8			9	
Fluoride	9.98	9.3	93.2		1			2			3	
				4.00	3.6	90.0	4.00	3.6	90.0	4.00	3.6	90.0
					4			5			6	
				4.00	3.6	90.0						
					7			8			9	
Sulfate as SO4	75.2	79.6	105.9		1			2			3	
				100	102	102.0	100	102	102.0	100	102	102.0
					4			5			6	
				100	102	102.0						
					7			8			9	

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPMS-PE DRC-II

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence: 1110091	Analysis: ICPMS Diss. Metals-2010					
Antimony	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Arsenic	IFA1	0.1	ug/L			2.00
	IFB1	19.5	ug/L	20	98	2.00
Barium	IFA1	0.1	ug/L			10.0
	IFB1	0.0	ug/L			10.0
Beryllium	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Cadmium	IFA1	0.1	ug/L			0.200
	IFB1	20.3	ug/L	20	102	0.200
Chromium	IFA1	0.5	ug/L			1.00
	IFB1	21.3	ug/L	20	106	1.00
Cobalt	IFA1	-0.1	ug/L			0.200
	IFB1	20.7	ug/L	20	104	0.200
Copper	IFA1	0.2	ug/L			1.00
	IFB1	20.5	ug/L	20	103	1.00
Lead	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Molybdenum	IFA1	202.7	ug/L	200	101	0.200
	IFB1	203.1	ug/L	200	102	0.200
Nickel	IFA1	-0.2	ug/L			1.00
	IFB1	20.9	ug/L	20	104	1.00
Selenium	IFA1	0.1	ug/L			1.00
	IFB1	0.2	ug/L			1.00
Silver	IFA1	0.0	ug/L			1.00
	IFB1	19.4	ug/L	20	97	1.00
Thallium	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Vanadium	IFA1	-0.1	ug/L			2.00
	IFB1	-0.6	ug/L			2.00

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPMS-PE DRC-II

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence: 1110092	Analysis: ICP-MS Tot. Rec. Metals-2010					
Antimony	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Arsenic	IFA1	0.1	ug/L			2.00
	IFB1	19.5	ug/L	20	98	2.00
Barium	IFA1	0.1	ug/L			10.0
	IFB1	0.0	ug/L			10.0
Beryllium	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Cadmium	IFA1	0.1	ug/L			0.200
	IFB1	20.3	ug/L	20	102	0.200
Chromium	IFA1	0.5	ug/L			1.00
	IFB1	21.3	ug/L	20	106	1.00
Cobalt	IFA1	-0.1	ug/L			0.200
	IFB1	20.7	ug/L	20	104	0.200
Copper	IFA1	0.2	ug/L			1.00
	IFB1	20.5	ug/L	20	103	1.00
Lead	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Molybdenum	IFA1	202.7	ug/L	200	101	0.200
	IFB1	203.1	ug/L	200	102	0.200
Nickel	IFA1	-0.2	ug/L			1.00
	IFB1	20.9	ug/L	20	104	1.00
Selenium	IFA1	0.1	ug/L			1.00
	IFB1	0.2	ug/L			1.00
Silver	IFA1	0.0	ug/L			1.00
	IFB1	19.4	ug/L	20	97	1.00
Thallium	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Vanadium	IFA1	-0.1	ug/L			2.00
	IFB1	-0.6	ug/L			2.00

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPOE - PE Optima

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence: 1110089	Analysis: ICPOE Diss. Metals-2010					
Aluminum	IFA1	59,753.2	ug/L	60,000	100	50.0
	IFB1	60,591.1	ug/L	60,000	101	50.0
Calcium	IFA1	291,898.5	ug/L	300,000	97	250
	IFB1	294,405.5	ug/L	300,000	98	250
Iron	IFA1	225,770.9	ug/L	250,000	90	250
	IFB1	227,142.2	ug/L	250,000	91	250
Magnesium	IFA1	143,067.7	ug/L	150,000	95	250
	IFB1	145,158.7	ug/L	150,000	97	250
Manganese	IFA1	1.4	ug/L			5.00
	IFB1	197.9	ug/L	200	99	5.00
Potassium	IFA1	-65.8	ug/L			1000
	IFB1	21,357.2	ug/L	20,000	107	1000
Sodium	IFA1	51,340.7	ug/L	50,000	103	500
	IFB1	51,897.7	ug/L	50,000	104	500
Zinc	IFA1	8.1	ug/L			20.0
	IFB1	296.1	ug/L	300	99	20.0

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPOE - PE Optima

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence: 1110090	Analysis: ICPOE Tot. Rec Metals-2010					
Aluminum	IFA1	59,753.2	ug/L	60,000	100	50.0
	IFB1	60,591.1	ug/L	60,000	101	50.0
Calcium	IFA1	291,898.5	ug/L	300,000	97	250
	IFB1	294,405.5	ug/L	300,000	98	250
Iron	IFA1	225,770.9	ug/L	250,000	90	250
	IFB1	227,142.2	ug/L	250,000	91	250
Magnesium	IFA1	143,067.7	ug/L	150,000	95	250
	IFB1	145,158.7	ug/L	150,000	97	250
Manganese	IFA1	1.4	ug/L			5.00
	IFB1	197.9	ug/L	200	99	5.00
Potassium	IFA1	-65.8	ug/L			1000
	IFB1	21,357.2	ug/L	20,000	107	1000
Sodium	IFA1	51,340.7	ug/L	50,000	103	500
	IFB1	51,897.7	ug/L	50,000	104	500
Zinc	IFA1	8.1	ug/L			20.0
	IFB1	296.1	ug/L	300	99	20.0

*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

TechLaw, Inc. - ESAT Region 8
Detection Limit (PQL) Standard
ICPMS-PE DRC-II

Metals (Dissolved) by EPA 200/7000 Series Methods

Sequence: 1110091

Analyte	True	Found	%R	Units
Antimony	1.00	1.00	100	ug/L
Arsenic	2.00	2.06	103	ug/L
Barium	0.500	0.516	103	ug/L
Beryllium	0.200	0.255	127	ug/L
Cadmium	0.200	0.209	104	ug/L
Chromium	1.00	1.01	101	ug/L
Cobalt	0.200	0.217	108	ug/L
Copper	1.00	1.09	109	ug/L
Lead	0.200	0.212	106	ug/L
Molybdenum	0.200	0.210	105	ug/L
Nickel	1.00	1.08	108	ug/L
Selenium	1.00	0.964	96	ug/L
Silver	0.500	0.526	105	ug/L
Thallium	0.200	0.191	96	ug/L
Vanadium	2.00	2.21	110	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8
Detection Limit (PQL) Standard
ICPOE - PE Optima

Metals (Dissolved) by EPA 200/7000 Series Methods

Sequence: 1110089

Analyte	True	Found	%R	Units
Aluminum	100	104.9	105	ug/L
Calcium	250	268.2	107	ug/L
Iron	100	104.0	104	ug/L
Magnesium	1000	1086	109	ug/L
Manganese	10.0	10.71	107	ug/L
Potassium	1000	1110	111	ug/L
Sodium	1000	1096	110	ug/L
Zinc	50.0	57.97	116	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8
Detection Limit (PQL) Standard
ICPMS-PE DRC-II

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1110092

Analyte	True	Found	%R	Units
Antimony	1.00	1.003	100	ug/L
Arsenic	2.00	2.062	103	ug/L
Barium	0.500	0.5162	103	ug/L
Beryllium	0.200	0.2549	127	ug/L
Cadmium	0.200	0.2087	104	ug/L
Chromium	1.00	1.013	101	ug/L
Cobalt	0.200	0.2167	108	ug/L
Copper	1.00	1.090	109	ug/L
Lead	0.200	0.2118	106	ug/L
Molybdenum	0.200	0.2096	105	ug/L
Nickel	1.00	1.081	108	ug/L
Selenium	1.00	0.9636	96	ug/L
Silver	0.500	0.5261	105	ug/L
Thallium	0.200	0.1915	96	ug/L
Vanadium	2.00	2.209	110	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw, Inc. - ESAT Region 8
Detection Limit (PQL) Standard
ICPOE - PE Optima

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1110090

Analyte	True	Found	%R	Units
Aluminum	100	104.9	105	ug/L
Calcium	250	268.2	107	ug/L
Iron	100	104.0	104	ug/L
Magnesium	1000	1086	109	ug/L
Manganese	10.0	10.71	107	ug/L
Potassium	1000	1110	111	ug/L
Sodium	1000	1096	110	ug/L
Zinc	50.0	57.97	116	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7 **Dissolved** **Sequence ID#:** 1110089

Instrument ID #: ICPOE - PE Optima Water **LSR #:** DG-264

Analysis ID	Sample Name	Analysis Date	Analysis Time
1110089-ICV1	Initial Cal Check	10/25/11	09:01
1110089-ICB1	Initial Cal Blank	10/25/11	09:04
1110089-CRL1	Instrument RL Check	10/25/11	09:07
1110089-IFA1	Interference Check A	10/25/11	09:10
1110089-IFB1	Interference Check B	10/25/11	09:14
1110089-CCV1	Calibration Check	10/25/11	09:18
1110089-CCB1	Calibration Blank	10/25/11	09:21
1110087-BLK1	Blank	10/25/11	09:24
1110087-BS1		10/25/11	09:27
C111002-14	SC068_100711	10/25/11	09:31
1110087-DUP1	Duplicate	10/25/11	09:34
1110089-SRD1	Serial Dilution	10/25/11	09:37
1110087-MS1	Matrix Spike	10/25/11	09:40
1110087-MSD1	Matrix Spike Dup	10/25/11	09:43
C111002-01	ArgentineShaft455_100311	10/25/11	09:46
C111002-03	ArgentineShaft475_100311	10/25/11	09:50
1110089-CCV2	Calibration Check	10/25/11	09:57
1110089-CCB2	Calibration Blank	10/25/11	10:00
C111002-17	SC068D_100711	10/25/11	10:15
C111002-20	SC1094_100711	10/25/11	10:18
C111002-23	SC1131_100711	10/25/11	10:22
C111002-26	SC198_100711	10/25/11	10:26
C111002-29	SC275_100711	10/25/11	10:29
C111002-32	SC351_100711	10/25/11	10:32
1110089-CCV3	Calibration Check	10/25/11	10:38
1110089-CCB3	Calibration Blank	10/25/11	10:41
C111002-35	SC404_100711	10/25/11	10:44
C111002-38	SC493_100711	10/25/11	10:47
C111002-41	SC699_100711	10/25/11	10:51
C111002-44	SC895_100711	10/25/11	10:54
C111002-05	BlaineInflow1_100611	10/25/11	11:02
C111002-08	BlaineTunnel_100311	10/25/11	11:05
C111002-11	BTD_100311	10/25/11	11:08
1110089-CCV4	Calibration Check	10/25/11	11:21
1110089-CCB4	Calibration Blank	10/25/11	11:24

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7 **Total Recoverable** **Sequence ID#:** 1110090

Instrument ID #: ICPOE - PE Optima Water **LSR #:** DG-264

Analysis ID	Sample Name	Analysis Date	Analysis Time
1110090-ICV1	Initial Cal Check	10/25/11	09:01
1110090-ICB1	Initial Cal Blank	10/25/11	09:04
1110090-CRL1	Instrument RL Check	10/25/11	09:07
1110090-IFA1	Interference Check A	10/25/11	09:10
1110090-IFB1	Interference Check B	10/25/11	09:14
1110090-CCV1	Calibration Check	10/25/11	09:18
1110090-CCB1	Calibration Blank	10/25/11	09:21
1110090-CCV2	Calibration Check	10/25/11	09:57
1110090-CCB2	Calibration Blank	10/25/11	10:00
1110090-CCV3	Calibration Check	10/25/11	10:38
1110090-CCB3	Calibration Blank	10/25/11	10:41
1110070-BLK1	Blank	10/25/11	11:11
1110070-SRM1	Reference	10/25/11	11:15
1110090-CCV4	Calibration Check	10/25/11	11:21
1110090-CCB4	Calibration Blank	10/25/11	11:24
C111002-13	SC068 100711	10/25/11	11:27
1110070-DUP1	Duplicate	10/25/11	11:30
1110090-SRD1	Serial Dilution	10/25/11	11:33
1110070-MS1	Matrix Spike	10/25/11	11:36
1110070-MSD1	Matrix Spike Dup	10/25/11	11:40
1110070-PS1	Post Spike	10/25/11	11:43
C111002-07	BlaineTunnel 100311	10/25/11	11:45
C111002-10	BTD 100311	10/25/11	11:48
C111002-16	SC068D 100711	10/25/11	11:51
C111002-19	SC1094 100711	10/25/11	11:55
1110090-CCV5	Calibration Check	10/25/11	11:59
1110090-CCB5	Calibration Blank	10/25/11	12:02
C111002-22	SC1131 100711	10/25/11	12:05
C111002-25	SC198 100711	10/25/11	12:08
C111002-28	SC275 100711	10/25/11	12:15
C111002-31	SC351 100711	10/25/11	12:18
C111002-34	SC404 100711	10/25/11	12:21
C111002-37	SC493 100711	10/25/11	12:24
C111002-40	SC699 100711	10/25/11	12:27
C111002-43	SC895 100711	10/25/11	12:30
1110090-CCV6	Calibration Check	10/25/11	12:36
1110090-CCB6	Calibration Blank	10/25/11	12:40

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.8 **Dissolved** **Sequence ID#:** 1110091

Instrument ID #: ICPMS-PE DRC-II Water **LSR #:** DG-264

Analysis ID	Sample Name	Analysis Date	Analysis Time
1110091-ICV1	Initial Cal Check	10/25/11	12:38
1110091-ICB1	Initial Cal Blank	10/25/11	12:41
1110091-CRL1	Instrument RL Check	10/25/11	12:44
1110091-IFA1	Interference Check A	10/25/11	12:47
1110091-IFB1	Interference Check B	10/25/11	12:50
1110091-CCV1	Calibration Check	10/25/11	12:53
1110091-CCB1	Calibration Blank	10/25/11	12:56
1110088-BLK1	Blank	10/25/11	12:59
C111002-14	SC068_100711	10/25/11	13:02
1110088-DUP1	Duplicate	10/25/11	13:05
1110091-SRD1	Serial Dilution	10/25/11	13:08
1110088-BS1		10/25/11	13:11
1110088-MS1	Matrix Spike	10/25/11	13:14
1110088-MSD1	Matrix Spike Dup	10/25/11	13:16
C111002-01	ArgentineShaft455_100311	10/25/11	13:19
C111002-03	ArgentineShaft475_100311	10/25/11	13:22
1110091-CCV2	Calibration Check	10/25/11	13:28
1110091-CCB2	Calibration Blank	10/25/11	13:31
C111002-05	BlaincInflow1_100611	10/25/11	13:34
C111002-08	BlaincTunnel_100311	10/25/11	13:37
C111002-11	BTD_100311	10/25/11	13:40
C111002-17	SC068D_100711	10/25/11	13:42
C111002-20	SC1094_100711	10/25/11	13:45
C111002-23	SC1131_100711	10/25/11	13:48
C111002-26	SC198_100711	10/25/11	13:51
C111002-29	SC275_100711	10/25/11	13:54
C111002-32	SC351_100711	10/25/11	13:56
C111002-35	SC404_100711	10/25/11	13:59
1110091-CCV3	Calibration Check	10/25/11	14:02
1110091-CCB3	Calibration Blank	10/25/11	14:05
C111002-38	SC493_100711	10/25/11	14:08
C111002-41	SC699_100711	10/25/11	14:11
C111002-44	SC895_100711	10/25/11	14:14
1110091-CCV4	Calibration Check	10/25/11	14:37
1110091-CCB4	Calibration Blank	10/25/11	14:40

