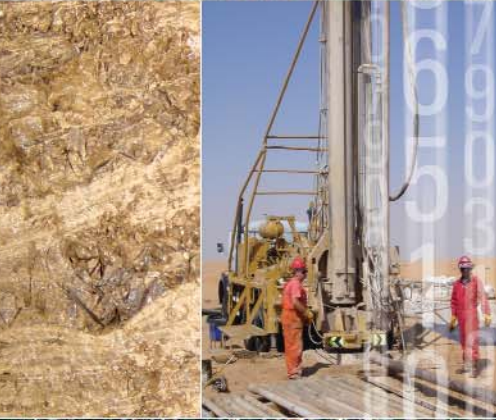# HydroGeo Analyst

From Data Discovery to Delivery

HydroGeo Analyst

Why is HydroGeo Analyst right for you?

HydroGeo Analyst* (HGA), developed by Schlumberger Water Services (SWS), is a comprehensive data management, visualization, and reporting program designed for efficient management of groundwater and environmental data—and is central for compiling reports to meet stringent regulatory requirements/guidelines.

Groundwater professionals use HydroGeo Analyst to:

- manage and report data from groundwater monitoring systems
- analyze data and complete regulatory environmental reports for site remediation projects
- assess potential water supplies to support mining operations
- develop GIS-based groundwater vulnerability maps to support source water protection plans
- manage and interpret hydrogeologic data for aquifer storage and recovery projects
- manage the complete lifecycle of groundwater from exploration to utilization

In a single software program, HGA's comprehensive workflow design, flexible data management structure, and complete range of integrated analysis, visualization, and reporting capabilities provide users with the tools necessary to gain a complete understanding of their groundwater and environmental data.

Who uses HydroGeo Analyst?

Government Agencies

In order to conduct a thorough environmental assessment, it is imperative to accurately define zoning and land use policies, and plan for mitigation measures. HGA provides the tools needed to:

- map environmentally sensitive areas
- cross-reference land use plans with existing zoning regulations
- characterize the subsurfaces, identify risks, and develop long-term water use plans

Water Supply Managers

Water Supply Managers have a mandate to provide clean, sustainable water supplies. With HGA, water professionals can efficiently address regulatory requirements in order to:

- map recharge areas critical to source water protection and regional water quality trends
- develop contingency plans in drought conditions
- analyze and report regional water quality trends
- complete summary reports of water and soil concentration data

All-in-one solution

- **Project Wizard:** easy-to-follow wizard for creating projects
- **Data Transfer System:** imports and validates all project data
- **Template Manager:** create and manage database templates
- **Materials Specification Editor:** manages all soil classifications
- **Query Builder:** performs on-the-fly, map-ready data queries
- **QA/QC Reporter:** analyze blank, duplicate and spiked samples
- **Map Manager:** for GIS mapping, contouring, gridding, etc.
- **Cross-Section Editor:** interpolate geologic, hydrogeologic and model layers - ideal for use with Visual MODFLOW!
- **HGA 3D-Explorer:** 3D visualization and animation of your data
- **Borehole Log Plotter:** borehole log design and plotting
- **Report Editor:** fully customizable reports, time series graphs, tables, maps, etc.

Logical data structure

HGA provides users with the ability to expand the scope, size, and structure of the database at any point in the project, or simply select from any of the standard regulatory-based database templates included. HGA also allows users to add or remove tables and fields, define unlimited number of soil specifications, and even export the modified database structure for use in new projects.

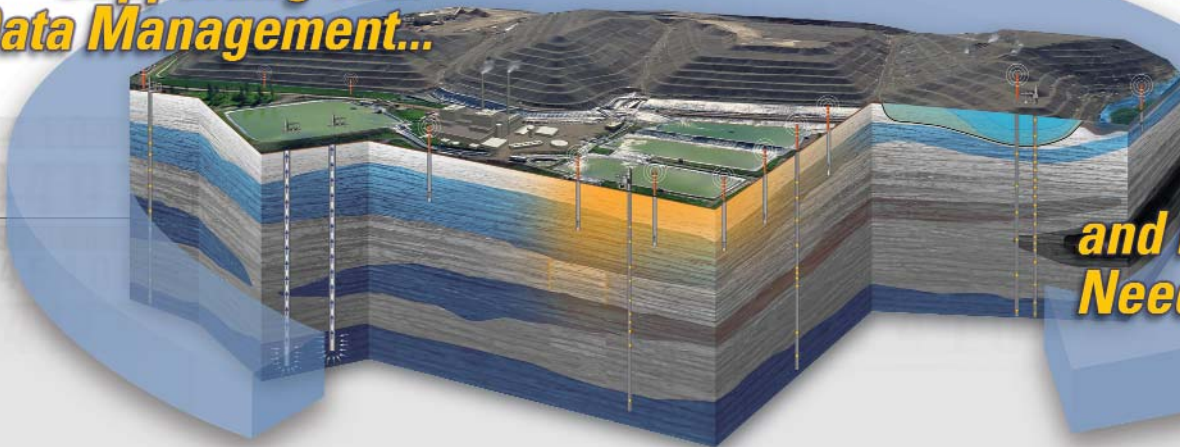HGA is equipped with four standard templates/data models including:

- SWS's own Environmental Database Template for groundwater data management, expands U.S. EPA Regions 2 & 5 standards,
- Ontario Ministry of Environment's Water Well Information System template designed for management of water well records, and
- The U.S EPA Regions 2 & 5 Environmental Data Models designed for environmental data management.

Reporting made easier

HGA includes a robust Report Designer, a time-saving component used for creating professional reports that contain vast amounts of data. Create report templates only once during the project, and these templates can be used for all similar projects, reducing the need to complete repetitive tasks such as setting up reports.

HGA provides a method of streamlining internal and regulatory compliance reporting, while also providing a process for managing environmental projects. HGA features a flexible reporting system, and allows users to view or export the results in multiple formats including maps, tables, charts, borehole logs, and more. When a specific report is needed, a simple query is performed to transform the data into a customized report.

Supporting Your Data Management...

and Reporting Needs!

Mining Professionals

Mining projects, whether for deep ore extraction or aggregates, require continuous data collection and management. HGA is ideal for supporting mining operations:

- manage water quality data (surface and groundwater)
- complete advanced 3D subsurface interpretations
- record continuous geologic logs
- store site information including site maps, roads, building layouts
- report analytical sample results (water and soil concentrations)
- map site activities (mine dewatering, monitoring stations), etc.

Groundwater Modelers

To develop 3D groundwater flow and contaminant transport models, groundwater modelers must incorporate various input. HGA assists groundwater modelers to:

- develop the conceptual model
- define hydrogeologic layers interpreted directly from borehole logs
- determine regional flow gradients directly from interpreted water elevation
- highlight concentration hotspots as initial or constant concentrations
- georeference raster images used as basemaps

Develop comprehensive reports including...

- GROUNDWATER MODELING REPORT
- HYDROGEOLOGIC ASSESSMENT
- SITE MONITORING SUMMARY
- WATER RESOURCE ASSESSMENT
- WELLHEAD PROTECTION STUDY
- WATER QUALITY REPORT
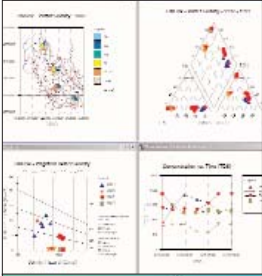- WATERSHED STUDY
- RISK ASSESSEMENT
- BOREHOLE LOG REPORT

Flexible reporting capabilities

Maps: The Map Manager, included with HGA, features ESRI™ mapping technology for preparing informative map style reports. Utilize a full range of standard GIS features for visualizing and reporting water table elevations, contaminant hotspots, recharge areas, and other geographic information.

Graphs and Tables: Another popular reporting feature is HGA's ability to create graphs and tables. Criteria exceedences can be queried, highlighted, and seamlessly sent to the built-in Report Manager. HGA users may also conveniently create time-series plots to view oscillating watertables, changes to concentration data, or for plotting multiple parameters. HGA also provides users the convenience of generating cross-tab queries to meet regulatory agency needs.

Cross-Section Interpretations: Water professionals can accurately and quickly interpret geologic and hydrogeologic layers, in addition to defining continuous layers for use in MODFLOW models. HGA's ability to simultaneously display and report borehole logs, concentration results, water elevations, and lithology empower users to truly gain a complete understanding of the subsurface environment.

Borehole Logs: HGA's Borehole Log Plotter offers a full range of features to support the design and plotting of professional borehole logs and well construction details. Choose from a compilation of pre-defined borehole log templates or prepare customized templates for your local reporting requirements.

3D Visualization and Animation: HGA 3D-Explorer brings data to life with a complete range of three-dimensional rendering and animation tools. Utilize the impressive images and animations in reports, technical presentations, or at public meetings. Explore the relationships between groundwater and geology, distribution of contaminant plumes and aquifers, landuse and wells, all within a single view.

