

Scientific Reporting

Concise Specific Use Assessment
Scientific Interpretation Report
Monitoring system design, implementation and management
Dust deposition fall-out management
Air Quality Monitoring
Occupational Hygiene Monitoring

Field Monitoring

Surface water Monitoring
Groundwater Monitoring
Air Quality Monitoring
Occupational Hygiene Monitoring
Hydrocensus surveys
Aquifer testing and modelling

Combined Packages

Inorganic Analyses Packages

Package	SANAS	Variable
AQP 01	✓	Alkalinity, Cl, SO ₄ , NO ₃ , PO ₄ , NH ₄ , Fluoride, pH & Conductivity
AQP 02	✓	Alkalinity, Cl, SO ₄ , NO ₃ , PO ₄ , NH ₄ , Fluoride Ca, Mg, Na, K, Fe, Al, Mn pH & Conductivity, Total Hardness, Total Dissolved Solids
AQP 03	✓	Alkalinity, Cl, SO ₄ , NO ₃ , PO ₄ , NH ₄ , Fluoride Ca, Mg, Na, K, Fe, Al, Mn, Cr, Cu, Ni pH & Conductivity, Total Hardness, Total Dissolved Solids
AQP 04	✓	Alkalinity, Cl, SO ₄ , NO ₃ , PO ₄ , NH ₄ , Fluoride Ca, Mg, Na, K, Fe, Al, Mn, Cr, Cu, Ni, Pb, Zn, Cd, Co pH & Conductivity, Total Hardness, Total Dissolved Solids
AQP 06	✓	Alkalinity, Cl, SO ₄ , NO ₃ , PO ₄ , NH ₄ , Fluoride
	✓	Ca, Mg, Na, K, Fe, Al, Mn, Cr, Cu, Ni, Pb, Zn, Cd, Co
	○	Ag Bi Ga Li Rb Te Tl
	✓	B Ba Be Mo Si Sr V
	✓	pH & Conductivity, Total Hardness, Total Dissolved Solids

Microbiological Package

Package	SANAS	Variable
AQP 05	✓	Enumeration of Coliforms and Escherichia coli (Total coliforms & <i>E.coli</i>) Heterotrophic plate count (TVC)

Organic Analyses Packages

Package	SANAS	Variable
OLM 01	○	Benzene, Toluene, Ethyl benzene, m + p Xylene, O-Xylene (BTEX)
OLM 02	○	Trihalomethanes (Chloroform, Bromoform, Dibromochloromethane, Bromodichloromethane)
OLM 03	○	Screening method for Gasoline Range Organic (GRO) - Benzene, Toluene, Ethyl benzene, m + p Xylene, o-Xylen, MTBE Polycyclic Aromatic Hydrocarbons (PAH) - Acenaphthene, Acenaphthylene, Fluorene, Phenanthrene, Anthracene, Naphthalene Diesel Range Organic (DRO) - (C10, C11, C12, C13, C14, C15, C16)
OLM 04	○	Total Petroleum Hydrocarbons - (TPH C10-C16, C16-C22, C22-C30, C30-C40)
OLM 05	○	1,1-Dichloroethene, Methylene Chloride, trans-1,2- Dichloroethene, 1,1-Dichloroethane, 2,2-Dichloropropane, 2,2-Dichloropropane, 2,2-Dichloropropane, 2,2-Dichloropropane, cis-1,2-Dichloropropane, 1,1,1-Trichloroethane, 1,1,1-Dichloropropene, Benzen, 1,2-Dichloroethane, 1,2-Dichloroethane, Trichloroethene, 1,2-Dichloropropane, Bromodichloromethane, Dibromomethane, trans-1,3-Dichloropropene, Toluene, cis-1,3-Dichloropropene, 1,1,2-Trichloroethane, Tetrachloroethene, 1,3-Dichloropropane, Dibromochloromethane, 1,2-Dibromoethane, Chlorobenzene, 1,1,1,2-Tetrachloroethane, m+p-Xylene, o-Xylene, Styrene, Bromoform, Ethylbenzene, Isopropylbenzene, 1,1,2,2-Tetrachloroethane, Bromobenzene, 1,2,3-Trichloropropane, n-Propylbenzene, 2-Chlorotoluene, 1,3,5-Trimethylbenzene, 4-Chlorotoluene, 1,2,4-Trimethylbenzene, sec-Butylbenzene, tert-Butylbenzene, p-Isopropyltoluene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, n-Butylbenzene, 1,2-Dichlorobenzene, 1,2-Dibromo-3-chloropropane, 1,2,4-Trichlorobenzene, Hexachlorobutadiene, Naphthalene, 1,2,3-Trichlorobenzene