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.8 **Total Recoverable** **Sequence ID#:** 1110092

Instrument ID #: ICPMS-PE DRC-II Water **LSR #:** DG-264

Analysis ID	Sample Name	Analysis Date	Analysis Time
1110092-ICV1	Initial Cal Check	10/25/11	12:38
1110092-ICB1	Initial Cal Blank	10/25/11	12:41
1110092-CRL1	Instrument RL Check	10/25/11	12:44
1110092-IFA1	Interference Check A	10/25/11	12:47
1110092-IFB1	Interference Check B	10/25/11	12:50
1110092-CCV1	Calibration Check	10/25/11	12:53
1110092-CCB1	Calibration Blank	10/25/11	12:56
1110092-CCV2	Calibration Check	10/25/11	13:28
1110092-CCB2	Calibration Blank	10/25/11	13:31
1110092-CCV3	Calibration Check	10/25/11	14:02
1110092-CCB3	Calibration Blank	10/25/11	14:05
1110070-BLK2	Blank	10/25/11	14:17
C111002-13	SC068 100711	10/25/11	14:20
1110070-DUP2	Duplicate	10/25/11	14:22
1110092-SRD1	Serial Dilution	10/25/11	14:25
1110070-SRM2	Reference	10/25/11	14:28
1110070-MS2	Matrix Spike	10/25/11	14:31
1110092-CCV4	Calibration Check	10/25/11	14:37
1110092-CCB4	Calibration Blank	10/25/11	14:40
1110070-MSD2	Matrix Spike Dup	10/25/11	14:43
1110070-PS2	Post Spike	10/25/11	14:45
C111002-07	BlaineTunnel 100311	10/25/11	14:48
C111002-10	BTD 100311	10/25/11	14:51
C111002-16	SC068D 100711	10/25/11	14:54
C111002-19	SC1094 100711	10/25/11	14:57
C111002-22	SC1131 100711	10/25/11	15:00
C111002-25	SC198 100711	10/25/11	15:02
C111002-28	SC275 100711	10/25/11	15:05
1110092-CCV5	Calibration Check	10/25/11	15:11
1110092-CCB5	Calibration Blank	10/25/11	15:14
C111002-31	SC351 100711	10/25/11	15:20
C111002-34	SC404 100711	10/25/11	15:23
C111002-37	SC493 100711	10/25/11	15:26
C111002-40	SC699 100711	10/25/11	15:28
C111002-43	SC895 100711	10/25/11	15:31
1110092-CCV6	Calibration Check	10/25/11	15:37
1110092-CCB6	Calibration Blank	10/25/11	15:40

Project Name: Rico-Argentine_Surface Waters_OCT 2011_D264 **Certificate of Analysis**

TDF #: DG-264

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: EPA 300.0 **Dissolved** **Sequence ID#:** 1110100

Instrument ID #: ESAT Dionex IC Water **LSR #:** DG-264

Analysis ID	Sample Name	Analysis Date	Analysis Time
1110100-ICV1	Initial Cal Check	10/18/11	13:25
1110100-ICB1	Initial Cal Blank	10/18/11	13:42
1110056-BLK1	Blank	10/18/11	14:00
1110056-BS1		10/18/11	14:17
C111002-15	SC068_100711	10/18/11	14:35
1110056-DUP1	Duplicate	10/18/11	14:53
1110056-MS1	Matrix Spike	10/18/11	15:10
1110056-MSD1	Matrix Spike Dup	10/18/11	15:28
C111002-02	ArgentineShaft455_100311	10/18/11	15:45
C111002-04	ArgentineShaft475_100311	10/18/11	16:03
C111002-06	BlaineInflow1_100611	10/18/11	16:21
C111002-09	BlaineTunnel_100311	10/18/11	16:38
1110100-CCV1	Calibration Check	10/18/11	16:56
1110100-CCB1	Calibration Blank	10/18/11	17:13
C111002-12	BTD_100311	10/18/11	17:31
C111002-18	SC068D_100711	10/18/11	17:48
C111002-21	SC1094_100711	10/18/11	18:06
C111002-24	SC1131_100711	10/18/11	18:24
C111002-27	SC198_100711	10/18/11	18:41
C111002-30	SC275_100711	10/18/11	18:59
C111002-33	SC351_100711	10/18/11	19:16
C111002-36	SC404_100711	10/18/11	19:34
C111002-39	SC493_100711	10/18/11	19:51
C111002-42	SC699_100711	10/18/11	20:09
1110100-CCV2	Calibration Check	10/18/11	20:27
1110100-CCB2	Calibration Blank	10/18/11	20:44
1110100-CCV3	Calibration Check	10/19/11	11:20
1110100-CCB3	Calibration Blank	10/19/11	11:37
C111002-45	SC895_100711	10/19/11	11:55
1110100-CCV4	Calibration Check	10/19/11	12:12
1110100-CCB4	Calibration Blank	10/19/11	12:30

TechLaw, Inc.
Environmental Services Assistance Team
16194 W. 45th Drive, Golden, CO 80403
303-312-7720

Task Order: 40
Contract: EP-W-06-33

Certificates of Analysis

Valid through March 2012

Alkalinity

Anions by Ion Chromatography

Dissolved Organic Carbon

TSS / TDS

Perkin Elmer Optima ICP-OE

Perkin Elmer ELAN 6000 ICP-MS

NIPPON NIC MA2000

Perkin Elmer FIMS 100

- Initial Calibration Verification (ICV) Standards
- Laboratory Check Standards (LCS)
- Matrix Spike Solutions
- Interference Check (ICSA / AB) Standards

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CERTIFICATE OF ANALYSIS

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1.0 **INORGANIC VENTURES** is an ISO Guide 34 "General Requirements for the Competence of Reference Material Producers" and ISO 9001 registered manufacturer. Our manufacturing laboratory is accredited to ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories."

ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** **1000 µg/mL Arsenic in 2% (v/v) HNO3**

Catalog Number:	CGAS1-1, CGAS1-2, and CGAS1-5
Lot Number:	**D2-AS02071**
Starting Material:	As pieces
Starting Material Purity (%):	99.999697
Starting Material Lot No:	1554
Matrix:	2% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 5 µg/mL

Certified Density: 1.013 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **997 ± 5 µg/mL (avg. of 2 assays)**
ICP Assay NIST SRM 3103a Lot Number: 010713

Assay Method #2 **1,002 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** **1000 µg/mL Chromium (+3) in 2% (v/v) HNO3**

Catalog Number:	CGCR(3)1-1, CGCR(3)1-2, and CGCR(3)1-5
Lot Number:	**D2-CR03042**
Starting Material:	Cr pieces
Starting Material Purity (%):	99.993508
Starting Material Lot No:	R800A
Matrix:	2% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 3 µg/mL

Certified Density: 1.014 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,000 ± 3 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3112a Lot Number: 030730

Assay Method #2 **1,001 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Custom Solution

Catalog No.: WW-LFS-1

Lot Number: **D2-MEB324015**

Matrix: 5% HNO3(v/v)

1,000.00 µg/mL ea:
K,

600.00 µg/mL ea:
P,

300.00 µg/mL ea:
Fe, Na,

200.00 µg/mL ea:
Al, Ce, Mg, Se, Tl,

100.00 µg/mL ea:
Ca, Pb,

80.00 µg/mL ea:
As,

70.00 µg/mL ea:
Hg,

50.00 µg/mL ea:
Ni,

40.00 µg/mL ea:
Cr3,

30.00 µg/mL ea:
B, Cu, V,

20.00 µg/mL ea:
Ba, Be, Cd, Co, Li, Mn, Sr, Zn,

7.50 µg/mL ea:
Ag

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.3 µg/mL	Barium, Ba	20.07 ± 0.03 µg/mL
Beryllium, Be	19.98 ± 0.08 µg/mL	Boron, B	29.99 ± 0.12 µg/mL	Cadmium, Cd	20.02 ± 0.04 µg/mL
Calcium, Ca	100.0 ± 0.3 µg/mL	Cerium, Ce	200.0 ± 0.3 µg/mL	Chromium+3, Cr3	39.84 ± 0.15 µg/mL
Cobalt, Co	20.07 ± 0.04 µg/mL	Copper, Cu	29.97 ± 0.06 µg/mL	Iron, Fe	300.0 ± 0 µg/mL
Lead, Pb	100.0 ± 0.2 µg/mL	Lithium, Li	20.02 ± 0.08 µg/mL	Magnesium, Mg	200.0 ± µg/mL
Manganese, Mn	19.94 ± 0.11 µg/mL	Mercury, Hg	70.0 ± 0.2 µg/mL	Nickel, Ni	49.90 µg/mL

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 DESCRIPTION OF CRM

DESCRIPTION OF CRM	**1000 µg/mL Zinc in 2% (v/v) HNO3**
Catalog Number:	CGZN1-1, CGZN1-2, and CGZN1-5
Lot Number:	**D2-ZN02065**
Starting Material:	Zn shot
Starting Material Purity (%):	99.999897
Starting Material Lot No:	1560
Matrix:	2% (v/v) HNO3

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MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 998 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **997 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3168a Lot Number: 080123

Assay Method #2 **999 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Vanadium in 2% (v/v) HNO3**

Catalog Number:	CGV1-1, CGV1-2, and CGV1-5
Lot Number:	**D2-V02065**
Starting Material:	V2O5
Starting Material Purity (%):	99.990563
Starting Material Lot No:	46
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,007 ± 3 µg/mL

Certified Density: 1.019 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,007 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **1,003 ± 4 µg/mL**
ICP Assay NIST SRM 3165 Lot Number: 992706

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Uranium in 2% (v/v) HNO3**

Catalog Number:	CGU1-1, CGU1-2, and CGU1-5
Lot Number:	**D2-U01084**
Starting Material:	UO2(NO3)2.6H2O
Starting Material Purity (%):	99.999942
Starting Material Lot No:	N55947
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,015 ± 4 µg/mL

Certified Density: 1.009 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

Certified Abundance: The 235U in this standard is depleted. The Certified abundances in Atom % are as follows:

IV's Certified Abundance

Isotope	Atom%
Uranium 238U	99.7 ± 0.1
235U	0.29 ± 0.05

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Titanium in 2% (v/v) HNO3 / tr. HF

Catalog Number:	CGTI1-1, CGTI1-2, and CGTI1-5
Lot Number:	**D2-TI02070**
Starting Material:	Ti turnings
Starting Material Purity (%):	99.996450
Starting Material Lot No:	R404TIA1
Matrix:	2% (v/v) HNO3 / tr. HF

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,001 ± 4 µg/mL

Certified Density: 1.017 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** — **1,001 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3162a Lot Number: 060808

Assay Method #2 — **1,007 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Thorium in 4% (v/v) HNO3**

Catalog Number:	CGTH1-1, CGTH1-2, and CGTH1-5
Lot Number:	**C2-TH01079**
Starting Material:	Th(NO3)4x4H2O
Starting Material Purity (%):	99.999912
Starting Material Lot No:	X0033369-8
Matrix:	4% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 993 ± 3 µg/mL

Certified Density: 1.022 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **993 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **993 ± 3 µg/mL**
ICP Assay NIST SRM 3159 Lot Number: 992912

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Thallium in 0.7% (v/v) HNO3**

Catalog Number:	CGTL1-1, CGTL1-2, and CGTL1-5
Lot Number:	**D2-TL01114**
Starting Material:	TlNO3
Starting Material Purity (%):	99.999671
Starting Material Lot No:	1479
Matrix:	0.7% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,005 ± 4 µg/mL

Certified Density: 1.004 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,005 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3158 Lot Number: 993012

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Strontium in 0.1% (v/v) HNO3**

Catalog Number:	CGSR1-1, CGSR1-2, and CGSR1-5
Lot Number:	**D2-SR02027**
Starting Material:	SrCO3
Starting Material Purity (%):	99.998364
Starting Material Lot No:	W999A
Matrix:	0.1% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 5 µg/mL - weighted mean

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **996 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

Assay Method #2 **997 ± 3 µg/mL**
ICP Assay NIST SRM 3153a Lot Number: 990906

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Tin in tr. (v/v) HNO3 / tr. (v/v) HF**

Catalog Number:	CGSN1-1, CGSN1-2, and CGSN1-5
Lot Number:	**C2-SN02024**
Starting Material:	Sn Shot
Starting Material Purity (%):	99.991456
Starting Material Lot No:	F27N16
Matrix:	tr. (v/v) HNO3 / tr. (v/v) HF

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 993 ± 4 µg/mL

Certified Density: 0.999 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **993 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3161a Lot Number: 070330

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Selenium(+4) in 2% (v/v) HNO3

Catalog Number:	CGSE(4)1-1, CGSE(4)1-2, and CGSE(4)1-5
Lot Number:	**D2-SE02020**
Starting Material:	Se shot
Starting Material Purity (%):	99.999203
Starting Material Lot No:	1505
Matrix:	2% (v/v) HNO3

EXPIRES
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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,004 ± 3 µg/mL

Certified Density: 1.011 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
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4.1 Assay Method #1 **1,004 ± 3 µg/mL**
ICP Assay NIST SRM 3149 Lot Number: 992106

Assay Method #2 **1,007 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Silica in 1% (v/v) HNO3 / tr. HF

Catalog Number:	CGSIO1-1, CGSIO1-2, and CGSIO1-5
Lot Number:	**C2-SI02130**
Starting Material:	SiO2
Starting Material Purity (%):	99.999846
Starting Material Lot No:	1015122300.00
Matrix:	1% (v/v) HNO3 / tr. HF

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 999 ± 2 µg/mL

Certified Density: 1.005 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **999 ± 2 µg/mL (Avg. of 2 Runs)**
ICP Assay NIST SRM 3150 Lot Number: 071204

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Scandium in 7% (v/v) HNO3**

Catalog Number:	CGSC1-1, CGSC1-2, and CGSC1-5
Lot Number:	**D2-SC02088**
Starting Material:	Sc2O3
Starting Material Purity (%):	99.995611
Starting Material Lot No:	1532
Matrix:	7% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,002 ± 2 µg/mL (avg. of 2 methods)

Certified Density: 1.037 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3148a Lot Number: 792111

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Antimony in 1% (v/v) HNO3 / 3% Tartaric Acid**

Catalog Number:	CGSB1-1, CGSB1-2 and CGSB1-5
Lot Number:	**D2-SB02126**
Starting Material:	Sb shot
Starting Material Purity (%):	99.996681
Starting Material Lot No:	R1105SBA1
Matrix:	1% (v/v) HNO3 / 3% Tartaric Acid

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 996 ± 4 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3102A Lot Number: 061229

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Antimony in 1% (v/v) HNO3 / 3% Tartaric Acid**

Catalog Number:	CGSB1-1, CGSB1-2 and CGSB1-5
Lot Number:	**D2-SB02126**
Starting Material:	Sb shot
Starting Material Purity (%):	99.996681
Starting Material Lot No:	R1105SBA1
Matrix:	1% (v/v) HNO3 / 3% Tartaric Acid

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 996 ± 4 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3102A Lot Number: 061229

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Nickel in 2% (v/v) HNO3**

Catalog Number:	CGNI1-1, CGNI1-2, and CGNI1-5
Lot Number:	**D2-NI02067**
Starting Material:	Ni pieces
Starting Material Purity (%):	99.999033
Starting Material Lot No:	E25T014
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **995 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3136 Lot Number: 000612

