3 Data Entry Rules

3.1 Introduction

This document describes the data entry rules associated with the SWUDS Batch Entry System. The user will learn the rules for adding, modifying, and deleting data for sites, owners, contacts, permits, conveyances, water quantities, place-of-use site quantities, ancillary data and population data. An appendix covers how the system converts water-quantity values to million gallons per day, rounds values, uses significant figures, and calculates annual values.

The section "General Instructions for Adding, Modifying, and Deleting Data" is good place for first-time users to begin learning the basics of entering water-use data.

3.2 General Instructions for Adding, Modifying, and Deleting Data

This section provides a general overview of adding, modifying, and deleting data using the SWUDS Batch Entry System. The section "Adding Data" covers the basics of deciding what data to compile and how to best add the data to the database. Steps for data entry are shown for typical water-use data. The section "Modifying Data" explains how to modify existing data and how to remove selected attributes or replace them with a blank space. The section "Deleting Data" explains how to go about deleting complete sets of data.

3.2.1 Adding Data

The first thing a user needs to do is to identify the type of data that will be compiled and then select the most appropriate SWUDS data entry model.

SWUDS supports point-oriented models, such as a collection of wells; network-based models, such as connecting sources of water to their places-of-use; and aggregate models, such as entering the aggregate amounts of water transferred from a distribution system to an aggregate user.

Once a data model is selected, the user will organize the data into files that follow the data structure of the SWUDS input views. The SWUDS Template Builder program can be used to create data entry templates in Microsoft Excel. The templates mimic the structure of the SWUDS input views.

Once the data have been compiled, they will be added into SWUDS in a predefined order, using the SWUDS Batch Entry System. There are a number of data dependencies that determine the order of entry.

Typically a user will want to do one of three things: add sites, add water-quantity data, add place-of-use site quantity or add ancillary data.

Available Data Entry Models:

All models are based on a link-node (network-based) data structure. Sites represent either hydrologic sources, places where water is used, or water/wastewater destinations. In the real world sites may be physically connected by a conveyance structure like a pipe or a canal. In SWUDS, a site can be considered a node within a water-use network. A conveyance is modeled in SWUDS as an association or link between two sites, a From-Site (source) and a To-Site (destination). Conveyances are stored in the SWUDS conveyance table. Sites can be standalone nodes in the network, which means that the site is not linked to any other site. The sites can also be connected to form any size network where water can be tracked from the original source to places-of-use to eventual return. Once conveyances have been entered, the water-quantity values, such as withdrawals, returns, transfers, and loss-gains, can be entered.

The user creates the infrastructure (collection of conveyances) once. Then annual and monthly data can be added to that infrastructure annually.

Suggested Order of Data Entry:

The SWUDS Batch Entry System uses a collection of views to assist the user with data entry. A view is a selected group of attributes that are logically associated with a theme of related data. For example, the Site View is comprised of all the attributes of the NWIS Sitefile. The view names are purely logical and may or may not be physically implemented using the same data structure in the database.

The main window of the SWUDS Batch Entry System shows the relationships between the views. Views highlighted with blue are major starting points for adding new data. The relationships between views are indicated with lines.

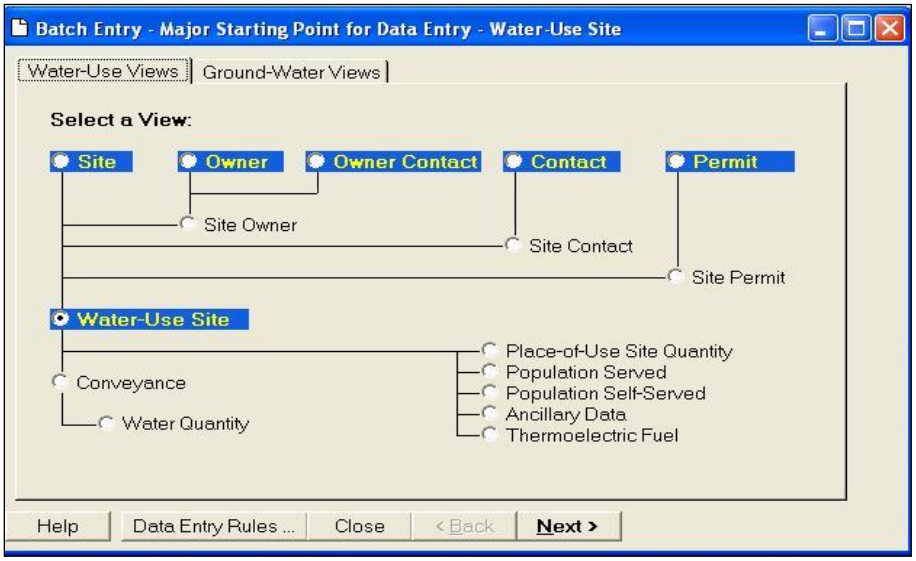

Figure 80. Main window of SWUDS Batch Entry System.

For example, the line connecting the Owner and Site Owner View implies a relationship between owners and sites. An owner record (owner's name, address, and phone number) must exist in the database before an owner record can be assigned to a site record. The Owner View (a major starting point for adding new data) will first be used to establish an owner in the database. Then the Site Owner View will be used to assign owners to sites. The following views are used with

the Batch Data Entry System (listed in suggested order of data entry):

View Short Name	View Long Name	Description
SITE	Site	Common attributes associated with the NWIS Sitefile, such as site identifier, site type, latitude, and longitude.
WUSITE	Water-Use Site	Additional site-related attributes that are only associated with water-use sites, such as standard industrial classification code (SIC code).
THERMOFUEL	Thermoelectric Fuel	Types of fuel and cooling method used by a thermoelectric power plant.
PERMIT	Permit	Selected permit information.
SITEPERMIT	Site Permit	An association of one or more sites to a permit.
OWNER	Owner	Address and phone of an owner.