Environmental Consultants

Environmental consultants comprised of engineers, hydrogeologists, and scientific experts work with numerous forms of data. HGA is specifically designed to assist environmental professionals:

- complete detailed reports of water and soil concentration data
- interpolate and contour water data to determine groundwater gradients
- manage data from groundwater monitoring programs (water levels, concentrations etc.)
- interpret and display geologic, and hydrogeologic subsurface conditions
- determine the spatial distribution of aquifers and aquitards
- report pumping test results and field observations
- develop models layers for MODFLOW models
- store site information including site maps, roads, building layouts, etc.
- map and catalog water well records
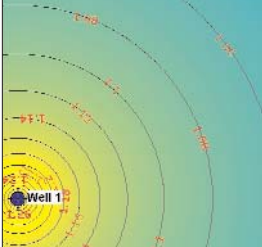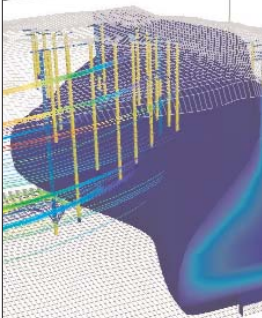- review well construction details to identify decommissioned wells, and more
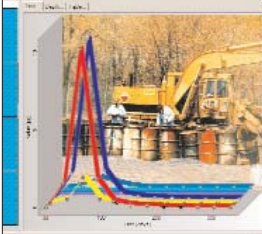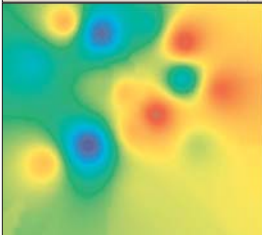
Waterloo Hydrogeologic Software
Environmental software designed to address your project needs

HydroGeo Analyst Data Exchange

Schlumberger Water Services' industry recognized software is used by consultants, regulatory agencies and educational institutions around the world. HydroGeo Analyst data management and visualization software is capable of receiving and exchanging information with the Waterloo Hydrogeologic Software (WHS) suite, plus numerous other commercial products. WHS is an innovative software suite that will take your project from inception to completion through solutions such as data management, analysis and visualization, as well as advanced reporting capabilities to ensure that you get the most out of your data.

	AquaChem* is specifically tailored for anyone working with water data, and is ideally suited for water projects requiring management, analysis, and reporting of their water quality data. AquaChem features a fully customizable database of physical and chemical parameters and provides a comprehensive selection of analysis, calculation, modeling, and graphing tools.	**Features:** • export hydrochemistry data from HGA and import to AquaChem for plotting or calculating statistics • export HGA water quality data to AquaChem, for plots and statistical analysis • export AquaChem stiff, pie, and radial plots to a SHP file to map water compositions in HGA
	Aquifer Test Pro* is specifically designed for graphical analysis and reporting of pumping test and slug test data. Import a vast range of data types including Westbay Probes, Diver dataloggers, or field observations. AquiferTest Pro includes features and tools for calculating hydraulic properties of the aquifer.	**Features:** • export a set of wells from HGA, and import as observation and pumping wells in AquiferTest • export pumping test water level data from HGA, to be used as time-water level data in an AquiferTest analysis • calculate transmissivity, storativity in AquiferTest, then store this data in the HGA hydrogeology table
	Visual MODFLOW Premium* is an industry-leading 3D groundwater flow and contaminant transport modeling package based on the USGS MODFLOW. Visual MODFLOW Premium incorporates various tools for determining groundwater flow and contaminant migration. Now features MIKE 11** integration for simulation of groundwater and surface water interactions.	**Features:** • property distribution data can be exported from HGA and imported and interpolated in Visual MODFLOW Premium • interpreted model layers created in HGA can be exported and used for model creation in Visual MODFLOW Premium • export georeferenced basemaps created in HGA and import into Visual MODFLOW Premium • pathlines can be exported from Visual MODFLOW Premium and shown in HGA's Map Manager
	UnSat Suite Plus* is a fully-integrated software package that combines models for simulating one-dimensional groundwater flow and contaminant transport in the unsaturated zone (includes SESOIL, VS2DT, VLEACH, PESTAN and the HELP model).	**Features:** • model pollutant fate and transport of leaky UST's • predict impacts on groundwater supply wells from pesticide and herbicide applications • estimate groundwater recharge and contaminant loading rates and export to Visual MODFLOW Premium
	GW Contour* represents the latest data interpolation and contouring program and incorporates advanced techniques for mapping velocity vectors and particle tracks within one, easy-to-use program. GW Contour also features built-in reporting tools allowing users to customize views or create templates for future use.	**Features:** • data sets can be quickly generated within HGA using the query builder and exported to be used in GW Contour • easily import basemaps created in HGA • interpolated results in GW Contour can be exported and easily imported into HGA's 3D-Explorer

Waterloo Hydrogeologic Software
Environmental software designed to address your project needs

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