Assay Method #2 **998 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Molybdenum in H2O / tr. NH4OH**

Catalog Number:	CGMO1-1, CGMO1-2, and CGMO1-5
Lot Number:	**D2-MO02036**
Starting Material:	(NH4)6Mo7O24xH2O
Starting Material Purity (%):	99.999912
Starting Material Lot No:	P704MOA1
Matrix:	H2O / tr. NH4OH

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,006 ± 5 µg/mL

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

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x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,006 ± 5 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3134 Lot Number: 891307

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Magnesium in 2% (v/v) HNO3**

Catalog Number:	CGMG10-1, CGMG10-2, and CGMG10-5
Lot Number:	**D2-MG03095**
Starting Material:	Mg metal
Starting Material Purity (%):	99.999300
Starting Material Lot No:	1484
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 9,979 ± 46 µg/mL- weighted mean

Certified Density: 1.053 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **9,986 ± 33 µg/mL**
ICP Assay NIST SRM 3131a Lot Number: 050302

Assay Method #2 **9,969 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Magnesium in 0.1% (v/v) HNO3**

Catalog Number:	CGMG1-1, CGMG1-2, and CGMG1-5
Lot Number:	**D2-MG03098**
Starting Material:	Mg metal
Starting Material Purity (%):	99.999299
Starting Material Lot No:	1484
Matrix:	0.1% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 6 µg/mL-weighted mean

Certified Density: 1.003 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **998 ± 3 µg/mL**
ICP Assay NIST SRM 3131a Lot Number: 050302

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Lead in 0.5% (v/v) HNO3**

Catalog Number:	CGPB1-1, CGPB1-2, and CGPB1-5
Lot Number:	**D2-PB03020**
Starting Material:	Pb(NO3)2
Starting Material Purity (%):	99.999554
Starting Material Lot No:	E1007PBA1
Matrix:	0.5% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,008 ± 2 µg/mL-weighted avg. of 2 methods

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\overline{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,003 ± 3 µg/mL**
ICP Assay NIST SRM 3128 Lot Number: 030721

Assay Method #2 **1,009 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Sodium in 2% (v/v) HNO3**

Catalog Number:	CGNA10-1, CGNA10-2, and CGNA10-5
Lot Number:	**D2-NA03085**
Starting Material:	Na2CO3
Starting Material Purity (%):	99.999710
Starting Material Lot No:	C181157
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,003 ± 58 µg/mL -weighted mean

Certified Density: 1.035 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **10,001 ± 55 µg/mL**
ICP Assay NIST SRM 3152a Lot Number: 010728

Assay Method #2 **10,024 ± 16 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Sodium in 0.1% (v/v) HNO3**

Catalog Number:	CGNA1-1, CGNA1-2, and CGNA1-5
Lot Number:	**D2-NA03084**
Starting Material:	Na2CO3
Starting Material Purity (%):	99.999709
Starting Material Lot No:	C181157
Matrix:	0.1% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 996 ± 4 µg/mL - weighted mean

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
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4.1 Assay Method #1 **995 ± 4 µg/mL**
ICP Assay NIST SRM 3152a Lot Number: 010728

Assay Method #2 **998 ± 2 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Manganese in 3% (v/v) HNO3**

Catalog Number:	CGMN1-1, CGMN1-2, and CGMN1-5
Lot Number:	**D2-MN02086**
Starting Material:	Mn pieces
Starting Material Purity (%):	99.990792
Starting Material Lot No:	R806MNA1
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 999 ± 5 µg/mL- weighted mean

Certified Density: 1.017 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **998 ± 4 µg/mL**
ICP Assay NIST SRM 3132 Lot Number: 050429

Assay Method #2 **1,000 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Potassium in 2% (v/v) HNO3**

Catalog Number:	CGK10-1, CGK10-2, and CGK10-5
Lot Number:	**D2-K03017**
Starting Material:	KNO3
Starting Material Purity (%):	99.998079
Starting Material Lot No:	B19P01
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,039 ± 51 µg/mL -weighted mean

Certified Density: 1.025 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **10,050 ± 32 µg/mL**
ICP Assay NIST SRM 3141a Lot Number: 051220

Assay Method #2 **10,020 ± 24 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Potassium in 0.1% (v/v) HNO3

Catalog Number:	CGK1-1, CGK1-2, and CGK1-5
Lot Number:	**D2-K03015**
Starting Material:	KNO3
Starting Material Purity (%):	99.998075
Starting Material Lot No:	B19P01
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 996 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **998 ± 4 µg/mL**
ICP Assay NIST SRM 3141a Lot Number: 051220

Assay Method #2 **994 ± 2 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Mercury in 5% (v/v) HNO3

Catalog Number:	CGHG1-1, CGHG1-2, and CGHG1-5
Lot Number:	**D2-HG02077**
Starting Material:	Hg metal
Starting Material Purity (%):	99.999792
Starting Material Lot No:	R307HGA1
Matrix:	5% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,003 ± 4 µg/mL (weighted avg. of 2 assay methods)

Certified Density: 1.029 g/mL (measured at 20 ± 1°C)

The Certified Value is based upon the most precise method used to analyze this CRM. The following equations are used in the calculation of the certified value and the uncertainty.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

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4.1 **Assay Method #1** **1,000 ± 6 µg/mL**
ICP Assay NIST SRM 3133 Lot Number: 061204

Assay Method #2 **1,004 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Lithium in 0.1% (v/v) HNO3

Catalog Number:	CGLI1-1, CGLI1-2, and CGLI1-5
Lot Number:	**D2-LI02122**
Starting Material:	Li2CO3
Starting Material Purity (%):	99.998872
Starting Material Lot No:	1312
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,003 ± 1 µg/mL

Certified Density: 1.005 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 **Assay Method #1** **997 ± 4 µg/mL**
ICP Assay NIST SRM 3129a Lot Number: 000505

Assay Method #2 **1,003 ± 1 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Copper in 3% (v/v) HNO3**

Catalog Number:	CGCU1-1, CGCU1-2, and CGCU1-5
Lot Number:	**D2-CU02121**
Starting Material:	Cu shot
Starting Material Purity (%):	99.999158
Starting Material Lot No:	1544
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,001 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 1.015 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,000 ± 4 µg/mL**
ICP Assay NIST SRM 3114 Lot Number: 011017

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Cobalt in 3% (v/v) HNO3**

Catalog Number:	CGCO1-1, CGCO1-2, and CGCO1-5
Lot Number:	**D2-CO02031**
Starting Material:	Co powder
Starting Material Purity (%):	99.999528
Starting Material Lot No:	1556
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,000 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.018 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **999 ± 4 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3113 Lot Number: 00630

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM

	1000 µg/mL Cadmium in 3% (v/v) HNO3
Catalog Number:	CGCD1-1, CGCD1-2, and CGCD1-5
Lot Number:	**D2-CD02027**
Starting Material:	Cd shot
Starting Material Purity (%):	99.999656
Starting Material Lot No:	R1205CDA1
Matrix:	3% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,002 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.015 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3108 Lot Number: 060531

Assay Method #2 **1,002 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Iron in 2% (v/v) HNO3**

Catalog Number:	CGFE1-1, CGFE1-2, and CGFE1-5
Lot Number:	**D2-FE03125**
Starting Material:	Fe powder
Starting Material Purity (%):	99.995339
Starting Material Lot No:	1539
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 997 ± 3 µg/mL (avg. of 2 methods)

Certified Density: 1.008 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 **Assay Method #1** **996 ± 4 µg/mL**
ICP Assay NIST SRM 3126a Lot Number: 051031

Assay Method #2 **997 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Iron in 5% (v/v) HNO3**

Catalog Number:	CGFE10-1, CGFE10-2, and CGFE10-5
Lot Number:	**D2-FE03115**
Starting Material:	Fe powder
Starting Material Purity (%):	99.995342
Starting Material Lot No:	1539
Matrix:	5% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,125 ± 26 µg/mL

Certified Density: 1.066 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **10,130 ± 47 µg/mL (avg. of 3 runs)**
ICP Assay NIST SRM 3126a Lot Number: 051031

Assay Method #2 **10,125 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Calcium in 2% (v/v) HNO3**

Catalog Number:	CGCA10-1, CGCA10-2, and CGCA10-5
Lot Number:	**D2-CA04008**
Starting Material:	CaO
Starting Material Purity (%):	99.995507
Starting Material Lot No:	C808CAA1
Matrix:	2% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 9,994 ± 37 µg/mL (avg. of 2 methods)

Certified Density: 1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **9,995 ± 47 µg/mL**
ICP Assay NIST SRM 3109a Lot Number: 050825

Assay Method #2 **9,992 ± 26 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM

	1000 µg/mL Calcium in 0.1% (v/v) HNO3
Catalog Number:	CGCA1-1, CGCA1-2, and CGCA1-5
Lot Number:	**D2-CA04002**
Starting Material:	CaO
Starting Material Purity (%):	99.995377
Starting Material Lot No:	C808CAA1
Matrix:	0.1% (v/v) HNO3

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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,001 ± 3 µg/mL

Certified Density: 1.001 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
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4.1 **Assay Method #1** **1,003 ± 5 µg/mL (avg. of 3 runs)**
ICP Assay NIST SRM 3109a Lot Number: 050825

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Beryllium in 3% (v/v) HNO3**

Catalog Number:	CGBE1-1, CGBE1-2, and CGBE1-5
Lot Number:	**D2-BE02003**
Starting Material:	Be(OOCCH3)2
Starting Material Purity (%):	99.999948
Starting Material Lot No:	0801-1
Matrix:	3% (v/v) HNO3

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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,004 ± 6 µg/mL

Certified Density: 1.023 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
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4.1 **Assay Method #1** **1,004 ± 6 µg/mL (avg. of 2 runs)**
ICP Assay NIST SRM 3105a Lot Number: 892707

Assay Method #2 **1,001 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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CERTIFICATE OF ANALYSIS

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1.0 **INORGANIC VENTURES** is an ISO Guide 34 "General Requirements for the Competence of Reference Material Producers" and ISO 9001 registered manufacturer. Our manufacturing laboratory is accredited to ISO/IEC 17025 "General Requirements for the Competence of Testing and Calibration Laboratories."

ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 DESCRIPTION OF CRM

1000 µg/mL Barium in 0.1% (v/v) HNO3

Catalog Number:	CGBA1-1, CGBA1-2, and CGBA1-5
Lot Number:	**D2-BA02060**
Starting Material:	Ba(NO3)2
Starting Material Purity (%):	99.999842
Starting Material Lot No:	1514
Matrix:	0.1% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,000 ± 6 µg/mL-weighted mean

Certified Density: 1.000 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

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4.1 **Assay Method #1** **999 ± 4 µg/mL**
ICP Assay NIST SRM 3104a Lot Number: 070222

Assay Method #2 **1,003 ± 3 µg/mL**
Gravimetric NIST SRM Lot Number: See Sec. 4.2

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2.0 DESCRIPTION OF CRM — 1000 µg/mL Boron in H2O / tr. NH4OH

Catalog Number:	CGB1-1, CGB1-2, and CGB1-5
Lot Number:	**D2-B02091**
Starting Material:	H3BO3
Starting Material Purity (%):	99.999981
Starting Material Lot No:	OV0133
Matrix:	H2O / tr. NH4OH

EXPIRES
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3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 1,007 ± 5 µg/mL

Certified Density: 1.000 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,007 ± 5 µg/mL**
ICP Assay NIST SRM 3107 Lot Number: 070514

Assay Method #2 **1,000 ± 5 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Silver in 5% (v/v) HNO3**

Catalog Number:	CGAG1-1, CGAG1-2, and CGAG1-5
Lot Number:	**D2-AG03009**
Starting Material:	Ag shot
Starting Material Purity (%):	99.999461
Starting Material Lot No:	1575
Matrix:	5% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 995 ± 5 µg/mL - weighted mean

Certified Density: 1.025 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\overline{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
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n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **995 ± 4 µg/mL**
ICP Assay NIST SRM 3151 Lot Number: 992212

Assay Method #2 **996 ± 2 µg/mL**
Volhard NIST SRM 999b Lot Number: 999b

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2.0 **DESCRIPTION OF CRM** **1000 µg/mL Aluminum in 3% (v/v) HNO3**

Catalog Number:	CGAL1-1, CGAL1-2, and CGAL1-5
Lot Number:	**D2-AL04087**
Starting Material:	Al ingot
Starting Material Purity (%):	99.999679
Starting Material Lot No:	1502
Matrix:	3% (v/v) HNO3

EXPIRES
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3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,001 ± 4 µg/mL (avg. of 2 methods)

Certified Density: 1.019 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 **Assay Method #1** **1,001 ± 5 µg/mL**
ICP Assay NIST SRM 3101a Lot Number: 060502

Assay Method #2 **1,001 ± 3 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 **DESCRIPTION OF CRM** **10000 µg/mL Aluminum in 7% (v/v) HNO3**

Catalog Number:	CGAL10-1, CGAL10-2, and CGAL10-5
Lot Number:	**D2-AL04086**
Starting Material:	Al ingot
Starting Material Purity (%):	99.999682
Starting Material Lot No:	1502
Matrix:	7% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,031 ± 30 µg/mL

Certified Density: 1.085 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

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n = number of measurements
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4.1 **Assay Method #1** **9,997 ± 39 µg/mL**
ICP Assay NIST SRM 3101a Lot Number: 060502

Assay Method #2 **10,031 ± 30 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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EXPIRES
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2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-3

Lot Number: **D2-MEB324067**

Matrix: 7% HNO3(v/v)

Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

50.00 µg/mL ea:
Se,

10.00 µg/mL ea:
Ag, Al, As, Ba, Be, Ca, Cd, Co, Cr3, Cu, Fe, K, Mg, Mn, Mo, Na, Ni, Pb, Sb, Th, Tl, U, V, Zn

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	10.01 ± 0.02 µg/mL	Antimony, Sb	10.02 ± 0.02 µg/mL	Arsenic, As	10.00 ± 0.03 µg/
Barium, Ba	10.00 ± 0.01 µg/mL	Beryllium, Be	10.00 ± 0.02 µg/mL	Cadmium, Cd	10.01 ± 0.02 µg/
Calcium, Ca	10.01 ± 0.03 µg/mL	Chromium+3, Cr3	10.00 ± 0.04 µg/mL	Cobalt, Co	10.00 ± 0.04 µg/
Copper, Cu	10.00 ± 0.02 µg/mL	Iron, Fe	10.01 ± 0.03 µg/mL	Lead, Pb	10.00 ± 0.02 µg/
Magnesium, Mg	10.01 ± 0.03 µg/mL	Manganese, Mn	10.00 ± 0.05 µg/mL	Molybdenum, Mo	10.02 ± 0.04 µg
Nickel, Ni	10.00 ± 0.03 µg/mL	Potassium, K	10.01 ± 0.03 µg/mL	Selenium, Se	49.99 ± 0.13 µg
Silver, Ag	10.00 ± 0.05 µg/mL	Sodium, Na	10.01 ± 0.02 µg/mL	Thallium, Tl	10.00 ± 0.02 µg
Thorium, Th	9.94 ± 0.03 µg/mL	Uranium, U	10.02 ± 0.04 µg/mL	Vanadium, V	10.00 ± 0.03 µg
Zinc, Zn	10.00 ± 0.04 µg/mL				

Certified Density: 1.034 g/mL (measured at 22° C)

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2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-2

Lot Number: **D2-MEB324018**

Matrix: tr. HF, 5% HNO3(v/v)

