ALS Environmental

EnviroMail™ 92 July 2015

Western Australian - Small Community Sampling Grid

SMALL COMMUNITY SAMPLING GRID (SCSG)

All mine sites and exploration camp operations in WA are required to comply with regulatory guidelines to ensure the safe supply of drinking water to their staff and the surrounding communities. These obligations involve:

- Compliance with ADWG 2004, as published by the National Health & Medical Research Council
- Provision of results of routine monitoring of water supplies to the Department of Health WA
- Establishing a drinking water quality monitoring program, involving chemical and microbiological analysis of drinking water.

The WA Department of Health issued the "Small Community Sampling Grid" as a guide to achieve compliance to the ADWG 2004.

ALS meets all the testing requirements including microbiological, chemical and radiological analyses compliant with the ADWG.

REPORT INFORMATION

ALS can provide a Certificate of Analysis and, if requested, a Guideline Comparison report that compares every data point to a guideline limit of the ADWG with a pass/fail comment. The Guideline Comparison report is designed to be used as a valuable tool to identify exceedences.

See Table 1 for an example of the ALS Guideline Comparison report.

ALS has a number of packages to assist clients in achieving compliant testing and also in optimising (reducing) bottle requirements.

DRINKING WATER QUALITY FOR MINESITES

ALS testing for mine sites for Small Community Sampling Grid (SCSG) analysis includes:

- Full NATA Accredited reporting - all tests
- Automated guideline comparison pass/fail reporting
- ADWG compliant LORs for all analytes
- Full ADWG OP pesticides (36 analytes)
- Microbiology including Amoeba with PCR confirmation
- Fully internal Radiological analysis
- **Customised ALS Packages** to meet SCSG categories

ALS SCSG Packages

- **P23/1** – Micro-organisms
- **P23/2** – Physical Characteristics (excl' Taste/Odour)
- **P23/3** – Inorganic Disinfection Agents and By-products
- **P23/4** – Organic Disinfection By-products A
- **P23/5** – Other Inorganic Chemicals
- **P23/6** – Treatment Organics
- **P23/7** – Industrial Hydrocarbons 1
- **P23/8** – Industrial Hydrocarbons 2
- **P23/9** – Organics other than disinfection By-products
- **P23/10** – Pesticides
- **P23 – all of the above – P23/1 to P23/10**

Sampling and logistics support

ALS recognises the challenges of working in remote locations and has significantly reduced the sample volume requirements for the SCSG testing. This will assist sampling times, reduce manual handling risks, reduce the weight of eskies and freight costs.

See Table 2- Information on the SCSG bottle requirements on page 3

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TABLE 1 -AN EXAMPLE OF THE GUIDELINE COMPARISON REPORT

Health & Aesthetic

Sub-Matrix: WATER

			Client sample ID	Small Community Grid	ADWG (2011) Health & Aesthetic based limits			
			Laboratory sample ID	EP1510236001				
			Client sampling date / time	[18-May-2015]				
Parameter	CAS Number	LOR	Unit	Result	Low	High	Unit	Evaluation
CM059: Miscellaneous								
2-Chlorophenol	—	0.0001	mg/L	<0.0001	—	0.1	µg/L	Pass
2.4-Dichlorophenol	—	0.0002	mg/L	<0.0002	—	0.3	µg/L	Pass
EA005P: pH by PC Titrator								
pH Value	—	0.01	pH Unit	6.00	6.5	8.5	pH Unit	Fail Low
EA041: Colour (True)								
Colour (True)	—	1	PCU	<1	—	15	HU	Pass
EA045: Turbidity								
Turbidity	—	0.1	NTU	15.0	—	5	NTU	Fail High
ED009: Anions								
Iodide	—	0.01	mg/L	<0.010	—	0.5	mg/L	Pass
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	—	1	mg/L	<1	—	250	mg/L	Pass
ED045G: Chloride by Discrete Analyser								
Chloride	—	1	mg/L	300	—	250	mg/L	Fail High
ED093F: Dissolved Major Cations								
Sodium	—	1	mg/L	300	—	180	mg/L	Fail High
EG020T: Total Metals by ICP-MS								
Aluminium	—	0.01	mg/L	<0.01	—	0.2	mg/L	Pass
Antimony	—	0.001	mg/L	<0.001	—	0.003	mg/L	Pass
Arsenic	—	0.001	mg/L	<0.001	—	0.01	mg/L	Pass
Beryllium	—	0.001	mg/L	<0.001	—	0.06	mg/L	Pass
Barium	—	0.001	mg/L	<0.001	—	2	mg/L	Pass
Cadmium	—	0.0001	mg/L	<0.0001	—	0.002	mg/L	Pass
Chromium	—	0.001	mg/L	<0.001	—	0.05	mg/L	Pass
Copper	—	0.001	mg/L	<0.001	—	1	mg/L	Pass
Lead	—	0.001	mg/L	<0.001	—	0.01	mg/L	Pass
Manganese	—	0.001	mg/L	<0.001	—	0.1	mg/L	Pass
Molybdenum	—	0.001	mg/L	<0.001	—	0.05	mg/L	Pass
Nickel	—	0.001	mg/L	<0.001	—	0.02	mg/L	Pass
Selenium	—	0.01	mg/L	<0.01	—	0.01	mg/L	Pass
Zinc	—	0.005	mg/L	<0.005	—	3	mg/L	Pass
Boron	—	0.05	mg/L	<0.05	—	4	mg/L	Pass
Iron	—	0.05	mg/L	<0.05	—	0.3	mg/L	Pass
Silver	—	0.001	mg/L	<0.001	—	0.1	mg/L	Pass
Uranium	—	0.001	mg/L	<0.001	—	0.017	mg/L	Pass
EG035T: Total Mercury by FIMS								
Mercury	—	0.00004	mg/L	<0.00004	—	0.001	mg/L	Pass
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	—	0.004	mg/L	<0.004	—	0.08	mg/L	Pass
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	—	0.01	mg/L	<0.01	—	0.41	mg/L	Pass
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	—	0.01	mg/L	<0.01	—	3	mg/L	Pass
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	—	0.01	mg/L	55.0	—	50	mg/L	Fail High
EP074A: Monocyclic Aromatic Hydrocarbons								
Benzene	—	1	µg/L	<1	—	1	µg/L	Pass
Toluene	—	1	µg/L	<1	—	25	µg/L	Pass
Ethylbenzene	—	1	µg/L	<1	—	3	µg/L	Pass
Styrene	—	1	µg/L	<1	—	4	µg/L	Pass