View Short Name	View Long Name	Description
OWNERCONTACT	Owner Contact	Address and phone of an owner contact, the contact associated with the owner.
SITEOWNER	Site Owner	The association of one or more owners to a site.
CONTACT	Contact	Address and phone of a contact.
SITECONTACT	Site Contact	The association of one or more contacts to a site.
CONVEYANCE	Conveyance	Conveyance connection, such as from-site identifier, to-site identifier, conveyance type, and conveyance capacity.
WATERQUANTITY	Water Quantity	Annual and monthly water quantities for a site or conveyance, such as groundwater withdrawals.
PSITEQUANTITY	Place-of-Use Site Quantity	Annual and monthly water quantities for a site, such as consumptive use, recycled water, and instream use.
ANCILLARY	Ancillary Data	Other annual or monthly data used to estimate water-use data, such as crop production.
POPSELFSERVED	Population Self-Served	Annual population represented at a site, such as the population that is on septic.
POPSERVED	Population Served by Public Supply	Annual population represented at a site, such as the population served by public supply.
SPNG	Spring	Detailed information regarding the type and use of a spring.
GEOH	Geohydrologic Unit	Geologic and lithologic classifications for specific subsurface horizons.
AQFR	Aquifer	Geologic and hydraulic characteristics for subsurface horizons that are considered aquifers.
LEV	Water Level	Records of water levels measured at a station.
CONS	Well-Construction	How, when, and by whom a station was constructed.
HOLE	Hole	Width and depth of the hole that was created for a well.
CSNG	Casing	Width, length, and material of casing that was used in well construction.
OPEN	Openings	Width, length, and material of the screen or other opening of a well.
LIFT	Lift	Information regarding the pump or other lift device used to bring water to the surface.
REPR	Repairs	General repairs information for a well or spring.
MPNT	Measurement Point	Height or altitude of the point from which water levels are measured.
OTID	Other Identifier	Additional identifiers by which a station is known.
OTDT	Other-Data-Available	Description of data acquired that does not reside in NWIS.
VIST	Site-Visits	Dates on which a person visits a station.
LOGS	Geophysical Logs	Depth and type of geophysical logs obtained at a station.
SPEC	Special Cases	Special information for collector wells, tunnels, and drains.
MSVL	Miscellaneous Values	Placeholders for miscellaneous values that otherwise not reside in NWIS.
COOP	Cooperator's Data	Records about the cooperator who helps with data collection or funding for a station.
RMKS	Remarks	Miscellaneous remarks about a station.

View Short Name	View Long Name	Description
DISC	Discharge	Discharge records.

Table 28. Views used with the Batch Data Entry System.

3.2.1.1 Process to Add a Water-Use Site to the NWIS Database

A site is described by the information stored in the NWIS Sitefile as well as data added using the water-use site, site owner, site contact, site permit, and thermoelectric fuel views.

1. First enter the site to the NWIS Sitefile. A SWUDS batch entry template for the Site View can be used to enter site information. The SWUDS Batch Entry software can then be used to create GWSI transactions by processing data for the Site View. The GWSI transaction file can then be moved to the NWIS server and processed by GWSI to enter the sites into the Sitefile. All water-use sites must have a National Water-Use Category Code in the NWIS Sitefile.
2. Before any additional information can be entered to SWUDS, the site must be established as a water-use site by entering it using the Water-Use Site View. At a minimum, the user must enter the agency code and site number for every site that will be used with SWUDS. The site does not have to be established as a water-use site to add data for steps 4 through 7.
3. Optionally, if the site is a thermoelectric power plant then the user can enter up to three thermoelectric fuel types and one cooling method with the Thermoelectric Fuel View.
4. Optionally, add names, addresses, phone numbers of owners, owner contacts, and contacts. Use the Owner, Owner Contact, and Contact Views to add names, addresses, and phone numbers. If a given name, phone, and address are entered for one view, such as Owner, the data does not need to be reentered for another view such as Contact. These views are strictly overlays for entering data into the same tables.
5. Optionally, associate one or more owners or contacts to a site. Use the Site Owner View to associate a site to an owner. Use the Site Contact View to associate a site to a contact.
6. Optionally, add permits. A permit can be associated to more than one site. The permit must exist before a permit can be associated to a site. Use the Permit View to add permits.
7. Optionally, add site permits. One or more sites can be associated to the same permit by using the Site Permit View.

3.2.1.2 Process to Add Water-Quantity Data

There are fields for each view that identifies a unique record. To identify these fields, use the Create Template tab, then select the view name, and finally select the ADD button. The mandatory data elements will appear in the right-hand pane. Additional data elements may be selected in addition to the mandatory data. When the user presses the Create Excel Data Entry Template, an Excel spreadsheet will be produced with the mandatory data elements and the other data elements selected.

1. First add conveyances using the Conveyance View. Conveyance data must exist before entering water-quantity data. A conveyance logically represents the structure that is used to move water between two sites.
2. Add withdrawal, return, and transfer monthly and annual values using the Water Quantity View. One or more years of data can be entered for the same conveyance.

Process to Add Place-of-Use Site Quantity or Ancillary Data:

1. Add consumptive use, instream use, and recycled water using the Place-of-use Site Quantity View.
2. Add population served by public supply system using the Population Served View.
3. Add population self-served and population on septic systems using the Population Self Served View.
4. Add power generation, acres irrigated, livestock counts, and general production data using the Ancillary View.

3.2.2 Modifying Data

Any attribute can be modified except those that are needed by the system to identify the data. For example, SWUDS cannot be used to modify the agency code and site number. Agency code and site number are used by the system to identify information associated to a site.

A unique data entry record is identified by specific data elements, not all data elements available on the data entry template are required. To identify these key fields, use the Create Template tab, then select the view name, and finally select the Modify button. The mandatory data elements will appear in the right-hand pane. When the user presses the Create Excel Data Entry Template, the mandatory data elements will be available in the spreadsheet.

To make a change to one of any key field, the current record must be deleted and the modified field included in a new record.

To modify one or more attributes for a given view, the input data set must contain the minimum set of attributes required by the system to identify the attributes. For example, to modify an annual withdrawal value, the user must include the following additional attributes in the input data set: Hydroelectric power plants with instream use are reported as Place-of-Use Quantity data not water-quantity data.

From Agency Code (from_agency_cd)
From Site Number (from_site_no)
To Agency Code (to_agency_cd)
To Site Number (to_site_no)
Water-Quantity Code (cn_qnty_cd)
Water Type Code (water_cd)
Data Source Code (data_source_cd)
Method Code (meas_meth_cd)

National Water-Use Category Code (nat_water_use_cd)
Water Use Subtype Code (water_use_subtype_cd)
Year (cn_qnty_yr)

Replacing an Attribute's Value with a Blank Space:

To replace an attribute's value with a blank space enter the character "$" or "*" for the value and process the data set with a modify transaction. The character "$" or "*" informs the system to replace an attribute's existing value with a blank space.