EXPIRES
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Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

500 µg/mL ea:
SiO2, Sn,

200 µg/mL ea:
Sb,

100 µg/mL ea:
Mo, Ti

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	200.0 ± 0.5 µg/mL	Molybdenum, Mo	100.1 ± 0.4 µg/mL	Silica, SiO2	500.0 ± 2.4
Tin, Sn	500.0 ± 1.4 µg/mL	Titanium, Ti	100.0 ± 0.3 µg/mL		

Certified Density: 1.024 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expande uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$$

($\bar{x}$) = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-1

Lot Number: **D2-MEB317042**

Matrix: 5% HNO3(v/v)

EXPIRES
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Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

500.00 µg/mL ea:
K, P, Tl,

200.00 µg/mL ea:
As, Hg, Pb,

100.00 µg/mL ea:
Al, B, Ba, Be, Ca, Cd, Ce, Co, Cr3, Cu, Fe, Li, Mg, Mn, Na, Ni, Se, Sr, V, Zn,

25.00 µg/mL ea:
Ag

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	99.9 ± 0.3 µg/mL	Arsenic, As	200.0 ± 0.6 µg/mL	Barium, Ba	100.0 ± 0.1 µg/mL
Beryllium, Be	100.0 ± 0.2 µg/mL	Boron, B	100.0 ± 0.4 µg/mL	Cadmium, Cd	100.0 ± 0.2 µg/mL
Calcium, Ca	100.1 ± 0.3 µg/mL	Cerium, Ce	100.0 ± 0.3 µg/mL	Chromium+3, Cr3	100.1 ± 0.4 µg/mL
Cobalt, Co	100.0 ± 0.2 µg/mL	Copper, Cu	99.9 ± 0.3 µg/mL	Iron, Fe	100.0 ± 0.2 µg/mL
Lead, Pb	200.0 ± 0.8 µg/mL	Lithium, Li	100.0 ± 0.3 µg/mL	Magnesium, Mg	99.6 ± 0.4 µg/mL
Manganese, Mn	100.1 ± 0.2 µg/mL	Mercury, Hg	200.0 ± 0.5 µg/mL	Nickel, Ni	99.6 ± 0.3 µg/mL
Phosphorus, P	500.0 ± 1.5 µg/mL	Potassium, K	500.0 ± 3.0 µg/mL	Selenium, Se	100.0 ± 1.0 µg/mL
Silver, Ag	25.06 ± 0.13 µg/mL	Sodium, Na	99.8 ± 0.4 µg/mL	Strontium, Sr	100.0 ± 0.3 µg/mL
Thallium, Tl	500.0 ± 2.0 µg/mL	Vanadium, V	100.0 ± 0.3 µg/mL	Zinc, Zn	99.7 ± 0.3 µg/mL

Certified Density: 1.037 g/mL (measured at 20 ± 1° C)

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2.0 **DESCRIPTION OF CRM** Stock Second Source Solution

Catalog No.: QCP-QCS-4

Lot Number: **D2-MEB335083**

Matrix: 7% HNO3(v/v) [1]

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Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

5.00 µg/mL ea:
Hg

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Mercury, Hg	5.000 ± 0.012 µg/mL				

Certified Density: 1.034 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\Sigma x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
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4.1 ASSAY INFORMATION

ELEMENT	METHOD	NIST SRM#	SRM LOT#	ELEMENT	METHOD	NIST SRM#	SRM LOT#
Hg	ICP Assay	3133	061204	Hg	EDTA	928	928

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2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: WW-LFS-2

Lot Number: **D2-MEB324072**

Matrix: tr. HF, 5% HNO3(v/v)

EXPIRES
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200.00 µg/mL ea:
SiO2,

80.00 µg/mL ea:
Sb,

70.00 µg/mL ea:
Sn,

40.00 µg/mL ea:
Mo,

20.00 µg/mL ea:
Ti

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	80.0 ± 0.2 µg/mL	Molybdenum, Mo	39.98 ± 0.14 µg/mL	Silica, SiO2	200.0 ± 1.1 µg/mL
Tin, Sn	70.0 ± 0.2 µg/mL	Titanium, Ti	20.04 ± 0.06 µg/mL		

Certified Density: 1.022 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: WW-LFS-2

Lot Number: **D2-MEB324072**

Matrix: tr. HF, 5% HNO3(v/v)

EXPIRES
MAR 01 2012

200.00 µg/mL ea:
SiO2,

80.00 µg/mL ea:
Sb,

70.00 µg/mL ea:
Sn,

40.00 µg/mL ea:
Mo,

20.00 µg/mL ea:
Ti

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	80.0 ± 0.2 µg/mL	Molybdenum, Mo	39.98 ± 0.14 µg/mL	Silica, SiO2	200.0 ± 1.1 µg
Tin, Sn	70.0 ± 0.2 µg/mL	Titanium, Ti	20.04 ± 0.06 µg/mL		

Certified Density: 1.022 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually n or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 199 definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are rep taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases whe NIST SRMs are available, the term 'in-house std.' is specified.

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CERTIFICATE OF ANALYSIS

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Prod Certificate 883.02

2.0 **DESCRIPTION OF CRM** Custom Solution

Catalog No.: WW-LFS-1

Lot Number: **D2-MEB324015**

Matrix: 5% HNO3(v/v)

EXPIRES
MAR 01 2012

1,000.00 µg/mL ea:
K,

600.00 µg/mL ea:
P,

300.00 µg/mL ea:
Fe, Na,

200.00 µg/mL ea:
Al, Ce, Mg, Se, Tl,

100.00 µg/mL ea:
Ca, Pb,

80.00 µg/mL ea:
As,

70.00 µg/mL ea:
Hg,

50.00 µg/mL ea:
Ni,

40.00 µg/mL ea:
Cr3,

30.00 µg/mL ea:
B, Cu, V,

20.00 µg/mL ea:
Ba, Be, Cd, Co, Li, Mn, Sr, Zn,

7.50 µg/mL ea:
Ag

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	200.0 ± 0.7 µg/mL	Arsenic, As	80.0 ± 0.3 µg/mL	Barium, Ba	20.07 ± 0.03 µg/
Beryllium, Be	19.98 ± 0.08 µg/mL	Boron, B	29.99 ± 0.12 µg/mL	Cadmium, Cd	20.02 ± 0.04 µg/
Calcium, Ca	100.0 ± 0.3 µg/mL	Cerium, Ce	200.0 ± 0.3 µg/mL	Chromium+3, Cr3	39.84 ± 0.15 µg/
Cobalt, Co	20.07 ± 0.04 µg/mL	Copper, Cu	29.97 ± 0.06 µg/mL	Iron, Fe	300.0 ± 0.8 µg/
Lead, Pb	100.0 ± 0.2 µg/mL	Lithium, Li	20.02 ± 0.08 µg/mL	Magnesium, Mg	200.0 ± 0.5 µg/
Manganese, Mn	19.94 ± 0.11 µg/mL	Mercury, Hg	70.0 ± 0.2 µg/mL	Nickel, Ni	49.90 ± 0.14 µg/

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 DESCRIPTION OF CRM Stock Solution

Catalog No.: 6020ICS-0A

Lot Number: **D2-MEB321139**

Matrix: 1.4% HNO3(v/v)

EXPIRES
MAR 01 2012

10,000.00 µg/mL ea:
Chloride,

2,000.00 µg/mL ea:
C,

1,000.00 µg/mL ea:
Al, Ca, Fe, K, Mg, Na, P, S,

20.00 µg/mL ea:
Mo, Ti

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	1,000 ± 2 µg/mL	Calcium, Ca	1,000 ± 3 µg/mL	Carbon, C	2,000 ± 10 µg/mL
Chloride, Chloride	10,000.0 ± 20.0 µg/mL	Iron, Fe	1,000 ± 3 µg/mL	Magnesium, Mg	1,000 ± 3 µg/mL
Molybdenum, Mo	20.00 ± 0.07 µg/mL	Phosphorus, P	1,000 ± 5 µg/mL	Potassium, K	1,000 ± 3 µg/mL
Sodium, Na	1,000 ± 9 µg/mL	Sulfur, S	1,000 ± 5 µg/mL	Titanium, Ti	20.05 ± 0.06 µg/mL

Certified Density: 1.041 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020SPK-W

Lot Number: **B2-CICP22006**

Matrix: 5% HNO3(abs)

EXPIRES
MAR 01 2012

100.00 µg/mL ea:
Fe,

50.00 µg/mL ea:
Ba, Zn,

20.00 µg/mL ea:
Co, Cr3, Cu, Mn, Ni, Sb, V,

10.00 µg/mL ea:
As, Pb,

5.00 µg/mL ea:
Ag, Be, Cd, Se, Tl

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	20.03 ± 0.04 µg/mL	Arsenic, As	10.04 ± 0.03 µg/mL	Barium, Ba	50.15 ± 0.08 µg/mL
Beryllium, Be	4.989 ± 0.010 µg/mL	Cadmium, Cd	5.016 ± 0.015 µg/mL	Chromium+3, Cr3	19.99 ± 0.08 µg/mL
Cobalt, Co	20.01 ± 0.10 µg/mL	Copper, Cu	20.04 ± 0.04 µg/mL	Iron, Fe	99.7 ± 0.2 µg/mL
Lead, Pb	10.04 ± 0.02 µg/mL	Manganese, Mn	20.01 ± 0.04 µg/mL	Nickel, Ni	20.02 ± 0.06 µg/mL
Selenium, Se	5.001 ± 0.020 µg/mL	Silver, Ag	5.015 ± 0.015 µg/mL	Thallium, Tl	5.013 ± 0.010 µg/mL
Vanadium, V	20.01 ± 0.04 µg/mL	Zinc, Zn	50.00 ± 0.18 µg/mL		

Certified Density: 1.040 g/mL (measured at 22° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-3

Lot Number: **D2-MEB347056**

Matrix: 7% HNO3(v/v)

EXPIRES
MAR 01 2012

20,000.00 µg/mL ea:
K,

1,000.00 µg/mL ea:
As, Pb, Tl,

500.00 µg/mL ea:
Se,

300.00 µg/mL ea:
Ag, Ba, Cd, Co, Cr3, Cu, Ni, V, Zn,

200.00 µg/mL ea:
Mn,

100.00 µg/mL ea:
Be

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Arsenic, As	1,000 ± 3 µg/mL	Barium, Ba	300.0 ± 0.9 µg/mL	Beryllium, Be	100.0 ± 0.4 µg/mL
Cadmium, Cd	300.0 ± 0.6 µg/mL	Chromium+3, Cr3	300.0 ± 2.2 µg/mL	Cobalt, Co	300.0 ± 0.8 µg/mL
Copper, Cu	300.0 ± 0.6 µg/mL	Lead, Pb	1,000 ± 2 µg/mL	Manganese, Mn	200.0 ± 1.1 µg/mL
Nickel, Ni	300.0 ± 0.8 µg/mL	Potassium, K	20,000.0 ± 100.0 µg/mL	Selenium, Se	500.0 ± 2.9 µg/mL
Silver, Ag	300.0 ± 1.2 µg/mL	Thallium, Tl	1,000 ± 4 µg/mL	Vanadium, V	300.0 ± 1.0 µg/mL
Zinc, Zn	300.0 ± 1.3 µg/mL				

Certified Density: 1.090 g/mL (measured at 20 ± 1° C)

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1.0 **INORGANIC VENTURES** is an ISO Guide 34:2000 registered Certified Reference Material (CRM) Manufacturer (Certificate #883-02). The certificate is designed and the data is determined in accordance with ISO Guide 31:2000 (Reference Materials-Contents of Certificates and Labels), ISO Guide 34:2000 "Quality System Guidelines for the Production of Reference Materials," and ISO Guide 35-1989 "Certification of Reference Materials - General and Statistical Principals."

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020SPK-W

Lot Number: **B2-CICP22006**

Matrix: 5% HNO3(abs)

EXPIRES
MAR 01 2012

100.00 µg/mL ea:
Fe,

50.00 µg/mL ea:
Ba, Zn,

20.00 µg/mL ea:
Co, Cr3, Cu, Mn, Ni, Sb, V,

10.00 µg/mL ea:
As, Pb,

5.00 µg/mL ea:
Ag, Be, Cd, Se, Tl

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Antimony, Sb	20.03 ± 0.04 µg/mL	Arsenic, As	10.04 ± 0.03 µg/mL	Barium, Ba	50.15 ± 0.08 µg/mL
Beryllium, Be	4.989 ± 0.010 µg/mL	Cadmium, Cd	5.016 ± 0.015 µg/mL	Chromium+3, Cr3	19.99 ± 0.08 µg/mL
Cobalt, Co	20.01 ± 0.10 µg/mL	Copper, Cu	20.04 ± 0.04 µg/mL	Iron, Fe	99.7 ± 0.2 µg/mL
Lead, Pb	10.04 ± 0.02 µg/mL	Manganese, Mn	20.01 ± 0.04 µg/mL	Nickel, Ni	20.02 ± 0.06 µg/mL
Selenium, Se	5.001 ± 0.020 µg/mL	Silver, Ag	5.015 ± 0.015 µg/mL	Thallium, Tl	5.013 ± 0.010 µg/mL
Vanadium, V	20.01 ± 0.04 µg/mL	Zinc, Zn	50.00 ± 0.18 µg/mL		

Certified Density: 1.040 g/mL (measured at 22° C)

The following equations are used in the calculation of the certified value and the uncertainty

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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ACCREDITED Testing Laboratory Certificate 883.01

ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 6020ICS-0B

Lot Number: **D2-MEB332026**

Matrix: 3% HNO3(v/v)

EXPIRES MAR 01 2012

2.00 µg/mL ea:
Ag, As, Cd, Co, Cr3, Cu, Mn, Ni, Zn

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Arsenic, As	1.999 ± 0.008 µg/mL	Cadmium, Cd	2.005 ± 0.004 µg/mL	Chromium+3, Cr3	1.995 ± 0.004 µg/mL
Cobalt, Co	1.998 ± 0.006 µg/mL	Copper, Cu	2.005 ± 0.004 µg/mL	Manganese, Mn	2.001 ± 0.004 µg/mL
Nickel, Ni	2.001 ± 0.004 µg/mL	Silver, Ag	1.996 ± 0.002 µg/mL	Zinc, Zn	2.003 ± 0.006 µg/mL

Certified Density: 1.013 g/mL (measured at 20 ± 1° C)

The Certified Value is based upon the most precise method used to analyze this CRM. The following equations are used in the calculation of the certified value and the uncertainty.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$.

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

· "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)

· This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are report taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where NIST SRMs are available, the term 'in-house std.' is specified.

