USER'S MANUAL FOR THE NATIONAL WATER INFORMATION SYSTEM OF THE U.S. GEOLOGICAL SURVEY

GROUND-WATER SITE-INVENTORY SYSTEM

Open-File Report
Version 4.3

ABSTRACT

The Ground-Water Site-Inventory (GWSI) System is a ground-water data storage and retrieval system that is part of the National Water Information System (NWIS) developed by the U.S. Geological Survey (USGS). The NWIS is a distributed water database in which data can be processed over a network of workstations and file servers at USGS offices throughout the United States. This system comprises the GWSI, the Automated Data Processing System (ADAPS), the Water-Quality System (QWDATA), and the Site-Specific Water-Use Data System (SWUDS).

The GWSI System provides for entering new sites and updating existing sites within the local database. In addition, the GWSI provides for retrieving and displaying ground-water and sitefile data stored in the local database. Finally, the GWSI provides for routine maintenance of the local and national data records. This manual contains instructions for users of the GWSI and discusses the general operating procedures for the programs found within the GWSI Main Menu.

1 INTRODUCTION

by Leslie W. Lenfest, Jr.

This section is an introduction to the GWSI User's Manual. It presents a management overview, description of the GWSI System, purpose of the manual, an acknowledgement of personnel who contributed to the completion of this manual, and a list of selected references.

1.1 Management Overview

The USGS investigates the occurrence, quantity, quality, distribution, and movement of the surface- and ground-water resources of the Nation. Hydrologic data collected during investigations of these resources provide valuable information that can be used for practical management of America's water. Easy access to hydrologic data facilitates the management process.

The GWSI is part of the NWIS, which is a data storage and retrieval system for hydrologic data collected by the USGS and its cooperators. The ADAPS, QWDATA System, and SWUDS comprise the other parts of the NWIS.

1.2 Description of the GWSI

The storage of ground-water data has evolved over several decades, from hand-written field notes stored in file cabinets at the State office level, to a distributed database where data can be processed over a network of UNIX workstations and file servers at USGS offices throughout the United States. Digital storage of data has developed from a punch-card data system in the late 1960's, to a national database in the mid 1970's, to a distributed database in the mid 1980's, and presently to an Ingres-based database where data are stored as tables. Much of the data are served to a Web-based national database (NWISWeb). The present system is a conversion of the distributed database on the Prime minicomputers to UNIX-based workstations and file servers located in USGS offices nationwide. Turnaround time for data storage and retrieval procedures has improved during this period from several days to minutes.

Currently, the GWSI is an interactive system, located on USGS workstations and file servers that maintains a dialog with the users through menus and prompts. The GWSI provides a method to enter new sites and update existing sites within the database. The GWSI also provides a method to retrieve and display, in several useful formats, ground-water and sitefile data that are stored in the local database. Finally, the GWSI provides for routine maintenance of the local and national data records.

The GWSI contains descriptive elements about sites where information is accessed from wells, test holes, springs, tunnels, drains, ponds or other excavations. There are over 500 components that make up the descriptive elements of the GWSI. These components are stored in a general data file called the "sitefile," which contains site information common to all members of NWIS, and in over 25 data tables that contain ground-water-related information. The sitefile primarily contains location information, physical and political descriptors, and data-collection methods used at the sites. The data tables contain well-construction, ground-water level, ground-water discharge, miscellaneous, geohydrologic, observation-well heading, and hydraulic data.

Ground-water data manipulations are initiated through GWSI utilities accessed through the GWSI Main Menu and submenus. The GWSI Main Menu is accessed by typing the system command "gwsi" at the user's terminal. This command displays the menu shown in the *Ground-Water Site Inventory Main Menu*, discussed in Chapter 3.

The GWSI System provides two programs, Query Entry and Screen Entry, for entering field data into files used to update the local database. Files created by the entry programs are reviewed and validated by the Ground-Water Edit program to ensure that entered data conform to expected criteria. Once the data pass the Edit program, they are entered into the databases using the Ground-Water Update program. Data may be retrieved from the

local database through the Ground-Water Retrieval/Tabling program and displayed in graphical form using the Ground-Water Hydrograph program.

The GWSI System Menu is used to provide maintenance of the database and for other GWSI administrative tasks. Data Dictionary modifications and Site ID changes and deletes are other options on the GWSI System Menu.

1.3 Purpose of the Manual

The purpose of this User's Manual is to document the operating modules of the GWSI and provide additional operating instructions to the user.