3.2.3 Modifying Published or Approved Data

A user with write-access to SWUDS can enter the published date and the data aging code for water quantity and place-of-use site quantity data. Data are considered published when the user enters a published date. Once a published date has been entered or once the data aging code has been set to approved, the data cannot be modified. The Database Administrator (NWIS or Water Use DBA) must change the data aging code back to working or accepted as reported and remove the published date before the record can be modified.

The published date can be removed by entering the character "$" or "*" for the published date value on a modify transaction.
A Database Administrator is any user that has been assigned to either the UNIX nwws or nwdba access groups. User "nwis" has Database Administrator access.

3.2.4 Deleting Data

Most views have an attribute called the delete record indicator. The delete record indicator is used to specify that a given record and all its dependent or child records are to be deleted. Enter the character "$" or "*" for the delete record indicator. Submit the records to the Batch Entry System using the modify option.

Not all data elements are required to delete a record. There are fields for each view that identifies a unique record. To identify these fields, use the Create Template tab, then select the view name, and finally select the Delete button. The mandatory data elements will appear in the right-hand pane. When the user presses the Create Excel Data Entry Template, the mandatory data elements will be available in the spreadsheet.

SWUDS performs cascading deletes:

If a parent record is deleted then all dependent records associated to the parent will be deleted. For example, deleting a water-use site record will cause all quantity, ancillary, and population data related to that site to be deleted. Site owner, site contact, or site permit data associated to the site will not be deleted because the information may still be used by GWSI; however, it is possible to delete site owner, site contact, or site permit data with SWUDS by using the Site Owner, Site Contact, and Site Permit Views.

A site can be completely deleted from NWIS using the NWIS utility program Station Change. Only a user with DBA access can delete a site from the Sitefile using the Station

Change program, STNCHANGE. This program can be used to change site numbers and to delete sites from the NWIS database. Deleting a site from the Sitefile removes all associated data in ADAPS, GWSI, QW, and SWUDS.

Cascade Delete Exceptions within SWUDS Batch Entry:

The cascading delete operation does not apply to the following:

SWUDS Input View	Comments
Site	SWUDS cannot be used to delete a site from the NWIS Sitefile. Use the GWSI Station Change program to delete a site from NWIS. Deleting a site from the Sitefile will trigger a cascade delete in SWUDS as if the user deleted a water-use site record with the water-use site input view.
Site Owner	SWUDS cannot be used to delete owner records. Deleting a site owner record removes the association of the owner to a site. The cascade delete does not delete the owner record.
Owner	SWUDS cannot be used to delete owner records.
Owner Contact	SWUDS cannot be used to delete owner contact records.
Site Contact	SWUDS cannot be used to delete contact records. Deleting a site contact record removes the association of a contact to a site. The cascade delete does not delete the contact record.
Contact	SWUDS cannot be used to delete contact records.
Permit	Deleting a permit record removes the permit record from the database. The cascade delete does not delete the permitting agency.
Site Permit	Deleting a site permit record removes the association of a permit to a site. The cascade delete does not delete the permit record.
Water Use	Deleting a water-use site record will cause a cascade delete operation that will remove all water-use data associated with the site. The cascade delete does not delete site owner, owner, owner contact, site contact, contact, site permit, permit, permitting agency, and surface- water resource records. Also, if the site has either approved or published water-quantity data associated to it then the site cannot be deleted.

Table 29. Cascade delete exceptions.

At release 4.4, neither SWUDS nor GWSI can be used to delete owner, contact, owner, or contact records.

Station Change Cascade Delete Exceptions:

If a site is deleted from the Sitefile using the Station Change program, all water-use data associated to the site should be deleted with the following exceptions:

Physical NWIS Table Name	Comments
cn_qnty and site_qnty	The site is not deleted if the site has published or approved water-use data.
party	Deleting a site removes the association of the owner, owner contact, or contact party records to a site. The owner, owner contact, and contact party records are not deleted.

Physical NWIS Table Name	Comments
agency	Deleting a site removes the association of a site to an agency that was used as a data source, an owner, an owner contact, or a contact, a permit permitting agency or part of the site identification. The agency is not deleted.
Surface-water	Deleting a water-use site record does not delete an associated surface-water record.
permit	Deleting a site removes the association of a permit to a site. The permit record is not deleted.

Table 30. Station change cascade delete exceptions.

3.2.5 Deleting Published or Approved Data

Once a published date has been entered or once the data aging code has been set to approved, only a Database Administrator can modify the data so that the data can be deleted. Deleting data that are published or approved is a two-step process.

First, a Database Administrator needs to remove the published date and must set the data aging code to working. The published date can be removed by entering the character "$" or "*" for the published date value on a modify transaction.

Second, any user with write-access can delete the data by entering the character "$" or "*" for the delete record indicator of a modify transaction.

3.3 Site Data Entry

The Site, Water-Use Site, and Thermoelectric Fuel Views are used to enter site data. The Site View is used to generate GWSI transaction records. The Water-Use and Thermoelectric Fuel Views are used to enter data directly to SWUDS.

3.3.1 Site Definition

SWUDS considers a site to be a physical entity, thing, or place where a quantity-of-water is either measured or estimated. Wells, diversions, outfalls, and water-use establishments are examples of sites in the NWIS Sitefile. Sites can be connected to form conveyances. Conveyances are connected to form water-use networks. Water-quantity data are entered on conveyances.

Sites can be categorized in one of the following roles: source-of-groundwater, source-of-surface-water, lake, destination, collection, water-use establishment, treatment, distribution, groundwater recharge, groundwater drain, agriculture, and hydroelectric. Sites are used to track the flow of water from the source of withdrawal, to the point of use, and to the eventual return to the natural system. Sites can be used as standalone points of withdrawal or return. Sites can also be connected to create complex water-use networks.

The first step for entering water-use data is to decide which sites types will be needed to store the type of water-use data being collected. Sites must exist before any other data are entered. The decision on what site types to enter depends on the available data and the complexity of the data model the user wants to maintain.

Review the Conveyance View documentation before creating new sites. The information will be helpful on deciding what site types to create. There are many rules involved with the types of sites that can be connected. The user needs to be aware of how the various sites types will be used in their implementation of SWUDS before the sites are created.