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CERTIFICATE OF ANALYSIS

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-1

Lot Number: **D2-MEB335093**

Matrix: 0.3% HF(v/v), 2% HNO3(v/v)

EXPIRES
MAR 01 2012

1,000 µg/mL ea:
Ti,

500 µg/mL ea:
B,

300 µg/mL ea:
Mo,

230 µg/mL ea:
Si

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Boron, B	500.0 ± 3.1 µg/mL	Molybdenum, Mo	300.0 ± 1.1 µg/mL	Silicon, Si	230.0 ± 1.0 µg/mL
Titanium, Ti	1,000 ± 3 µg/mL				

Certified Density: 1.015 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** Stock Solution

Catalog No.: 2007ICS-4

Lot Number: **D2-MEB329125**

Matrix: 3% HNO3(v/v)

EXPIRES
MAR 01 2012

15,000.00 µg/mL ea:
Ca,

12,500.00 µg/mL ea:
Fe,

7,500.00 µg/mL ea:
Mg,

3,000.00 µg/mL ea:
Al,

2,500.00 µg/mL ea:
Na

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Aluminum, Al	3,000 ± 11 µg/mL	Calcium, Ca	15,000.0 ± 40.0 µg/mL	Iron, Fe	12,500.0 ± 40.0 µg/mL
Magnesium, Mg	7,500.0 ± 20.0 µg/mL	Sodium, Na	2,500 ± 22 µg/mL		

Certified Density: 1.175 g/mL (measured at 20 ± 1° C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEBILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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ACCREDITED Reference Material Producer Certificate 883.02

2.0 **DESCRIPTION OF CRM** **1000 µg/mL Scandium in 7% (v/v) HNO3**

Catalog Number:	CGSC1-1, CGSC1-2, and CGSC1-5
Lot Number:	**D2-SC02088**
Starting Material:	Sc2O3
Starting Material Purity (%):	99.995611
Starting Material Lot No:	1532
Matrix:	7% (v/v) HNO3

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,002 ± 2 µg/mL (avg. of 2 methods)

Certified Density: 1.037 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **1,002 ± 4 µg/mL**
ICP Assay NIST SRM 3148a Lot Number: 792111

Assay Method #2 **1,001 ± 2 µg/mL**
EDTA NIST SRM 928 Lot Number: 928

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2.0 DESCRIPTION OF CRM Ion Chromatography 10,000 µg/mL Fluoride in H2O

Catalog Number:	ICF10K
Lot Number:	C2-F01054MCA
Starting Material:	Sodium Fluoride
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	04408EZ
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,117 ± 19 µg/mL

Certified Density: 1.020 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

- "Property of the result of a measurement or the value of a standard whereby it can be related to stated references, usually national or international standards, through an unbroken chain of comparisons all having stated uncertainties." (ISO VIM, 2nd ed., 1993, definition 6.10)
- This product is Traceable to NIST via an unbroken chain of comparisons. The uncertainties for each certified value are reported, taking into account the SRM uncertainty error and the measurement, weighing and volume dilution errors. In rare cases where no NIST SRMs are available, the term 'in-house std.' is specified.

4.1 Assay Method #1 **10,117 ± 19 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3183 Lot Number: 050721

Assay Method #2 **10,019 ± 51 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Testing Laboratory Certificate 983.01

ACCREDITED Reference Material Producer Certificate 983.02

2.0 **DESCRIPTION OF CRM** Ion Chromatography Custom Solution

Catalog No.: ICCL10-5

Lot Number: **E2-MEB363069**

Matrix: H2O

EXPIRES
MAR 01 2012

10,000 µg/mL ea:
Chloride

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ION	CERTIFIED VALUE	ION	CERTIFIED VALUE	ION	CERTIFIED VALUE
Chloride	10,000.0 ± 30.0 µg/mL				

Certified Density: 1.012 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 ASSAY INFORMATION

ION	METHOD	NIST SRM#	SRM LOT#	ION	METHOD	NIST SRM#	SRM LOT#
Chloride	IC Assay	3182	060925	Chloride	Volhard	999b	999b

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2.0 **DESCRIPTION OF CRM** **Ion Chromatography 1000 µg/mL Bromide in H2O**

Catalog Number:	ICBR1-1 and ICBR1-5
Lot Number:	**D2-BR01078**
Starting Material:	KBr
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	09014BY
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 1,002 ± 2 µg/mL

Certified Density: 0.998 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty (±) $= \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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Assay Method #1 **999 ± 3 µg/mL**
IC Assay NIST SRM 3184 Lot Number: 020701

Assay Method #2 **1,002 ± 2 µg/mL**
Volhard NIST SRM 999b Lot Number: 999b

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2.0 DESCRIPTION OF CRM Ion Chromatography 10000 µg/mL Nitrite as N in H2O

Catalog Number:	ICNNO210K
Lot Number:	D2-NOX02082MCA
Starting Material:	NaNO2
Starting Material Purity (%):	100.0000
Starting Material Lot No.:	1574
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration:	10,316 ± 69 µg/mL
Certified Density:	1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

$$\text{Certified Value } (\bar{x}) = \frac{\sum x_i}{n}$$

$$\text{Uncertainty } (\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS

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4.1 Assay Method #1 **10,316 ± 69 µg/mL (avg. of 2 runs)**
IC Assay NIST SRM 40h Lot Number: 40h

Assay Method #2 **10,372 ± 52 µg/mL**
Calculated NIST SRM, Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **Ion Chromatography 10000 µg/mL Nitrate as N in H2O**

Catalog Number:	ICNNO310K
Lot Number:	**D2-NOX02083MCA**
Starting Material:	NaNO3
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	1571
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 **CERTIFIED VALUES AND UNCERTAINTIES**

Certified Concentration: 10,206 ± 62 µg/mL

Certified Density: 1.038 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 **TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS**

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4.1 **Assay Method #1** **10,206 ± 62 µg/mL (avg. of 2 runs)**
IC Assay NIST SRM 3185 Lot Number: 050517

Assay Method #2 **10,000 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Reference Material Producer Certificate 865.02

2.0 DESCRIPTION OF CRM Ion Chromatography 10,000 µg/mL Phosphate as P in H2O

Catalog Number:	ICPPO410K
Lot Number:	**B2-POX01082MCA**
Starting Material:	NH4H2PO4
Starting Material Purity (%):	99.9990
Starting Material Lot No.:	10911CA / 07430AE
Matrix:	H2O

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,006 ± 26 µg/mL

Certified Density: 1.018 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\sum x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\sum s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
$\sum s_i$ = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

4.0 TRACEABILITY TO NIST AND VALUES OBTAINED BY INDEPENDENT METHODS*

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4.1 Assay Method #1 **10,006 ± 26 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3186 Lot Number: 000330

Assay Method #2 **10,009 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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2.0 **DESCRIPTION OF CRM** **Ion Chromatography** **10,000 µg/mL Sulfate in H20**

Catalog Number:	ICSO410K
Lot Number:	**B2-SOX01084MCA**
Starting Material:	K2SO4
Starting Material Purity (%):	99.0000
Starting Material Lot No.:	08524KC
Matrix:	H20

EXPIRES
MAR 01 2012

3.0 CERTIFIED VALUES AND UNCERTAINTIES

Certified Concentration: 10,030 ± 22 µg/mL

Certified Density: 1.011 g/mL (measured at 20 ± 1°C)

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2\,[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume and the fixed error reported on the NIST SRM certificate of analysis)

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4.1 Assay Method #1 **10,030 ± 22 µg/mL (Avg. of 2 Runs)**
IC Assay NIST SRM 3154 Lot Number: 892205

Assay Method #2 **10,010 ± 50 µg/mL**
Calculated NIST SRM Lot Number: See Sec. 4.2

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ACCREDITED Reference Material Producer Certificate 853.02

2.0 **DESCRIPTION OF CRM** Custom Second Source Custom Solution

Catalog No.: QCP-QCS-5

Lot Number: **D2-MEB343140**

Matrix: H2O

EXPIRES
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Second Source: Whenever possible, this solution was manufactured from a second set of concentrates in our manufacturing facility.

75 µg/mL ea:
Sulfate,

50 µg/mL ea:
Bromide,

25 µg/mL ea:
oPhosphate_as_P,

15 µg/mL ea:
Chloride, Nitrite_as_N,

10 µg/mL ea:
Fluoride, Nitrate_as_N

3.0 CERTIFIED VALUES AND UNCERTAINTIES

ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE	ELEMENT	CERTIFIED VALUE
Bromide, Bromide	49.99 ± 0.23 µg/mL	Chloride, Chloride	15.01 ± 0.03 µg/mL	Fluoride, Fluoride	10.01 ± 0.03 µg/mL
Nitrate_ as_ N, Nitrate_as_N	10.00 ± 0.02 µg/mL	Nitrite_ as_ N, Nitrite_as_N	15.00 ± 0.04 µg/mL	o-Phosphate as P, oPhosphate_as_P	25.01 ± 0.07 µg/mL
Sulfate, Sulfate	75.0 ± 0.2 µg/mL				

Certified Density: 0.997 g/mL (measured at 20 ± 1° C)

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WATER QC CERTIFIED REFERENCE MATERIAL Complex Nutrients

Catalog No: QCP-NUT-2

Lot Number: **B2-NUT01111**

EXPIRES
MAR 01 2012

STABILITY AND STORAGE INFORMATION

- This CRM can be stored at room temperature before opening. After opening and dilution, the EPA recommends that it be stored at 4 °C for no more than 48 hours for Nitrate as N and Phosphate as P. For Nitrate plus Nitrite as N and Ammonia as N samples, a "maximum" holding time of 28 days at 4 °C is recommended. The EPA recommendations for holding time and storage conditions should be followed **after** opening and dilution.

SPECIFICATIONS AND TRACEABILITY:

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Total Kjeldahl Nitrogen as N	15.1 ± 0.3 mg/L	15.0 mg/L	Dumas Micro Combustion	SRM 141c	18.6 – 11.5 mg/L
Total Organic Phosphorus as P	8.02 ± 0.04 mg/L	8.00 mg/L	ICP	SRM 3139a	9.64 – 6.40 mg/L

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis

ANALYZED DENSITY OF SOLUTION (measured at 22°C): **1.013 g/mL**

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WATER QC Reference Material Solids
Catalog No: QCP-SLD

Recvd: 10/19/2010
Exp: 11/01/2011

Lot Number: **C2-SLD02006**

STABILITY AND STORAGE INFORMATION

- This reference material can be stored at room temperature before and after opening. The EPA recommends a "maximum" holding time for solids samples of 7 days at 4 °C. Our stability data indicates that this standard should be disposed of in 3 months after opening.

SPECIFICATIONS AND TRACEABILITY:

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Filterable Residue	743.0 ± 36 mg/L	750 mg/L	EPA Method 160.1	Gravimetric	934 - 552 mg/L
Non-filterable Residue	27.0 ± 2.7 mg/L	35 mg/L	EPA Method 160.2	Gravimetric	31.7 – 22.2 mg/L
Total Residue	777 ± 61 mg/L	785 mg/L	EPA Method 160.3	Gravimetric	977 – 577 mg/L

The following equations are used in the calculation of the certified value and the uncertainty. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Certified Value $(\bar{x}) = \frac{\Sigma x_i}{n}$

Uncertainty $(\pm) = \frac{2[(\Sigma s_i)^2]^{1/2}}{(n)^{1/2}}$

$(\bar{x})$ = mean
x_i = individual results
n = number of measurements
Σs_i = The summation of all significant estimated errors (Most common are the errors from instrumental measurement, weighing, dilution to volume, and the fixed error reported on the NIST SRM certificate of analysis.)

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WATER QC REFERENCE MATERIAL **Minerals**

Catalog No: QCP-MIN

Lot Number: **E2-MIN01123**

STABILITY AND STORAGE INFORMATION

- Do not put transfer devices, probes, etc. in sample container. The insertion of a pH electrode, for example, can significantly increase the conductivity, potassium, and chloride values. This standard can be stored at room temperature before opening. After opening, the EPA recommends a "maximum" holding time for the following:

Parameter	Holding Conditions	Holding Time
Alkalinity	4°C	14 days
Conductivity	4°C	28 days
Chloride	None required	28 days
Sulfate	4°C	28 days
Nitrate as N	4°C	48 hours
Fluoride	None required	28 days
Sodium	HNO_3 to pH<2	6 months
Potassium	HNO_3 to pH<2	6 months

SPECIFICATIONS AND TRACEABILITY:

***pH: The value listed below is for informational purposes only. The pH value of this CRM is not stable and cannot be relied upon. It can change up to 1 pH unit. For a certified pH CRM, use catalog no. QCP-PH.**

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Alkalinity	115.19 ± 0.58 mg/L $CaCO_3$	110.075 mg/L	EPA Method 310.1	723d	122.71 – 107.66 mg/L $CaCO_3$
Conductivity	1287 ± 7 µmhos/cm @ 25°C	Measured	EPA Method 120.1	999b	1421 – 1153 µmhos/cm @ 25°C
Chloride	200.24 ± 0.44 mg/L	200.21 mg/L	EPA Method 300.0	3182	215.05 – 185.43 mg/L
Fluoride	7.92 ± 0.04 mg/L	8.00 mg/L	EPA Method 300.0	3183	8.54 – 7.30 mg/L
Sulfate	125.22 ± 0.75 mg/L	125.00 mg/L	EPA Method 300.0	3181	142.82 – 107.62 mg/L
Nitrate as N	8.80 ± 0.08 mg/L	9.00 mg/L	EPA Method 300.0	3185	10.54 – 7.05 mg/L
Sodium	202.31 ± 0.75 mg/L	203.01 mg/L	ICP	3152a	222.03 – 182.58 mg/L
Potassium	101.71 ± 1.63 mg/L	101.68 mg/L	ICP	3141a	116.10 – 87.32 mg/L
pH	9.21 units	Measured	4500-H^+B	186g, 185h	*See parameters table above

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QCPLUS MINERALS 14750

Rec'd: 2011-07-27

WATER QC REFERENCE MATERIAL Minerals
Catalog No: QCP-MIN

Lot Number: **E2-MIN01122**

STABILITY AND STORAGE INFORMATION

- Do not put transfer devices, probes, etc. in sample container. The insertion of a pH electrode, for example, can significantly increase the conductivity, potassium, and chloride values. This standard can be stored at room temperature before opening. After opening, the EPA recommends a "maximum" holding time for the following:

Parameter	Holding Conditions	Holding Time
Alkalinity	4°C	14 days
Conductivity	4°C	28 days
Chloride	None required	28 days
Sulfate	4°C	28 days
Nitrate as N	4°C	48 hours
Fluoride	None required	28 days
Sodium	HNO_3 to pH<2	6 months
Potassium	HNO_3 to pH<2	6 months

SPECIFICATIONS AND TRACEABILITY:

***pH: The value listed below is for informational purposes only. The pH value of this CRM is not stable and cannot be relied upon. It can change up to 1 pH unit. For a certified pH CRM, use catalog no. QCP-PH.**

Parameter	Certified Value	Made to Value	Analytical Method	NIST Traceability	Acceptance Limits
Alkalinity	24.16 ± 0.20 mg/L $CaCO_3$	23.78 mg/L	EPA Method 310.1	723d	28.12 – 20.20 mg/L $CaCO_3$
Conductivity	211 ± 1 µmhos/cm @ 25°C	Measured	EPA Method 120.1	999b	234 – 188 µmhos/cm @ 25°C
Chloride	24.87 ± 0.05 mg/L	25.00 mg/L	EPA Method 300.0	3182	28.13 – 21.61 mg/L
Fluoride	3.01 ± 0.01 mg/L	3.00 mg/L	EPA Method 300.0	3183	3.28 – 2.74 mg/L
Sulfate	20.14 ± 0.09 mg/L	20.00 mg/L	EPA Method 300.0	3181	23.98 – 16.30 mg/L
Nitrate as N	1.48 ± 0.03 mg/L	1.50 mg/L	EPA Method 300.0	3185	1.81 – 1.15 mg/L
Sodium	32.17 ± 0.13 mg/L	31.98 mg/L	ICP	3152a	35.59 – 28.75 mg/L
Potassium	16.34 ± 0.061 mg/L	16.27 mg/L	ICP	3141a	18.82 – 13.87 mg/L
pH	9.12 units	Measured	4500-H^+B	186g, 185h	*See parameters table above

