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THE HYDROGRAPH ANALYST, AN ARCVIEW GIS EXTENSION THAT INTEGRATES POINT, SPATIAL, AND TEMPORAL DATA AND PROVIDES A GRAPHICAL USER INTERFACE FOR HYDROGRAPH ANALYSIS

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The Hydrograph Analyst (HA) is an ArcView GIS 3.2 extension developed by the authors to analyze hydrographs from a network of ground-water wells and springs in a regional ground-water flow model. ArcView GIS integrates geographic, hydrologic, and descriptive information and provides the base functionality needed for hydrograph analysis. The HA extends ArcView's base functionality by automating data integration procedures and by adding capabilities to visualize and analyze hydrologic data. Data integration procedures were automated by adding functionality to the View document's Document Graphical User Interface (DocGUI). A menu allows the user to query a relational database and select sites which are displayed as a point theme in a View document. An 'Identify One to Many' tool is provided within the View DocGUI to retrieve all hydrologic information for a selected site and display it in a simple and concise tabular format. For example, the display could contain various records from many tables storing data for one site. Another HA menu allows the user to generate a hydrograph for sites selected from the point theme. Hydrographs generated by the HA are added as hydrograph documents and accessed by the user with the Hydrograph DocGUI, which contains tools and buttons for hydrograph analysis. The Hydrograph DocGUI has a 'Select By Polygon' tool used for isolating particular points on the hydrograph inside a user-drawn polygon or the user could isolate the same points by constructing a logical expression with the ArcView GIS 'Query Builder' dialog that is also accessible in the Hydrograph DocGUI. Other buttons can be selected to alter the query applied to the active hydrograph. The selected points on the active hydrograph can be attributed (or flagged) individually or as a group using the 'Flag' tool found on the Hydrograph DocGUI. The 'Flag' tool activates a dialog box that prompts the user to select an attribute and 'methods' or 'conditions' that qualify the attribute. Attributes and qualifying information are dynamically written to a database designated by the user.

Key words: ArcView, GIS, hydrograph, analysis, ground-water