3.3.2 Site Type

The site type is defined in the Sitefile with the attribute site type code (site_tp_cd, component C802). A site can be assigned to a single site type. The following site types are used with SWUDS:

Site Type Code	Site Type Name	Description
AG	Aggregated Groundwater	An Aggregate Groundwater Withdrawal/Return site represents an aggregate of specific sites where groundwater is withdrawn or returned which is defined by a geographic area or some other common characteristic. An aggregate groundwater site type is used when it is not possible or practical to describe the specific sites as springs or as any type of well including 'multiple wells', or when water-use information is only available for the aggregate. Aggregate sites that span multiple counties should be coded with 000 as the county code, or an aggregate site can be created for each county.

Site Type Code	Site Type Name	Description
AS	Aggregated Surface-water	An Aggregate Surface-Water Diversion/Return site represents an aggregate of specific sites where surface-water is diverted or returned. A geographic area or some other common characteristic defines this. An aggregate surface-water site type is used when it is not possible or practical to describe the specific sites as diversions, outfalls, or land application sites, or when water-use information is only available for the aggregate. Aggregate sites that span multiple counties should be coded with 000 as the county code, or an aggregate site can be created for each county.
AW	Aggregate Water-Use Establishment	An Aggregate Water-Use Establishment represents an aggregate class of water-using establishments or individuals that are associated with a specific geographic location and water-use category, such as all the industrial users located within a county or all self-supplied domestic users in a county. The aggregate class of water-using establishments is identified using the National Water-Use category code and optionally classified using the Standard Industrial Classification System Code (SIC code) or North American Classification System Code (NAICS code). An aggregate water-use establishment site type is used when specific information needed to create sites for the individual facilities or users is not available or when it is not desirable to store the site-specific information in the database. Data entry rules that apply to water-use establishments also apply to aggregate water-use establishments. Aggregate sites that span multiple counties should be coded with 000 as the county code, or an aggregate site can be created for each county.
FA-AWL	Animal Waste Lagoon	Animal waste lagoon describes a facility site type with a National Water Use code of Livestock (LV) for the storage and/or biological treatment of wastes from livestock operations
FA-CI	Cistern	An artificial, non-pressurized reservoir used for water storage. The reservoir may be located above, at, or below ground level. The water may be supplied from diversion of precipitation, surface, or groundwater sources
FA-CS	Combined Sewer	An underground conduit created to convey storm drainage and waste products into a wastewater-treatment plant, stream, reservoir, or wastewater disposal site.
FA-DV	Diversion	A site where water is withdrawn or diverted from a surface-water body (e.g. the point where the upstream end of a canal intersects a stream, or point where water is withdrawn from a reservoir). Includes sites where water is pumped for use elsewhere.
FA-FON	Field, Pasture, Orchard, or Nursery	A water-using facility characterized by an area where plants are grown for transplanting, for use as stocks for budding and grafting, or for sale. Irrigation water may or may not be applied.
FA-GC	Diversion	A place-of-use, either public or private, where the game of golf is played. A golf course typically uses water for irrigation purposes. This should not be used if the site is a specific hydrologic feature or facility, but it can be used especially for the water-use sites.
FA-HP	Hydroelectric Plant	A facility that generates electric power by converting potential energy of water into kinetic energy. Typically, turbine generators are turned by falling water.
FA-OF	Outfall	A site where water or wastewater is returned to a surface-water body, e.g. the point where wastewater is returned to a stream. Typically, this is the discharge end of an effluent pipe.

Site Type Code	Site Type Name	Description
FA-SEW	Wastewater Sewer	An underground conduit created to convey liquid and semisolid domestic, commercial, or industrial waste into a treatment plant, stream, reservoir, or disposal site. If the sewer also conveys storm water, then the "combined sewer" secondary type should be used.
FA-STS	Storm Sewer	An underground conduit created to convey storm drainage into a stream channel or reservoir. If the sewer also conveys liquid waste products, then the "combined sewer" secondary type should be used.
FA-TEP	Thermoelectric plant	A facility that uses water in the generation of electricity from heat. Typically turbine generators are driven by steam. The heat may be caused by various means, including combustion, nuclear reactions, and geothermal processes.
FA-WDS	Water-distribution system	A site located somewhere on a networked infrastructure that distributes treated or untreated water to multiple domestic, industrial, institutional, and (or) commercial users. May be owned by a municipality or community, a water district, or a private concern.
FA-WIW	Waste- injection well	A facility used to convey industrial waste, domestic sewage, brine, mine drainage, radioactive waste, or other fluid into an underground zone. An oil-test or deep-water well converted to waste disposal should be in this category. A well where fresh water is injected to artificially recharge the groundwater supply or to pressurize an oil or gas production zone by injecting a fluid should be classified as a well (not an injection-well facility), with additional information recorded under use-of-site.
FA-WTP	Water-supply treatment plant	A facility where water is treated prior to use for consumption or other purpose.
FA-WU	Water-use establishment	A place-of-use (a water using facility that is associated with a specific geographical point location, such as a business or industrial user) that cannot be specified with any other facility secondary type. Water-use place-of-use sites are establishments such as a factory, mill, store, warehouse, farm, ranch, or bank. A place-of-use site is further classified using the National Water-Use category code (C39) and optionally classified using the Standard Industrial Classification System Code (SIC code) or North American Classification System Code (NAICS code). See also: Aggregate water-use-establishment.
FA-WWD	Wastewater land application	A site where the disposal of waste water on land occurs. Use "waste-injection well" for underground waste-disposal
FA-WWTP	Wastewater-treatment plant	A facility where wastewater is treated to reduce concentrations of dissolved and (or) suspended materials prior to discharge or reuse.
GW	Well	A hole or shaft constructed in the earth intended to be used to locate, sample, or develop groundwater, oil, gas, or some other subsurface material. The diameter of a well is typically much smaller than the depth. Wells are also used to artificially recharge groundwater or to pressurize oil and gas production zones. Additional information about specific kinds of wells should be recorded under the secondary site types or the Use of Site field. Underground waste-disposal wells should be classified as waste-injection wells.
GW-CR	Collector or Ranney type well	An infiltration gallery consisting of one or more underground laterals through which groundwater is collected and a vertical caisson from which groundwater is removed. Also known as a "horizontal well." These wells produce large yield with small drawdown.