TechLaw
Quality & Integrity

Ion Chromatography
EPA Method 300.0 / SW-846 Method 9056

Analysis Date: 10/18/2011 Analyst: Nick Philpot

TDF #: DG-264 Project Name: Rico-Argentine LIMS #: C111002

Standards Traceability Documentation

Vendor	Standard	LIMS ID #:	Expires	Purpose
Inorganic Ventures	QCP-QCS-5	1040749	3-1-12	ICV / LCS
Inorganic Ventures	10,000 ppm Cl	1040750	3-1-12	Calibration
Inorganic Ventures	10,000 ppm NO_2	1040754	3-1-12	Calibration
Inorganic Ventures	10,000 ppm Br	1040752	3-1-12	Calibration
Inorganic Ventures	10,000 ppm PO_4	1040755	3-1-12	Calibration
Inorganic Ventures	10,000 ppm Fl	1040751	3-1-12	Calibration
Inorganic Ventures	10,000 ppm SO_4	1040756	3-1-12	Calibration
Inorganic Ventures	10,000 ppm NO_3	1040753	3-1-12	Calibration
ESAT	Cl + SO_4 + F	1052401	3-1-12	Spike

Calibration Standards

Cal Stock LIMS ID #: 1052601 Prepared: 05-24-2011 Exp: 3-1-2012

Name	F^- mg/L	Cl^- mg/L	Br^- mg/L	NO_2-N g/L	NO_3-N mg/L	PO_4 mg/L	SO_4^- mg/L
Stock	20	200	50	50	50	20	500
Std. 1	0.2	2	0.5	0.5	0.5	0.2	5.0
Std. 2	0.4	4	1	1	1	0.4	10
Std. 3	1	10	2.5	2.5	2.5	1	25
Std. 4	4	40	10	10	10	4	100
Std. 5	10	100	25	25	25	10	250

Instrument Analysis Parameters

Column Press.: Approx 2600 Eluent Cond.: 00.0 Eluent Prep.Date: 10/18/2011

Cal. Date: 6/28/2011 Cal. By: SV

Analytical Run Information

CCV LIMS ID #: 1052602 Prepared: 05-24-2011 Exp: 3-1-2012

Spiked Sample ID: C111002-15 mL Sample: 10 mL Spike: 0.100

Analytical Batch ID: 1110056

Sequence ID: 1110100

Upload Date: 10/28/2011 Upload By: NP

Peer Review Date: 11/02/11 By: SV

ANALYSIS SEQUENCE

1110100

Instrument: ESAT Dionex IC Sequence Date: 10/26/11 00:00 Printed: 10/26/2011 1:47:02PM

Lab Number	Dilut. Factor	Analysis	STD ID	Sample/Std Name	EPA Tag ID	Source Sple	Comments
1110100-ICV1		QC	1040749	Initial Cal Check		-	
1110100-ICB1		QC	1040749	Initial Cal Blank		-	
1110056-BLK1		QC		Blank		-	
1110056-BS1		QC		LCS		-	
C111002-15 A		nions by Ion Chromatograpl		SC068_100711	8-C		
1110056-DUP1		QC		Duplicate		C111002-15	
1110056-MS1		QC		Matrix Spike		C111002-15	
1110056-MSD1		QC		Matrix Spike Dup		C111002-15	
C111002-02 A		nions by Ion Chromatograpl		rgentineShaft455_10031	8-C		
C111002-04 A		nions by Ion Chromatograpl		rgentineShaft475_10031	8-C		
C111002-06 A		nions by Ion Chromatograpl		BlaineInflow1_100611	8-C		
C111002-09 A		nions by Ion Chromatograpl		BlaineTunnel_100311	8-C		
1110100-CCV1		QC	1052602	Calibration Check		-	
1110100-CCB1		QC		Calibration Blank		-	
C111002-12 A		nions by Ion Chromatograpl		BTD_100311	8-C		
C111002-18 A		nions by Ion Chromatograpl		SC068D_100711	8-C		
C111002-21 A		nions by Ion Chromatograpl		SC1094_100711	8-C		
C111002-24 A		nions by Ion Chromatograpl		SC1131_100711	8-C		
C111002-27 A		nions by Ion Chromatograpl		SC198_100711	8-C		
C111002-30 A		nions by Ion Chromatograpl		SC275_100711	8-C		
C111002-33 A		nions by Ion Chromatograpl		SC351_100711	8-C		
C111002-36 A		nions by Ion Chromatograpl		SC404_100711	8-C		
C111002-39 A		nions by Ion Chromatograpl		SC493_100711	8-C		
C111002-42 A		nions by Ion Chromatograpl		SC699_100711	8-C		
1110100-CCV2		QC	1052602	Calibration Check		-	
1110100-CCB2		QC		Calibration Blank		-	
1110100-CCV3		QC	1052602	Calibration Check		-	
1110100-CCB3		QC		Calibration Blank		-	
C111002-45 A		nions by Ion Chromatograpl		SC895_100711	8-C		
1110100-CCV4		QC	1052602	Calibration Check		-	
1110100-CCB4		QC		Calibration Blank		-	

PREPARATION BENCH SHEET

1110056

TechLaw, Inc. - ESAT Region 8

Printed: 10/26/2011 1:45:04PM

Matrix: Water

Date Prepared: 10/13/11 16:04 By: NP **Prepared using: WETCHEM - No Prep Req**

Lab Number	Analysis	EPA Tag ID	Initial (mL)	Final (mL)	Spike1 ID	ul Spike1	Spike2 ID	ul Spike2	Source ID	QC Code	Extraction Comments
1110056-BLK1	QC		10	10						Blank	
1110056-BS1	QC		10	10	1052401	100				LCS	
1110056-DUP1	QC		10	10					C111002-15	Duplicate	
1110056-MS1	QC		10	10	1052401	100			C111002-15	Matrix Spike	
1110056-MSD1	QC		10	10	1052401	100			C111002-15	Matrix Spike Dup	
100X C111002-02 A	nions by Ion Chromatograpl	8-C	10	10						;entineShaft455_100.	
C111002-04 A	nions by Ion Chromatograpl	8-C	10	10						;entineShaft475_100.	
C111002-06 A	nions by Ion Chromatograpl	8-C	10	10						;laineInflow1_10061	
C111002-09 A	nions by Ion Chromatograpl	8-C	10	10						3laineTunnel_10031	
C111002-12 A	nions by Ion Chromatograpl	8-C	10	10						BTD_100311	
C111002-15 A	nions by Ion Chromatograpl	8-C	10	10						SC068_100711	
C111002-18 A	nions by Ion Chromatograpl	8-C	10	10						SC068D_100711	
10X C111002-21 A	nions by Ion Chromatograpl	8-C	10	10						SC1094_100711	
C111002-24 A	nions by Ion Chromatograpl	8-C	10	10						SC1131_100711	
C111002-27 A	nions by Ion Chromatograpl	8-C	10	10						SC198_100711	
C111002-30 A	nions by Ion Chromatograpl	8-C	10	10						SC275_100711	
C111002-33 A	nions by Ion Chromatograpl	8-C	10	10						SC351_100711	
C111002-36 A	nions by Ion Chromatograpl	8-C	10	10						SC404_100711	
C111002-39 A	nions by Ion Chromatograpl	8-C	10	10						SC493_100711	
C111002-42 A	nions by Ion Chromatograpl	8-C	10	10						SC699_100711	
C111002-45 A	nions by Ion Chromatograpl	8-C	10	10						SC895_100711	

DG-264

ANION SUMMARY REPORT

No.	Name	Time min Fluoride ECD_1	Area µS*min Fluoride ECD_1	Rel.Area % Fluoride ECD_1	Height µS Fluoride ECD_1	Rel.Height % Fluoride ECD_1	Amount mg/L Fluoride ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	3.023	0.0542	3.94	0.39	6.24	0.2000
3	Std 2	3.023	0.1023	3.76	0.78	6.25	0.4093
4	Std 3	3.023	0.2371	3.36	1.96	5.86	0.9883
5	Std 4	3.030	0.9753	3.03	8.16	5.25	4.0027
6	Std 5	3.020	2.6265	2.90	21.67	5.28	9.9997
7	SEQ-ICV	3.003	2.4105	7.14	15.04	10.96	9.2626
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	2.997	1.1019	6.26	6.71	7.90	4.4957
11	C111002-15	3.020	0.0053	0.34	0.03	0.55	-0.0138
12	1110056-DUP1	3.007	0.0237	1.50	0.05	0.91	0.0670
13	1110056-MS1	2.993	1.1282	5.79	6.70	7.41	4.5974
14	1110056-MSD1	2.997	1.1258	5.78	6.76	7.45	4.5882
15	C111002-02 @100x	3.003	0.0333	1.63	0.12	2.03	0.1088
16	C111002-04 @100x	3.003	0.0337	1.65	0.12	2.09	0.1106
17	C111002-06 @100x	3.020	0.1951	1.42	0.98	2.38	0.8089
18	C111002-09 @100x	3.003	0.0753	0.87	0.36	1.40	0.2918
19	SEQ-CCV	3.003	0.8836	2.72	5.49	3.79	3.6414
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	3.013	0.0759	0.90	0.37	1.45	0.2947
22	C111002-18	3.003	0.0119	0.74	0.06	1.11	0.0150
23	C111002-21 @10x	3.007	0.1228	1.17	0.66	2.11	0.4978
24	C111002-24	3.010	0.0850	1.21	0.41	1.85	0.3339
25	C111002-27	3.000	0.0090	0.50	0.05	0.79	0.0024
26	C111002-30	3.003	0.0170	0.75	0.08	1.12	0.0377
27	C111002-33	3.007	0.0630	2.60	0.13	1.65	0.2385
28	C111002-36	3.007	0.0174	0.71	0.10	1.19	0.0394
29	C111002-39	3.013	0.0301	1.21	0.11	1.36	0.0950
30	C111002-42	3.017	0.0176	0.72	0.10	1.22	0.0402
31	SEQ-CCV	3.003	0.8760	2.70	5.72	3.83	3.6115
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	2.997	0.8821	2.73	5.76	3.86	3.6354
34	SEQ-CCV	2.997	0.8773	2.72	5.62	3.82	3.6163
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	3.003	0.0336	0.99	0.17	1.57	0.1102
37	SEQ-CCV	3.007	0.8824	2.72	5.72	3.86	3.6367
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	93.257	15.013	74.451	100.383	106.543	59.763
	Average:	3.008	0.484	2.402	3.238	3.437	1.928
	Rel.Std.Dev:	0.318 %	141.911 %	75.849 %	153.337 %	76.671 %	139.604 %

No.	Name	Time min Chloride ECD_1	Area µS*min Chloride ECD_1	Rel.Area % Chloride ECD_1	Height µS Chloride ECD_1	Rel.Height % Chloride ECD_1	Amount mg/L Chloride ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	4.62	0.314	22.89	2.253	35.74	2.3540
3	Std 2	4.62	0.622	22.89	4.506	36.02	3.9997
4	Std 3	4.62	1.675	23.74	12.489	37.33	9.5293
5	Std 4	4.65	7.993	24.87	61.226	39.41	40.1303
6	Std 5	4.67	22.775	25.12	162.892	39.71	99.9865
7	SEQ-ICV	4.51	2.592	7.68	16.164	11.78	14.2376
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	4.52	4.530	25.73	29.546	34.82	23.8634
11	C111002-15	4.50	0.075	4.78	0.440	8.14	1.0666
12	1110056-DUP1	4.50	0.075	4.73	0.450	8.20	1.0661
13	1110056-MS1	4.51	4.633	23.78	29.849	33.03	24.3654
14	1110056-MSD1	4.52	4.633	23.78	30.091	33.15	24.3639
15	C111002-02 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	C111002-04 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C111002-06 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C111002-09 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	4.54	8.018	24.72	54.707	37.84	40.2423
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C111002-18	4.50	0.079	4.90	0.482	8.53	1.0855
23	C111002-21 @10x	4.51	0.009	0.09	0.058	0.18	0.7096
24	C111002-24	4.50	0.080	1.14	0.500	2.26	1.0948
25	C111002-27	4.48	0.077	4.29	0.482	7.73	1.0769
26	C111002-30	4.48	0.078	3.44	0.485	6.40	1.0799
27	C111002-33	4.48	0.082	3.40	0.512	6.37	1.1053
28	C111002-36	4.48	0.080	3.22	0.498	6.01	1.0906
29	C111002-39	4.48	0.079	3.18	0.502	5.96	1.0886
30	C111002-42	4.49	0.079	3.23	0.504	6.13	1.0861
31	SEQ-CCV	4.50	8.020	24.75	56.955	38.08	40.2543
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	4.50	7.999	24.75	56.872	38.16	40.1560
34	SEQ-CCV	4.50	7.972	24.71	55.787	37.90	40.0332
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	4.50	0.079	2.33	0.505	4.61	1.0885
37	SEQ-CCV	4.52	8.011	24.68	56.311	38.06	40.2115
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	117.687	90.659	362.815	635.065	561.565	456.366
	Average:	4.526	3.487	13.954	24.426	21.599	17.553
	Rel.Std.Dev:	1.241 %	147.388 %	76.575 %	150.180 %	73.014 %	133.633 %

No.	Name	Time min Nitrite ECD_1	Area µS*min Nitrite ECD_1	Rel.Area % Nitrite ECD_1	Height µS Nitrite ECD_1	Rel.Height % Nitrite ECD_1	Amount mg/L Nitrite ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	5.673	0.171	12.446	0.951	15.094	0.535
3	Std 2	5.670	0.329	12.096	1.860	14.866	0.979
4	Std 3	5.667	0.867	12.288	4.854	14.509	2.479
5	Std 4	5.687	3.662	11.394	20.863	13.428	10.008
6	Std 5	5.693	9.698	10.697	53.125	12.952	24.999
7	SEQ-ICV	5.520	5.598	16.581	27.905	20.330	14.990
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	5.513	3.543	20.124	18.046	21.267	9.696
11	C111002-15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1110056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1110056-MS1	5.507	3.560	18.272	17.928	19.841	9.741
14	1110056-MSD1	5.513	3.558	18.260	17.997	19.830	9.735
15	C111002-02 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	C111002-04 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C111002-06 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C111002-09 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	5.527	3.702	11.414	19.390	13.412	10.114
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C111002-18	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C111002-21 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	C111002-24	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
25	C111002-27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	C111002-30	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
27	C111002-33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
28	C111002-36	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
29	C111002-39	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
30	C111002-42	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
31	SEQ-CCV	5.457	3.698	11.410	20.121	13.454	10.102
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	5.473	3.689	11.416	20.082	13.473	10.080
34	SEQ-CCV	5.477	3.681	11.413	19.843	13.480	10.059
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
37	SEQ-CCV	5.493	3.716	11.450	19.905	13.454	10.149
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	77.870	49.473	189.259	262.870	219.390	133.666
	Average:	5.562	3.534	13.519	18.776	15.671	9.548
	Rel.Std.Dev:	1.651 %	66.181 %	24.037 %	67.261 %	19.948 %	63.300 %