CHEMICAL ANALYSES VARIABLES

Package	SANAS	Variable
ALM 02	✓	Chloride (Cl)
ALM 03	✓	Sulphate (SO ₄)
ALM 04	✓	Orthophosphate (PO ₄) as P
ALM 05	✓	Ammonium (NH ₄) as N
ALM 06	✓	Nitrate (NO ₃) as N
ALM 07	✓	Nitrite (NO ₂) as N
ALM 08	✓	Fluoride (F)
ALM 09	✓	Hexavalent Chromium (Cr ⁶⁺)
ALM 10	✓	Chemical Oxygen Demand (COD)
ALM 11	○	Total Kjeldahl nitrogen (TKN)
ALM 11	○	Total Nitrogen (TN)
ALM 12	○	Total Phosphorus (TP)
ALM 13	○	Cyanide – screening test
ALM 14	✓	Free Cyanide (CN)
ALM 15	✓	Total Cyanide (CN)
ALM 16	✓	WAD Cyanide (CN)
ALM 20	✓	pH & EC
ALM 20	○	Temperature
ALM 21	✓	Turbidity

Package	SANAS	Variables Analyses
ALM 22	○	Color (Hazen)
ALM 23	○	Free Chlorine (Residual)
ALM 23	○	Total Chlorine
ALM 28	○	Dissolved oxygen (DO)
ALM 29	✓	Oil & Grease (SOG) - HEM
ALM 60	○	Acidity
ALM 61	○	Absorbed oxygen (AO)
ALM 62	○	Biological oxygen Demand (BOD)
ALM 63	✓	Total Organic Carbon (TOC)
ALM 63	○	Dissolved organic carbon (DOC)
ALM 64	○	Hydrogen Sulphide (0-5mg/l)
ALM 65	○	Ferrous (Fe ²⁺) & Ferric (Fe ³⁺)
ALM 67	○	Monochloramine
ALM 68	○	Mycrocystin (screening)
ALM 69	○	Redox Potential
ALM 70	○	Bromide (Br)
ALM 71	○	Phenol
ALM 29	○	Oil & Grease (SOG) - Petroleum ether soluble
ALM 60	○	Acidity

GRAVIMETRIC ANALYSES

Package	SANAS	Variable
ALM 24	✓	Total Dissolved Solids (TDS) - gravimetric
ALM 24	○	Total Solids Dried (TS)
ALM 25	✓	Suspended Solids (SS)
ALM 27	○	Total Soluble Matter

Package	SANAS	Variables Analyses
ALM 66	○	Settleable Solids 30 min
ALM 66	○	Settleable Solids 60 min
ALM 27	✓	Dust Deposition
Dust03	○	Quantitative XRD Mineral diffraction

ELEMENTS ICP-OES

Metal analyses are done either as Dissolved metals or Acid Soluble metals

Package	SANAS	Variable
ALM 30	✓	Ca Mg Na K
ALM 31	✓	(10) Al Fe Mn Cr Cu Ni Pb Zn Cd Co
ALM 32	○	(7) Ag Bi Ga Li Rb Te Tl
ALM 33	✓	(7) B Ba Be Mo Si Sr V
ALM 34	✓	Arsenic as As
ALMT	A	Total Metal Analyses - Ca Mg Na K Al Fe Mn Cr Cu Ni Pb Zn Cd Co B Ba Be Mo Sr V <i>Requires microwave digestion</i>

Package	SANAS	Variables Analyses
ALM 34	✓	Selenium as Se
ALM 35	○	Mercury as Hg
ALM 36	○	(3) Sb, Sn, Ti
ALM 37	✓	Uranium as U

CALCULATIONS

Package	SANAS	Variable
ALM 26	✓	Total Hardness
ALM 26	✓	Calcium Hardness
ALM 26	✓	Magnesium Hardness
ALM 26	✓	Total Dissolved Solids (TDS)
ALM 26	✓	Sodium Adsorption Ratio (SAR)
ALM 26	✓	Cations
ALM 26	✓	Anions
ALM 26	✓	Cations & Anions balance
ALM 26	○	Balancing
ALM 26	✓	Bicarbonate alkalinity
ALM 26	✓	Carbonate alkalinity
ALM 26	✓	Hydroxide alkalinity