Site Type Code	Site Type Name	Description
GW-IW	Interconnected wells	Collector or drainage wells connected by an underground lateral.
GW-MW	Multiple wells	A group of wells that are pumped through a single header and for which little or no data about the individual wells are available.
LK	Lake, Reservoir, Impoundment	An inland body of standing fresh or saline water that is generally too deep to permit submerged aquatic vegetation to take root across the entire body (cf: wetland). This site type includes an expanded part of a river, a reservoir behind a dam, and a natural or excavated depression containing a water body without surface-water inlet and/or outlet.
SB-GWD	Groundwater drain	An underground pipe or tunnel through which groundwater is artificially diverted to surface-water for the purpose of reducing erosion or lowering the water table. A drain is typically open to the atmosphere at the lowest elevation, in contrast to a well, which is open at the highest point.
SP	Spring	A location at which the water table intersects the land surface, resulting in a natural flow of groundwater to the surface. Springs may be perennial, intermittent, or ephemeral.

Table 31. Station Types (Site Types).

See the Conveyance View to find out how these various site types can be used to create conveyances.

3.3.3 Site Identification Numbers

Site identifiers are comprised of the digits 0-9. Site identifiers cannot contain imbedded blanks or alphabetic characters.

The following table shows examples of site identifiers:

SiteType	Example Site Identifier	Summary
Groundwater (GW)	363001076303001	A 15-digit identification number comprised of the latitude and longitude.
Spring, Diversion (FA-DV), Outfall (FA-OF)	02030000	An 8- to 14-digit downstream order number.
Aggregate Groundwater (AG), Aggregate Surface-Water (AS), and Aggregate Water-Use Establishment (AW)	951020202080029	A 10 to 15-digit number. The identifier begins with the number “9”, followed by the state numeric FIPS code (that is, the state code as entered in GWSI), plus 7 to 12 digits.

Table 32. Site Identifiers.

The site identification numbering schemes are documented in the GWSI manual; however, the information is repeated here for convenience:

Site identification numbers (site IDs) are assigned according to criteria that differ with the type of site that is being entered. Three categories of site IDs, with 2-character acronyms that are displayed in the following table, are (1) those based on latitude and longitude (LL), (2) those based on downstream order (DS), and (3) those specially created as water-use sites (WU). The site types are described more fully in the *Groundwater Site-Inventory System (GWSI) User's Manual, (GWSI) Chapter 2, Section 1.9.*

Site Type Code section 1.9 (bold are primary types)	Site Type Long Name	Site IDs (see the following)
AT	Atmosphere	LL
GL	Glacier	DS, LL
OC	Ocean	LL
OC-CO	Coastal	LL
LK	Lake, Reservoir, Impoundment	DS,LL
ST	Stream	DS,LL
ST-CA	Canal	DS,LL
ST-DCH	Ditch	DS,LL
ST-TS	Tidal stream	DS,LL
SP	Spring	DS,LL
GW	Well	LL
GW-CR	Collector or Ranney type well	LL
GW-EX	Extensometer well	LL
GW-HZ	Hyporheic-zone well	LL
GW-IW	Interconnected wells	LL
GW-MW	Multiple wells	LL
GW-TH	Test hole not completed as a well	LL
SB	Subsurface	LL
SB-CV	Cave	LL
SB-GWD	Groundwater drain	LL
SB-TSM	Tunnel, shaft, or mine	LL
SB-UZ	Unsaturated zone	LL
LA	Land	LL
LA-EX	Excavation	LL
LA-OU	Outcrop	LL
LA-SNK	Sinkhole	LL
LA-SH	Soil hole	LL
LA-SR	Shore	LL
AW	Aggregate water-use establishment	WU
AG	Aggregate groundwater use	WU
AS	Aggregate surface-water-use	WU
FA	Facility	*
FA-AWL	Animal Waste Lagoon	LL
FA-CI	Cistern	LL,WU
FA-CS	Combined sewer	LL,WU
FA-DV	Diversion	DS,LL

Site Type Code section 1.9 (bold are primary types)	Site Type Long Name	Site IDs (see the following)
FA-FON	Field, Pasture, Orchard, or Nursery	LL,WU
FA-GC	Golf course	LL,WU
FA-HP	Hydroelectric plant	DS,LL
FA-QC	Laboratory or sample-preparation area	LL,WU
FA-LF	Landfill	LL,WU
FA-OF	Outfall	DS,LL
FA-PV	Pavement	LL,WU
FA-SEW	Wastewater sewer	LL,WU
FA-SPS	Septic system	LL,WU
FA-STS	Storm sewer	LL,WU
FA-TEP	Thermoelectric plant	LL,WU
FA-WIW	Waste injection well	LL
FA-WWD	Wastewater disposal	LL
FA-WWTP	Wastewater-treatment plant	LL,WU
FA-WDS	Water-distribution system	LL,WU
FA-WTP	Water-supply treatment plant	LL,WU
FA-WU	Water-use establishment	LL,WU
WE	Wetland	DS,LL
ES	Estuary	DS,LL

Table 33. Site type codes and IDs.

* - FA site types are not allowed without a secondary classification.

Latitude-longitude Site IDs:

The latitude-longitude (LL) site ID is a 15-digit identification number assigned to the site and contains no blanks or alphabetic characters. Types of sites that use 15-digit LL site IDs include wells (GW), springs (SP), atmospheric(AT), and many other sites (see table). Although the site ID is formed initially from the latitude and longitude of a point believed to represent the location of the site followed by a 2-digit sequence number, the site ID is an ***identifier*** and not a ***locator***. The site ID is a mandatory entry. Data will not be stored for the site if the identification number is missing or invalid.

It cannot be emphasized too strongly that the site ID, once assigned, is used as a pure number and has ***no locational significance*** beyond representing the best location available at the time the site ID was assigned. The latitude and longitude fields should be used for location.

The Site ID is assigned as follows: use a method (map, Global Positioning System (GPS), Geographic Information System (GIS), etc.) that will provide the most precise location for a point representing the site.

IF THE SITE IS:	USE:
A tunnel	A point at the mouth of the tunnel.
A drain	The discharge point of the drain.
A pond or multiple well field	A point at the center of the pond or well field.
A land (LA) site	A point at the center of the land feature.

Table 34. Assignment of site IDs.

Determine the latitude and longitude of the point to the nearest 100th of a second.

The first six digits of the Site ID are the value of latitude, the 7th through 13th digits are the value of longitude, and the 14th and 15th digits are sequence numbers used to distinguish between sites at the same location.

Use leading zeros if the value of latitude is less than 10 degrees, the value of longitude is less than 100 degrees, or the sequence number is less than 10.