No.	Name	Time min Bromide ECD_1	Area µS*min Bromide ECD_1	Rel.Area % Bromide ECD_1	Height µS Bromide ECD_1	Rel.Height % Bromide ECD_1	Amount mg/L Bromide ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	6.943	0.033	2.373	0.164	2.595	0.474
3	Std 2	6.943	0.066	2.430	0.326	2.605	1.004
4	Std 3	6.933	0.164	2.320	0.812	2.427	2.531
5	Std 4	6.943	0.663	2.062	3.336	2.147	9.991
6	Std 5	6.930	1.782	1.965	9.146	2.230	25.001
7	SEQ-ICV	6.680	3.906	11.567	18.476	13.461	49.182
8	SEQ-ICB	7.373	0.005	100.000	0.007	100.000	0.042
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	6.687	0.645	3.664	3.027	3.567	9.734
11	C111002-15	6.683	0.421	26.782	1.885	34.899	6.444
12	1110056-DUP1	6.663	0.418	26.334	1.910	34.806	6.400
13	1110056-MS1	6.677	1.095	5.619	5.056	5.595	16.035
14	1110056-MSD1	6.690	1.094	5.617	5.072	5.588	16.029
15	C111002-02 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	C111002-04 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C111002-06 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C111002-09 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	6.707	0.673	2.074	3.234	2.237	10.135
20	SEQ-CCB	6.740	0.012	100.000	0.018	100.000	0.140
21	C111002-12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C111002-18	6.687	0.425	26.463	1.964	34.716	6.508
23	C111002-21 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	C111002-24	6.653	0.289	4.107	1.345	6.073	4.466
25	C111002-27	6.613	0.390	21.696	1.841	29.529	5.989
26	C111002-30	6.603	0.384	17.031	1.815	23.988	5.899
27	C111002-33	6.617	0.382	15.757	1.803	22.425	5.863
28	C111002-36	6.603	0.377	15.238	1.792	21.651	5.784
29	C111002-39	6.600	0.380	15.281	1.795	21.310	5.838
30	C111002-42	6.597	0.369	15.111	1.778	21.651	5.667
31	SEQ-CCV	7.423	4.296	13.255	19.208	12.844	53.191
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	6.613	0.668	2.067	3.337	2.239	10.068
34	SEQ-CCV	6.617	0.670	2.078	3.310	2.249	10.100
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	6.660	0.319	9.391	1.477	13.482	4.913
37	SEQ-CCV	6.643	0.668	2.060	3.310	2.237	10.072
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	182.523	20.594	452.345	97.245	526.550	287.498
	Average:	6.760	0.763	16.754	3.602	19.502	10.648

	Rel.Std.Dev:	3.236 %	135.672 %	151.587 %	132.729 %	132.640 %	120.904 %

No.	Name	Time min Nitrate ECD_1	Area µS*min Nitrate ECD_1	Rel.Area % Nitrate ECD_1	Height µS Nitrate ECD_1	Rel.Height % Nitrate ECD_1	Amount mg/L Nitrate ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	7.873	0.189	13.727	0.818	12.974	0.524
3	Std 2	7.870	0.370	13.596	1.610	12.867	0.997
4	Std 3	7.853	0.949	13.451	4.175	12.479	2.473
5	Std 4	7.840	4.224	13.144	18.713	12.044	10.008
6	Std 5	7.793	12.331	13.601	51.958	12.667	24.999
7	SEQ-ICV	7.537	4.425	13.107	18.023	13.131	10.433
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	7.540	4.154	23.594	17.475	20.595	9.857
11	C111002-15	7.570	0.020	1.242	0.077	1.433	0.078
12	1110056-DUP1	7.543	0.019	1.169	0.077	1.407	0.075
13	1110056-MS1	7.537	4.199	21.548	17.075	18.897	9.953
14	1110056-MSD1	7.550	4.195	21.531	17.094	18.835	9.946
15	C111002-02 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
16	C111002-04 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C111002-06 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C111002-09 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	7.560	4.299	13.253	18.530	12.818	10.166
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C111002-18	7.570	0.020	1.246	0.084	1.489	0.079
23	C111002-21 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	C111002-24	7.533	0.027	0.384	0.113	0.509	0.098
25	C111002-27	7.487	0.025	1.365	0.104	1.675	0.091
26	C111002-30	7.543	0.035	1.573	0.107	1.412	0.120
27	C111002-33	7.487	0.020	0.813	0.084	1.044	0.078
28	C111002-36	7.480	0.027	1.088	0.115	1.393	0.097
29	C111002-39	7.477	0.018	0.720	0.077	0.915	0.074
30	C111002-42	7.470	0.020	0.800	0.084	1.023	0.078
31	SEQ-CCV	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	7.460	4.292	13.281	19.086	12.805	10.151
34	SEQ-CCV	7.467	4.281	13.272	18.922	12.854	10.128
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	7.537	0.017	0.489	0.073	0.663	0.070
37	SEQ-CCV	7.490	4.284	13.200	18.937	12.799	10.134
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	182.067	52.437	211.194	223.412	198.729	120.707

Average:	7.586	2.185	8.800	9.309	8.280	5.029
Rel.Std.Dev:	1.857 %	135.659 %	89.432 %	134.941 %	84.723 %	127.189 %

No.	Name	Time min Phosphate ECD_1	Area µS*min Phosphate ECD_1	Rel.Area % Phosphate ECD_1	Height µS Phosphate ECD_1	Rel.Height % Phosphate ECD_1	Amount mg/L Phosphate ECD_1
1	Std 0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	Std 1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
3	Std 2	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	Std 3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
5	Std 4	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
6	Std 5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
7	SEQ-ICV	9.990	3.884	11.502	10.057	7.327	n.a.
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	9.093	0.007	100.000	0.013	100.000	n.a.
10	1110056-BS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
11	C111002-15	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
12	1110056-DUP1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
13	1110056-MS1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
14	1110056-MSD1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
15	C111002-02 @100x	9.080	0.016	0.779	0.019	0.324	n.a.
16	C111002-04 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17	C111002-06 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
18	C111002-09 @100x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
19	SEQ-CCV	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
22	C111002-18	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
23	C111002-21 @10x	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
24	C111002-24	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
25	C111002-27	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
26	C111002-30	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
27	C111002-33	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
28	C111002-36	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
29	C111002-39	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
30	C111002-42	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
31	SEQ-CCV	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
32	SEQ-CCB	9.390	0.009	26.346	0.013	18.688	n.a.
33	SEQ-CCV	9.993	0.487	1.507	1.146	0.769	n.a.
34	SEQ-CCV	9.993	0.501	1.552	1.167	0.793	n.a.
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
37	SEQ-CCV	9.997	0.501	1.544	1.146	0.774	n.a.
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

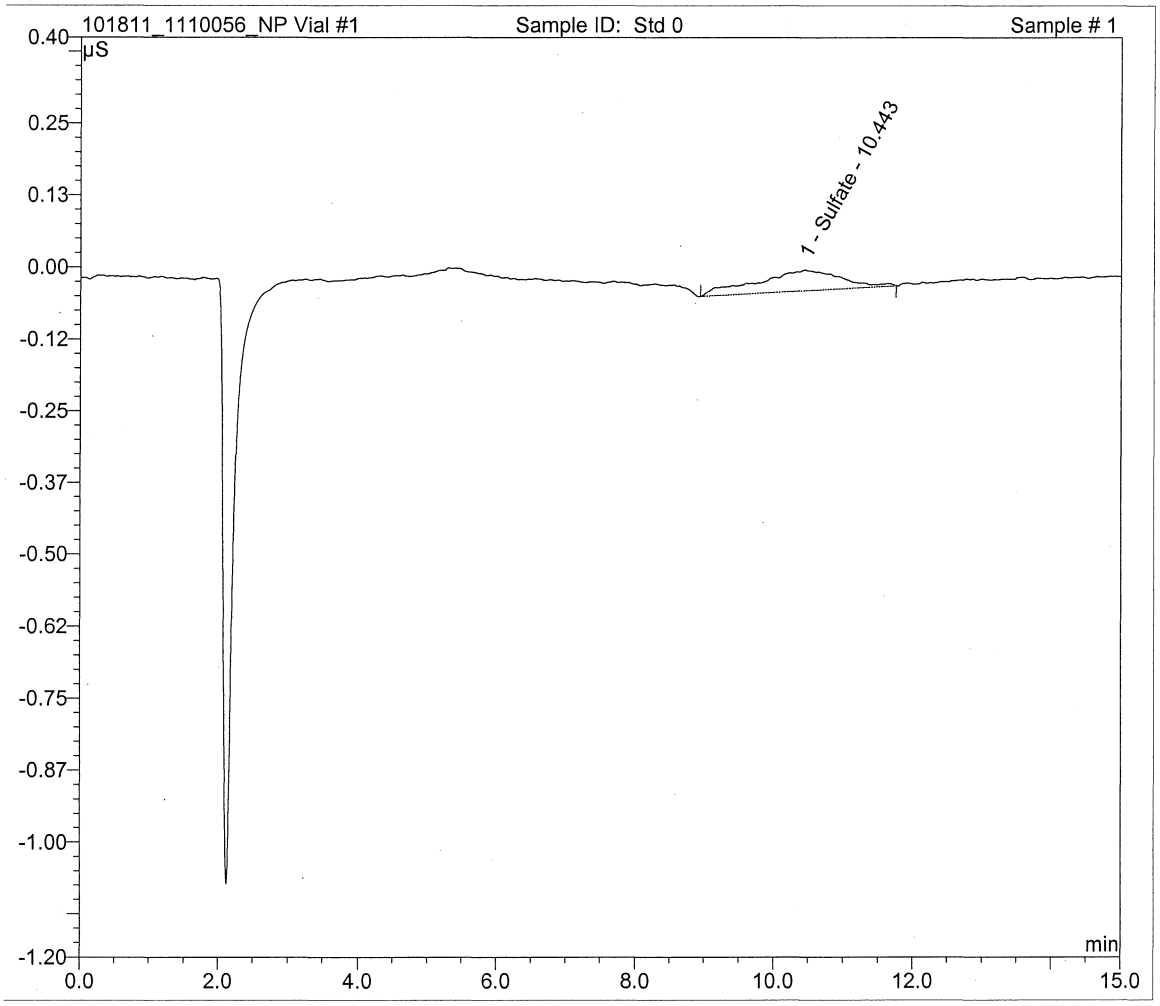
Sum:	67.537	5.404	143.230	13.560	128.675	0.000
Average:	9.648	0.772	20.461	1.937	18.382	#DIV/0!
Rel.Std.Dev:	4.585 %	180.501 %	177.375 %	187.156 %	199.133 %	#DIV/0!

No.	Name	Time min Sulfate ECD_1	Area µS*min Sulfate ECD_1	Rel.Area % Sulfate ECD_1	Height µS Sulfate ECD_1	Rel.Height % Sulfate ECD_1	Amount mg/L Sulfate ECD_1
1	Std 0	10.443	0.051	100.000	0.036	100.000	1.528
2	Std 1	11.693	0.591	43.037	1.663	26.393	5.682
3	Std 2	11.693	1.160	42.680	3.288	26.278	10.021
4	Std 3	11.697	3.035	43.027	8.841	26.426	24.067
5	Std 4	11.770	14.065	43.762	41.626	26.792	100.257
6	Std 5	11.850	39.974	44.091	107.337	26.169	249.973
7	SEQ-ICV	11.410	10.933	32.381	31.552	22.988	79.612
8	SEQ-ICB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
9	1110056-BLK1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
10	1110056-BS1	11.327	3.012	17.106	8.570	10.100	23.893
11	C111002-15	11.340	1.023	65.127	2.913	53.934	8.979
12	1110056-DUP1	11.350	1.023	64.505	2.945	53.664	8.982
13	1110056-MS1	11.350	4.242	21.773	12.372	13.692	32.923
14	1110056-MSD1	11.347	4.247	21.796	12.394	13.656	32.956
15	C111002-02 @100x	11.300	1.989	97.589	5.629	97.645	16.277
16	C111002-04 @100x	11.303	2.014	98.354	5.715	97.909	16.466
17	C111002-06 @100x	11.390	13.552	98.488	40.196	97.552	96.924
18	C111002-09 @100x	11.350	8.593	98.929	25.322	98.496	63.714
19	SEQ-CCV	11.367	14.387	44.352	42.097	29.119	102.339
20	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
21	C111002-12	11.367	8.398	98.986	24.867	98.466	62.369
22	C111002-18	11.320	1.044	65.030	3.006	53.137	9.141
23	C111002-21 @10x	11.370	10.366	98.743	30.670	97.704	75.803
24	C111002-24	11.387	6.547	92.871	19.724	89.088	49.438
25	C111002-27	11.350	1.286	71.462	3.721	59.698	10.971
26	C111002-30	11.380	1.730	76.671	5.042	66.629	14.329
27	C111002-33	11.357	1.860	76.725	5.467	67.981	15.304
28	C111002-36	11.387	1.958	79.226	5.706	68.928	16.046
29	C111002-39	11.407	1.952	78.442	5.746	68.194	15.998
30	C111002-42	11.420	1.946	79.723	5.716	69.587	15.954
31	SEQ-CCV	11.460	14.361	44.310	43.097	28.818	102.170
32	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
33	SEQ-CCV	11.387	14.298	44.246	42.773	28.696	101.766
34	SEQ-CCV	11.390	14.274	44.252	42.552	28.907	101.612
35	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
36	C111002-45	11.353	2.920	85.992	8.670	79.140	23.216
37	SEQ-CCV	11.393	14.392	44.345	42.629	28.812	102.375
38	SEQ-CCB	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

39	STOP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Sum:	364.707	221.225	2,058.019	641.885	1,754.600	1,591.084
	Average:	11.397	6.913	64.313	20.059	54.831	49.721
	Rel.Std.Dev:	1.977 %	115.837 %	41.111 %	111.371 %	56.464 %	104.365 %

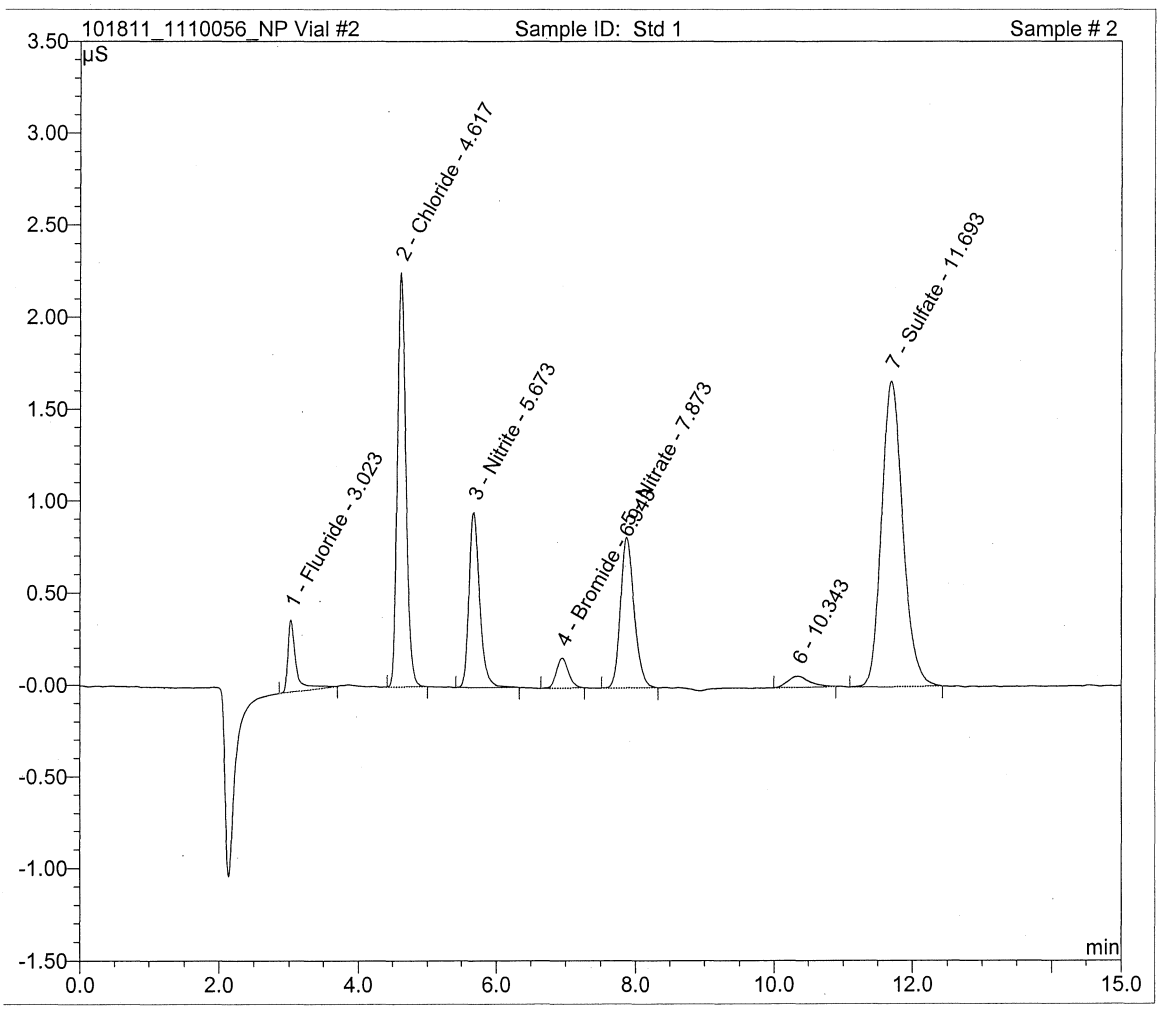
Sample Name:	**Std 0**	*Inj. Vol.:*	**25.0**
Sample Type:	**unknown**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**1**
Inj. Date/Time:	**06.28.11 09:04**	*Run Number:*	**1**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	10.44	Sulfate	BMB	0.051	0.036	1.5277