Package	SANAS	Variables Analyses
ALM 26	✓	Free carbon dioxide
ALM 26	✓	Total carbon dioxide
ALM 26	✓	Converting PO ₄ as P to PO ₄
ALM 26	✓	Converting NH ₄ as N to NH ₄
ALM 26	✓	Converting NO ₃ as N to NO ₃
ALM 26	✓	Converting NO ₂ as N to NO ₂
ALM 26	○	Ammonia NH ₃ as N
ALM 26	○	Converting Si to SiO ₂
ALM 26	✓	Langelier saturation index (LSI)
ALM 26	✓	pHs
ALM 26	✓	Ryznar (Stability Index)
ALM 26	○	Trivalent Chromium (Cr ³⁺)

BACTERIOLOGICAL ANALYSES

Package	SANAS	Variable
ALM 40	✓	T. Coliforms & <i>E. coli</i> (<1 to > 100 000 CFU/100ml)
ALM 42	○	Faecal Coliforms (<1 to >100 000 CFU/ml)
ALM 45	✓	Heterotrophic plate count (<1 to 50 000 CFU/ml)

Package	SANAS	Variables Analyses
ALM 51	○	Salmonella (absent / present)
ALM 52	○	Cholera (absent / present)

Occupational Hygiene Monitoring

OHM 01	A	Gravimetric Analyses
OHM 02	A	Crystalline Silica analysis (on filter)
OHM 03	A	Diesel Particulate Matter (DPM)
OHM 04	A	Metal on MCE Filters (Cd, Co, Cr, Cu, Fe, Mn, Ni, Pb, Zn)

OHM 45	NA	SWAB - Total Microbial Activity (TMA) ($<1 - 50\,000\text{ cfu}/10\text{cm}^2$)
OHM 40	NA	SWAB - Pathogenic Indicator – Coliforms & E.coli SWABS ($<1 - 30\text{ cfu}/10\text{cm}^2$)

Geochemical Assessment

Analyses in this section is not accredited

Acid Base Characterisation Curve (ABCC)
Acid Potential AP
Acid-base accounting and pate pH
Organic Carbon
Sample preparation (crushing, milling)
Reagent water leach (procedure and analyses)

Total Carbon Analyses
Total Sulphur
Net Acid Generation
Sulphur speciation
X-ray diffraction (XRD)

Kinetic Column Analyses

pH, EC, SO₄, Cl, Talk, NO₃, PO₄,

Ca, Mg, Na, K, Al, Fe, Mn and ICP of ± 22 metal(loids), COD

Static Column Analyses

pH, EC, SO₄, Cl, Talk, NO₃, PO₄,

Ca, Mg, Na, K, Al, Fe, Mn and ICP of ± 19 metal(loids)

Mineral Waste Assessment

Analyses in this section is not accredited

Distilled Water Leach Analyses

pH, TDS (Grav), Cl, SO₄, NO₃, F

17 metals - Hg, As, B, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, V, Zn, CrVI

Total CN

TCLP and Borax Water Leach Analyses

pH, TDS (Grav), Cl, SO₄, NO₃, F

17 metals - Hg, As, B, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, V, Zn, CrVI

Total Concentrations

Digestion (Microwave Assisted Digestion)

16 metals - Hg, As, B, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, V, Zn

Moisture

Total CN

Paste pH

Redox Potential

Total Concentrations

Digestion (Microwave Assisted Digestion)

16 metals - Hg, As, B, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, V, Zn

Liquid Phase Analyses

pH, TDS (Grav), Cl, SO₄, NO₃, F

17 metals - Hg, As, B, Ba, Cd, Co, Cr, Cu, Mn, Mo, Ni, Pb, Sb, Se, V, Zn, CrVI

Redox Potential

Total CN

SANAS (South African National Accreditation System) schedule of accreditation for Aquatico Laboratory: <http://www.sanas.co.za/schedules/testing/T0685.PDF>

For your quote, please contact: office: (012) 450 3800 e-mail: quotes@aquatico.co.za