Downstream Order Site IDs:

Downstream order (DS) site IDs are typically used for stream sites (ST), lakes (LK), diversion (FA-DV), and other sites where water is exposed on the land surface (see table). For surface-water sites where records are systematically collected, an 8 to 14-digit downstream order number is usually used for the site ID. Examples of sites that meet these criteria are:

- Continuous surface-water stations
- Partial record (surface-water and water-quality) stations
- Water-quality sites
- Spring stations where discharge measurements are routine

Downstream order numbers also may be assigned to springs (SP), glaciers (GL), wetlands (WE), estuaries (ES), and facilities (FA-) where water-use data are collected.

When downstream order is used, the first 8 to 14 positions of the field must contain digits. The remaining positions are blank.

A site ID containing a latitude-longitude and sequence number may be assigned to sites where there is difficulty in assigning a meaningful downstream order number or where data are obtained intermittently. In this case, positions 1-6 are coded with latitude, 7-13 are coded with longitude, and 14-15 are coded with a sequence number. Examples of surface-water sites that meet these criteria are listed on the following page:

- Water-quality grab sample sites
- Surface-water sites at which miscellaneous measurements are made
- Sites within large open-water areas (lakes, reservoirs, bays)

Water-Use Sites:

The water-use site ID is a 10- to 15-digit number which begins with the number ‘9’ followed by the 2-digit state numeric FIPS code plus 7 to 12 digits that constitute a unique

ID. Each science center can assign the 7 to 12 digits as desired, such as assigning them sequentially or basing them on a partial latitude and longitude. The use of the state numeric FIPS code allows the site ID to be unique nationally. The state code should be the same as that entered for component STATE/C007.

The water-use site ID format is used for aggregate groundwater (AG), aggregate surface-water (AS), and aggregate water-use establishment (AW) sites, and is an option for most facility sites. Aggregate water-use sites represent aggregations of specific sites defined by a geographic area or other common characteristics, and as such typically do not have latitudes and longitudes. The facility site types, which can use the water-use site ID format also may be difficult to represent with a single point location, such as wastewater sewer (FA-SEW), golf course (FA-GC), and water-use establishment (FA-WU). For these reasons, latitude (C009 and C909), longitude (C010 and C910), method (C035), accuracy (C011), and datum (C036) are not mandatory for sites which use the water-use site ID format.

Diversions (FA-DV), outfalls (FA-OF), and hydroelectric plants (FA-HP) must use either the latitude-longitude or downstream order site ID format. Waste injection wells (FA-WIW) and wastewater disposal sites (FA-WWD) must use the latitude-longitude site ID format.

3.3.4 Hydroelectric Plants

A hydroelectric power plant is a site with a site type set to Hydroelectric Plant (FA-HP) and a Water-Use Category Code set to hydroelectric power (PH).

Hydroelectric power generation refers to the water used in the generation of electricity at plants where the turbine generators are driven by falling water ((Solley and others, 1990). Water used for hydroelectric power generation is classified as either Instream use or Offstream use. Offstream use should be entered as a surface-water withdrawal using a diversion site.

The Instream-Use Codes on the Water-Use Site View can be used classify the hydroelectric plant using:

- Instream Use (IU)
- Offstream (OU)
- Instream Use Pumped Storage (IU-PS)
- Offstream Pumped Storage (OU-PS)

Sites set to instream use can have instream use data entered with the Place-of-use Site Quantity View but not withdrawal data entered with the Water Quantity View.

3.3.5 Thermoelectric Plants and Cooling Method

The cooling method code is used to identify the cooling method used at a thermoelectric power plant. Because of the importance on the environment, thermoelectric power was broken out into once-through cooling and other than once-through cooling for the 2000 Water-Use Compilation. The cooling method can be used to indicate which withdrawals in SWUDS are associated with once-through cooling.

In SWUDS, a thermoelectric plant is a site having a National Water-Use Category Code of "TE" and a site type code of FA-TEP. The Thermoelectric Fuel View can be used to enter up to three fuel types used at the plant.

Code	Description
OI	Oil – light and heavy oil.
GA	Natural gas
CL	Coal – bituminous, anthracite, coke, or lignite coal
NU	Nuclear
GE	Geothermal
BI	Biomass – wood, charcoal, or other plant derived material including peat
SL	Solid Waste – Municipal solid waste is comprised of all discarded non-hazardous material from residential, commercial, and industrial establishments.
UN	Unspecified

Table 35. Fuel Types.

The cooling method code is used to indicate the cooling method as follows:

Cooling Method Code	Cooling Method Name	Description
DC	Dry cooling system	Dry (air) cooling system. EIA cooling code DC.
EV	Evaporation pond	
HC	Hybrid: recirculation pond/canal and dry cooling	Hybrid cooling system using recirculating cooling pond or canal and dry cooling, EIA cooling code HRC.
HT	Hybrid: recirculation cooling tower and dry cooling	Hybrid cooling system using recirculating cooling tower and dry cooling. EIA cooling codes HRF and HRI.
OC	Once through with cooling pond/canal	Cooling system where is withdrawn from a water source, passed through the plant one time, then placed in a dedicated cooling pond or canal before being returned to a stream, lake, or aquifer for other use. EIA cooling code OC.
ON	Once-through cooling	Cooling system where is withdrawn from a water source, passed through the plant one time, then returned to a stream, lake, or aquifer for other use. EIA cooling codes OF and OS: code fresh/saline in the Water Quantity Salinity Code.
RC	Recirculation pond/canal	Recirculating cooling system using dedicated cooling ponds or canals. Water is withdrawn from a source, then is used multiple times from the cooling ponds/canals. EIA cooling code RC. Replaces SWUDS code EV for new entries.
TR	Cooling tower	Recirculating cooling system using a cooling tower. EIA cooling codes RF, RI, RN.

Cooling Method Code	Cooling Method Name	Description
OT	Other, not specified above	A cooling system other than the listed types. EIA cooling code OT.
EV	Evaporation pond	Legacy code: use Recirculation pond/canal for new entries.

Table 36. Cooling Method Codes

One cooling method can be assigned to a thermoelectric power plant (site); however, if no cooling method is specified, the default value will be OT –other.