The GWSI User's Manual describes the primary user functions found in the GWSI Main Menu and submenus:

Section	Description
1	Abstract and Introduction
2	GWSI Coding Instructions
3	GWSI Menus
4	Query Entry Program
5	Screen Entry Program
6	Ground-Water Edit Program
7	Ground-Water Update Program
8	Ground-Water Retrieval/Tabling Program
9	Ground-Water Hydrograph Program
10	Field Forms
11	Ground-Water Local Translation Program
12	Inventory Station in GWSI and QWDATA
13	Query Support Files
14	Change Default Database Number
15	Error Messages

The GWSI Coding Instructions (Chapter 2 of this manual) describe every data component contained in the sitefile and ground-water data records. Component descriptions consist of the component name, component number, the format of the entry, and a brief explanation of what the component is and how it is entered. Mandatory components are identified. Several components are limited in response to a list of acceptable names or terms; acceptable responses are tabulated in the manual for those components.

The GWSI Menus (Chapter 3) and their elements are described. Most of the nationally supported GWSI software that is used to submit and retrieve data is accessed from the Main Menu. Currently, there are 12 data entry and retrieval selections on the GWSI Main Menu, two submenus (Utilities and Documentation), access to a specified Local Menu, and two exit modes from the Main Menu. The Utilities submenu contains access to six data utility programs, two database maintenance menus, and two exit modes. The Documentation submenu now opens in a separate browser window.

GWSI Main Menu

The Query Entry program (Chapter 4) is the first of two modules in the GWSI Main Menu used to prepare sitefile and ground-water data for editing and updating. Although both modules create card images in user-specified records that ultimately are used for updating local and national databases, neither module *directly* updates databases. The Query Entry program is an interactive program that prompts the user with a defined list of GWSI components. It stores user responses along with the required component numbers, delimiters, and other program-generated elements used by the Edit program in a user-specified output file.

The Screen Entry program (Chapter 5) is the second module used to prepare data for editing and updating. Screen Entry input displays a "form" to be filled in by the user. It stores user responses along with the required component numbers, delimiters, and other program-generated elements in a user-specified output file.

The Edit program (Chapter 6) performs edit validation and logical data checks on the output files created by the Query Entry and Screen Entry programs. Edit checks may be initiated for interactive processing or batch processing. Both processing modes are discussed in Chapter 6.

The Update program (Chapter 7) is used to update the NWIS sitefile and the GWSI data records in the database after the data records have successfully passed the Edit GWSI Data program. This program is also available in either interactive or batch modes.

The Retrieval/Tabling program (Chapter 8) provides access to the data stored in the database. Retrieved data may be obtained in several formats: two types of general data tables, four types of water-level tables, and as a data record that can be used as input into other programs. A list of all component numbers and their descriptions is included in this section.

The Plot Hydrographs program (Chapter 9) provides graphical representation of ground-water levels. Data are retrieved using the Retrieval/Tabling program and displayed on the user's monitor or at a designated printer using TKG2 graphics.

The Field Forms program (Chapter 10) generates a form that can be used in the field to collect data. The form contains user-specified components, and in some instances, may be pre-populated with data from the database that are helpful in determining the location of the site and in collecting the data.

```
**********************************************************************
*  Main Menu for WRD GWSI Database # 1  --  NWIS_4_3+20010627
**********************************************************************
Code   Program Description              Code   Program Description
----   ------------------              ----   -------------------
  1 : Query Entry                       11 : Generate Field Forms
  2 : Screen Entry
  3 : Edit GW Data (from 1-2)           13 : Edit GW Data in Batch
  4 : Update GW Data (from 3)           14 : Update GW Data in Batch
  5 : Update Sitefile Only (runs 2,3,4)
  6 : Retrieval/Tables                  16 : Plot Hydrographs
  7 : Copy File (from 1-2) to Directory watin


 10 : Change GW/QW Database #
                                        91 : Utilities Menu
 96 : Documentation Menu                97 : Local Menu


 98 : Exit to Previous Menu            99 : Exit to UNIX


Enter UNIX Command or Select Program Code:
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GWSI Main Menu

GWSI Utilities Menu

The Translate Station program (Chapter 11) is an interactive procedure that translates the station name of a site or sites into the agency code and site identification number of the site(s).

The Inventory Station program (Chapter 12) retrieves sites by agency and site identification number listed in a user-specified input file and reports the number of records in the sitefile, ground-water data records, water-quality data records, ADAPS, and SWUDS records for that site.

The Query Support Files procedure (Chapter 13) displays a menu that accesses specified site records, checks and lists the Parameter Code Dictionary, accesses the Geologic Unit Code and Federal Information Processing Standards (FIPS) Code files, and lists State and County data.

The Change Default Database Number utility (Chapter 14) allows the user to change the default number for ground-water and/or water-quality databases.

Error messages (Chapter 15) list the code number and description of all error messages that can occur during the Edit and Update procedures.

The user is led through the basic modules by a series of prompts and questions. In many instances, help is provided when a question mark (?) is typed in response to a prompt that is not understood. Additional documentation is available from the User's Manual or documentation files contained within the GWSI system.

1.4 Acknowledgements

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1.5 Selected References

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