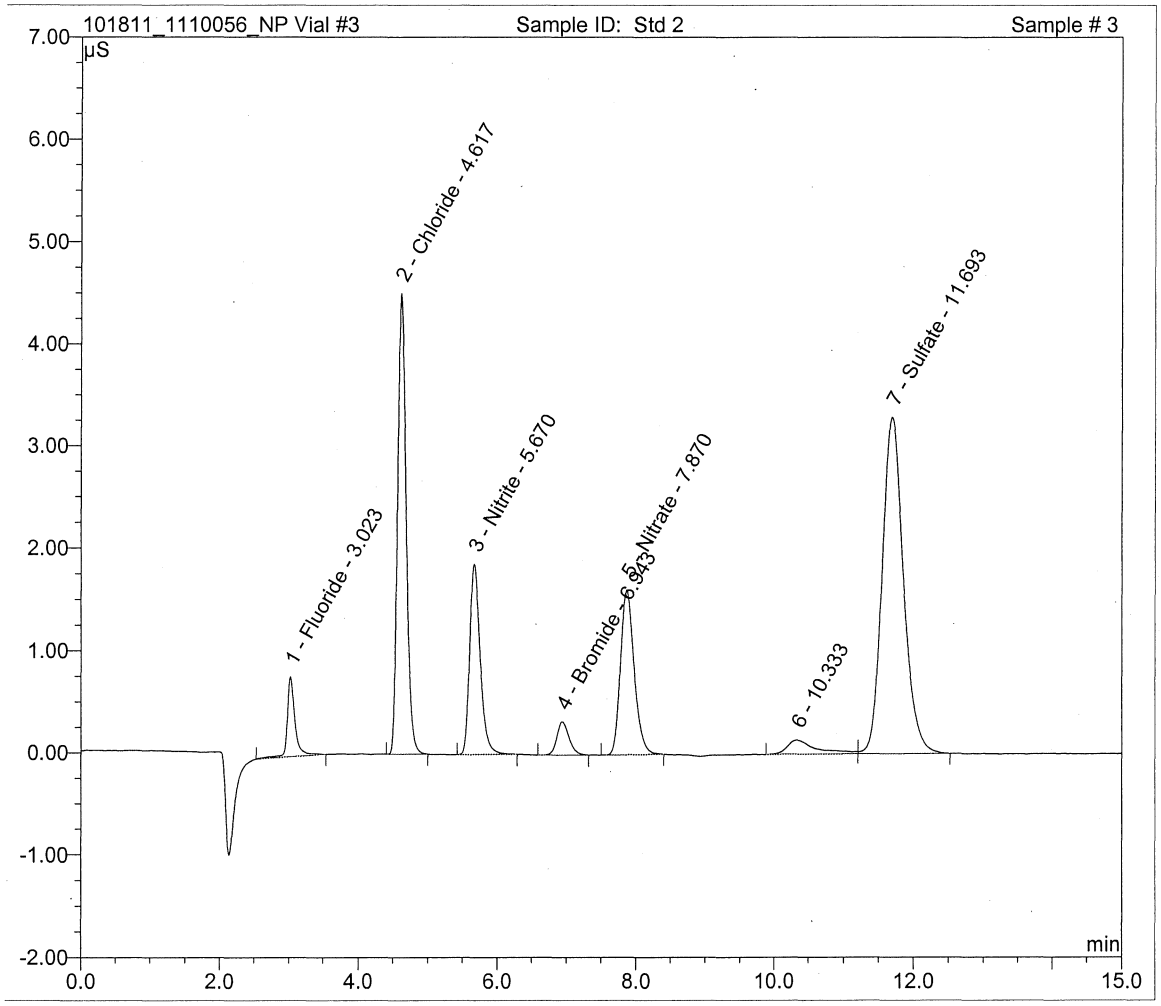
Sample Name:	**Std 1**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**2**
Inj. Date/Time:	**06.28.11 09:21**	*Run Number:*	**2**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.054	0.393	0.2000
2	4.62	Chloride	BMB	0.314	2.253	2.3540
3	5.67	Nitrite	BMB	0.171	0.951	0.5354
4	6.94	Bromide	BMB	0.033	0.164	0.4736
5	7.87	Nitrate	BMB	0.189	0.818	0.5239
7	11.69	Sulfate	BMB	0.591	1.663	5.6818



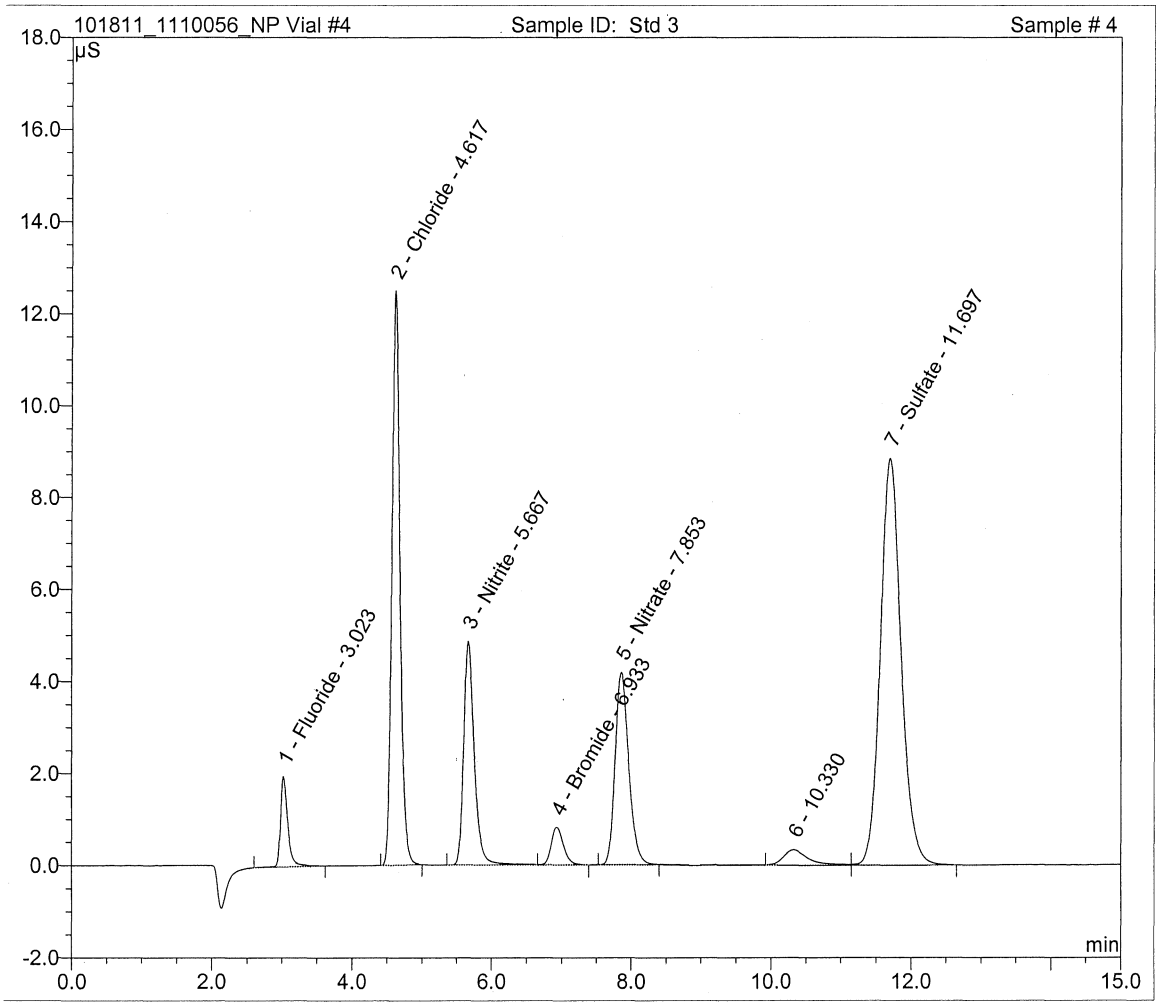
Sample Name:	**Std 2**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**3**
Inj. Date/Time:	**06.28.11 09:39**	*Run Number:*	**3**

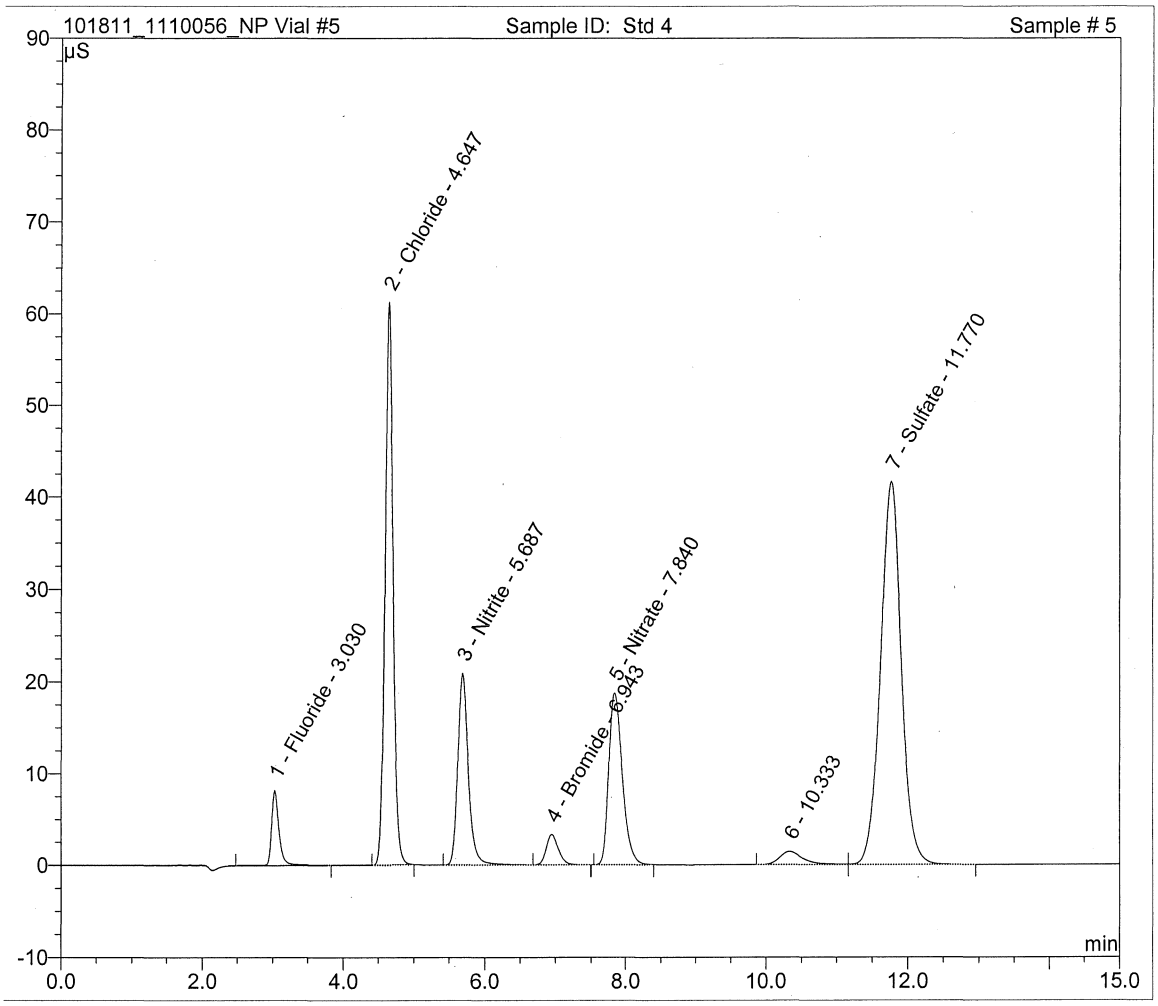
No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.102	0.782	0.4093
2	4.62	Chloride	BMB	0.622	4.506	3.9997
3	5.67	Nitrite	BMB	0.329	1.860	0.9789
4	6.94	Bromide	BMB	0.066	0.326	1.0035
5	7.87	Nitrate	BMB	0.370	1.610	0.9965
7	11.69	Sulfate	MB	1.160	3.288	10.0211



Sample Name:	**Std 3**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**4**
Inj. Date/Time:	**06.28.11 09:57**	*Run Number:*	**4**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.02	Fluoride	BMB	0.237	1.959	0.9883
2	4.62	Chloride	BMB	1.675	12.489	9.5293
3	5.67	Nitrite	BMB	0.867	4.854	2.4786
4	6.93	Bromide	Rd	0.164	0.812	2.5313
5	7.85	Nitrate	BMB	0.949	4.175	2.4729
7	11.70	Sulfate	MB	3.035	8.841	24.0667



Sample Name:	**Std 4**	*Inj. Vol.:*	**25.0**
Sample Type:	**standard**	*Dilution Factor:*	**1.0000**
Program:	**Program Anions Right**	*Vial #:*	**5**
Inj. Date/Time:	**06.28.11 10:14**	*Run Number:*	**5**

No.	Time min	Peak Name	Type	Area µS*min	Height µS	Amount mg/L
1	3.03	Fluoride	BMB	0.975	8.162	4.0027
2	4.65	Chloride	BMB	7.993	61.226	40.1303
3	5.69	Nitrite	BMB	3.662	20.863	10.0080
4	6.94	Bromide	Rd	0.663	3.336	9.9906
5	7.84	Nitrate	BMB	4.224	18.713	10.0075
7	11.77	Sulfate	MB	14.065	41.626	100.2571