The Water-Use Subtype Code is a required element when adding thermoelectric power data in the Water Quantity or P-site Quantity Views. The TE National Water Use Code is related to cooling method, the Water-Use Subtype Code, a required element is related to cooling method. The National Water Use Subtype code includes the same National Water Use codes as found in the Sitefile, except for water use subtype the code TE was replaced with PO and PC: PO is used for thermoelectric Once-through cooling and PC is for Thermoelectric Circulation cooling. For thermoelectric power the code TE is entered as a national water use category code in the Sitefile whereas the codes PO and PC (water use subtype codes) are used ONLY when entering Psite Quantity and Water Quantity data.

Special Case: How to enter a thermoelectric plant that has two cooling systems:

If a plant has two cooling systems, a once-through system and a cooling tower, use the following procedure to track withdrawals by cooling type. Split the site into two sites and enter one as “Plant ABC Unit 1” and the other as “Plant ABC Unit 2.”

3.3.6 Site View

Purpose:

The Site View is used to access the NWIS Sitefile. SWUDS does not directly add or modify site data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records. To create GWSI transaction records use the SWUDS Batch Entry System with the Site View.

Dependencies:

A site must exist in the Sitefile before a site can be entered with the Water-Use Site View, Site Owner View, Site Contact View, or Site Permit View.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Station Name C12 (station_nm)
Site Type Code C802 (site_tp_cd)
Latitude C9 (lat_va)
Longitude C10 (long_va)
Coordinate Accuracy C11 (coord_acy_cd)
Coordinate Datum C36 (coord_datum_cd)
Coordinate Method C35 (coord_meth_cd)
Altitude C16 (alt_va)
Altitude Datum Code C22 (alt_datum_cd)
Altitude Method Code C17 (alt_meth_cd)
Altitude Accuracy Value C18 (alt_acy_va)
District Code C6 (district_cd)
State FIPS Code C7 (state_cd)
County FIPS Code C8 (county_cd)
County Subdivision/Minor Civil Division Code C42 (mcd_cd)
Country Code C41 (country_cd)
Hydrologic Unit Code C20 (huc_cd)
Basin Code C801 (basin_cd)
National Aquifer Code C715 (nat_aqfr_cd)
Aquifer Code C714 (aqfr_cd)
Aquifer Type Code C713 (aqfr_type_cd)
Agency Use Code C803 (agency_use_cd)
Data Reliability Code C3 (reliability_cd)
Land Net (TWP Sec Range) C13 (land_net_ds)
Map Name C14 (map_nm)
Map Scale C15 (map_scale_fc)
National Water-Use Code C39 (nat_water_use_cd)
Primary Use of Site C23 (site_use_1_cd)
Secondary Use of Site C301 (site_use_2_cd)
Tertiary Use of Site Code C302 (site_use_3_cd)
Primary Use of Water Code C24 (water_use_1_cd)
Secondary Use of Water Code C25 (water_use_2_cd)
Tertiary Use of Water Code C26 (water_use_3_cd)
Topographic Code C19 (topo_cd)
Instruments C805 (instruments_cd)
Data Types C804 (data_types_cd)
Contributing Drainage Area C809 (contrib_drain_area_va)
Drainage Area (drain_area_va)
First Construction Date C21 (construction_dt)
Site Establishment Date C711 (inventory_dt)
Hole Depth C27 (hole_depth_va)
Well Depth C28 (well_depth_va)
Source of Depth C29 (depth_src_cd)
Project Number C5 (project_no)

Attributes (continued):

Time Zone Code C813 (tz_cd)
Daylight Savings Time Flag C814 (local_time_fg)
Remarks C806 (site_rmks_tx)
Site Web Ready Code C32 (site_web_cd)

Adding Data to the Sitefile:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII-delimited, or ASCII fixed-format files. Once the transaction records are made, a user transfers the files to the NWIS server and a user with GWSI write-access runs them through GWSI. The Site View is used to create GWSI Sitefile transaction files.

The SWUDS-created transaction file is submitted to the GWSI EditGW program that is used to validate the data on the transaction records. An input file with records ready to be inserted into the Sitefile is created. The EditGW program is invoked by GWSI menu option "3 Edit GW Data" or "13 Edit GW Data in Batch." Once the input file is created with records ready to be inserted into the Sitefile, the file can be submitted to the GWSIUPT program. This program actually inserts the records into the Sitefile. The GWSIUPT program is invoked by GWSI menu option "4 Update GW Data" or "14 Update GW Data in Batch."

The following are points that the user should keep in mind when processing site data: SWUDS shares the Sitefile with the other NWIS subsystems. The GWSI subsystem is used to add or modify data in the Sitefile.

The minimum amount of data required to add a new site are: Agency Code, Site Number, Station Name, Site Type Code, District Code, State FIPS Code, County FIPS Code, Country Code, Data Reliability Code, Time Zone Code, and Daylight Savings Time Flag.

Site-type-specific data requirements and recommendations include the following:

Any site type used in SWUDS:
Required data: National Water-Use Category Code
Recommended data: Hydrologic Unit Code

Groundwater or Spring:
Required data: Primary Site Use Code

The following applies to all site types except those site types listed in the following table:

Site Type Code	Description
FA-CS	Combined sewer
FA-FON	Field, Pasture, Orchard, or Nursery
FA-GC	Golf course
FA-HP	Hydroelectric plant

Site Type Code	Description
FA-SPS	Septic system
FA-STS	Storm sewer
FA-TEP	Thermoelectric plant
FA-SEW	Wastewater sewer
FA-WWD	Wastewater disposal
FA-WWTP	Wastewater-treatment plant
FA-WDS	Water-distribution system
FA-WTP	Water-supply treatment plant
FA-WU	Water-use establishment

Table 37. Site Types

1. The station name must be unique.
2. Water-use data are frequently aggregated either spatially or by the use-of-water. In order for the data to be correctly aggregated it is recommended that state FIPS code, County FIPS code, Hydrologic Unit Code, and National Water-Use Category Code be entered for all water-use sites. In addition, the National Aquifer Code and Primary Aquifer Code should be entered for groundwater sites.
3. The National Water-Use Category Code entered in the Sitefile is considered the current-day use at the site.
4. Surface-water sites can be designated as Lake, Reservoir or Impoundment (LK), Diversion (FA-DV), Outfall (FA-OF), Spring (SP), or Aggregated Surface-water (AS).
5. The station name should not indicate or imply that the site is a water use/public supply site, especially for sites that are a source of drinking water for large populations or wastewater treatment facility. The creation of new sites and the release of sensitive water information should comply with the "U.S. Geological Survey, Guidance on Release of Sensitive Water Related Information" (March 13, 2014).

   http://nwis.usgs.gov/communications/2014news/140313sensitive_data_guidelines.html

   The site web flag can be set to L (local) to keep the site record from being transmitted to NWISWeb.
6. The County Subdivision/Minor Civil Division Code that is entered must be consistent with the State and County FIPS codes. A reference list of County Subdivision/Minor Civil Division Codes can be obtained using the reference list option of the template builder.
7. Latitude and longitude can be entered as degrees, minutes, and decimal seconds, up to the hundredths place (DMS e.g. 360130.23 0784520.01). GWSI stores both the DMS and decimal degree (DD) versions of latitude and longitude; however, the user enters DMS. For sites west of Greenwich, located in the western hemisphere, the sign for longitude should be entered as positive. The sign for longitude should be entered as negative for sites east of Greenwich, located in the eastern hemisphere.