TABLE 2 - BOTTLE REQUIREMENTS FOR SMALL COMMUNITY SAMPLING GRID SUITES

ALS SCSG Packages	Bottle Type (preservation)	Analytes
P23/1 – Micro-organisms	1 x **250mL** sterile plastic (Grey - $Na_2S_2O_3$)	E. coli, Thermotolerant coliforms
	1 x **500mL** sterile plastic (Grey - $Na_2S_2O_3$) Amoebae **(DO NOT CHILL)**	Amoebae
P23/2 – Physical Characteristics (excl. taste & odour)	1 x **500mL** plastic (Green - *none*)	Hardness, DO, TDS, True colour, Turbidity, pH
P23/3 – Inorganic Disinfection Agents & By-products	1 x **125mL** plastic (Green - *none*)	Free Chlorine
	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*	Trihalomethane
P23/4– Organic Disinfection By-products A	2 x **40mL** Amber vials *(Ammonium Chloride)*	Haloacetic acid,
	1 x **100mL** Amber glass (Orange - *none*)	Trace Phenols, Chloral Hydrate
P23/5 – Other Inorganic Chemicals (excl asbestos)	2 x **125mL** plastic (Green - *none*)	Anions, nutrients, Cations
	1 x **60mL** plastic (Red/Green - *none*)	Metals
	1 x **60mL** plastic (Purple - *Sulfuric acid*)	Nutrients,
	2 x **60mL** plastic (Blue - *NaOH)*	Cyanide, Cr VI
	1 x **125mL** (Yellow Zinc Acetate/*NaOH*) 1 x **250mL**plastic (Light Blue – *AlCl3*)	Hydrogen Sulfide
P23/6 – Treatment Organics	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*	Carbon tetrachloride
	1 x **100mL** Amber glass (Orange - *none*)	Acrylamide
P23/7 – Industrial Hydrocarbons 1	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*	BTEX, Epichlorohydrin, VOCs
	1 x **100mL** Amber glass (Orange - *none*)	EDTA, NTA,
P23/8 – Industrial Hydrocarbons 2	2 x **500mL** Amber glass (Orange - *none*)	Organotins
	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*	BTEX
	2 x **100mL** Amber glass (Orange - *none*)	Plasticisers and super UT PAHs
P23/9– Organics excl' disinfection by-products	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*	Select VOCs
P23/10 – Pesticides	2 x **100mL** Amber glass (Lime Green)	All ultra-trace pesticides & Phenols
	1 x **60mL** plastic (Grey – *none*)	Paraquat & Diquat

ALS SCSG Package P23	Bottle Type (preservation)
Full ALS Package **P23** testing **Condensed bottle requirements** for P23/1 to P23/10	1 x **250mL** sterile plastic (Grey - $Na_2S_2O_3$)
	1 x **500mL** sterile plastic (Grey - $Na_2S_2O_3$) **(DO NOT CHILL)**
	1 x **500mL** plastic (Green - *none*)
	2 x **40mL** Amber vials (Purple - *Sulfuric Acid)*
	2 x **40mL** Amber vials *(Ammonium Chloride)*
	2 x **100mL** Amber glass (Orange - *none*)
	1 x **60mL** plastic (Red/Green - *none*)
	1 x **60mL** plastic (Purple - *Sulfuric acid*)
	2 x **60mL** plastic (Blue - *NaOH)*
	1 x **125mL** (Yellow Zinc Acetate/*NaOH*), plus 1 x **250mL**plastic (Light Blue – *AlCl3*)
	2 x **500mL** Amber glass (Orange - *none*)
	1 x **100mL** Amber glass (Lime Green)
	1 x **60mL** plastic (Grey – *none*)

Other occasional Testing requirements	Bottle Requirements
Asbestos in Water	1x **1000mL** plastic (Green - *none*)
Gross Alpha and Beta	1 x **1000mL** plastic (Red/Green - *none*)
Total Coliforms	1 x **250mL** sterile plastic (Grey - $Na_2S_2O_3$)
Taste and Odour	1x **1000mL** plastic (Green - *none*)

REFERENCE:

Government of Western Australia Department of Health – Drinking Water Scheme

The Model Drinking Water Quality Management plan: , Australian Drinking Water Guideline 2011 – updated 2015