GWSI will convert the latitude and longitude that was entered as DMS to decimal degrees using the formula (degrees + (minutes / 60) + (seconds / 3600). The decimal degree latitude and longitude values will also be converted to the NAD83 datum. The decimal degree latitude and longitude values are only stored in NAD83 datum. If the entered latitude and longitude values are not in NAD83 and cannot be converted to NAD83 using the NADCON routines, then the decimal latitude and longitude values are set to null. The sign on the decimal longitude will be opposite that of the DMS longitude.

Modifying Data:

Use the Site View to create GWSI Modify transaction records from Microsoft-Excel, ASCII- delimited, or ASCII fixed-format input files. Once the transaction records are created, a user must transfer them to the NWIS server and a user with GWSI write-access will run them through GWSI.

The SWUDS-created transaction file will be submitted to the GWSI EditGW program that is used to validate the data on the transaction records. An input file with records ready to be inserted into the Sitefile will be created. The EditGW program is invoked by GWSI menu option "3 Edit GW Data" or "13 Edit GW Data in Batch." Once the input file is created with records ready to be inserted into the Sitefile, the file can be submitted to the GWSIUPT program. This program actually inserts the records into the Sitefile. The GWSIUPT program is invoked by GWSI menu option "4 Update GW Data" or "14 Update GW Data in Batch."

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with Database Administrator access can use the station change utility.
The National Water-Use Category Code is stored in both the Sitefile and the water-quantity data file. The National Water-Use Category Code is stored with the water-quantity data so that changes in use over time can be tracked. The National Water-Use Category Code entered in the Sitefile should be maintained as the current-day use at the site.

The National Water-Use Code can be updated; however, changing the National Water-Use Category Code in the Sitefile can create potential problems with water-use data. For example, in the Ancillary View only certain NAICS and SIC codes are valid for hydroelectric sites. If the National Water-Use Code of PH (Hydroelectric Power) is changed to WS (Public Supply) the stored electric power data in the Ancillary View will be orphaned. Because there is no check in GWSI to keep a user from changing the National Water-Use Code when there is existing water- use data, the data loses its meaning. Some of the codes can be changed to reflect the modified National Water-Use Category. However, some codes such as NAICS code in the Ancillary View cannot be modified. Such a record would have to be deleted and data reentered.

If a site has water-use data then in some cases it is not possible to modify the site type. Changing the site type code could corrupt existing water-use data. The template builder can be used to get a list of which site types can be changed. Use the reference list option with the site view and select the reference list Site Type Transitions Allowed. The only

way to change site type that has the water-use site type change restriction is to retrieve the water-use data associated with the site, delete the data, change the site type, then restructure the data. For proper data entry based on the site type, deleting a water-use site record causes all water-use information associated with the site to be deleted.

To remove the contents of a specific attribute, replace the value of an attribute with a blank space; enter a "$" or "*" for a value.

Deleting Data:

The program Station Change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records will be submitted as a SWUDS modify transaction.

Sites having approved or published water-use data cannot be deleted.

3.3.7 Water-Use Site View

Purpose:

The Water-Use Site View contains information that further describes a water-use site. Every site used with SWUDS must have an entry in the water-use site table. The view can be used to enter physical location of the site using an address, associate surface-water sites to a surface-water resource, and assign Standard Industrial Classification (SIC) and North America Classification System (NAICS) codes.

Dependencies:

A site must exist in the Sitefile before a site can be entered using the Water-Use Site View. The National Water-Use Code must be entered in the Sitefile. A water-use site record must exist before conveyances, water quantities, ancillary data, population data, or place-of-use site quantities can be entered.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Delete Record Indicator (Modify) (delete_record_cd)
Standard Industrial Classification Code (sic_cd)
North American Classification System Code (naics_cd)
Instream Use Code (instream_use_cd)
Surface-Water Name (surface_water_nm)
Surface-Water Type Code (surface_water_cd)
Physical Address Line One (line_1_tx)
Physical Address Line Two (line_2_tx)

Attributes (continued):

Physical City (city_nm)
Physical Postal Code (addr_post_cd)
Physical Zip Code (zip_cd)
Physical Country (addr_country_nm)
WU Site Comment (wu_site_cm_tx)

Adding Data:

1. An entry must be made for every site that will be used with SWUDS. The minimum amount of data to be entered is the agency code and the site number. ***A water-use site record for a site can only be created if in the Sitefile, the site-type code is consistent with the National Water-Use Category Code.*** (See the following table).

Site Type Code	Site Type Long Name	National Water-Use Category Code	National Water-Use Category Name
AG	Aggregate groundwater use	All uses except PH, Hydroelectric power	
AS	Aggregate surface-water-use		
AW	Aggregate water-use establishment	All National Water-Use codes	
FA-AWL	Animal Waste Lagoon	LV	Livestock
FA-CI	Cistern	All uses except PH, Hydroelectric power	
FA-CS	Combined sewer	ST	Wastewater Treatment
FA-DV	Diversion	All National Water-Use codes	
FA-FON	Field, Pasture, Orchard, or Nursery	IR	Irrigation
FA-GC	Golf course	CO	Commercial
FA-GC	Golf course	IR	Irrigation
FA-HP	Hydroelectric plant	PH	Hydroelectric
FA-OF	Outfall	All National Water-Use codes	
FA-SEW	Wastewater sewer	ST	Wastewater Treatment
FA-SPS	Septic system	ST	Wastewater Treatment
FA-STS	Storm sewer	ST	Wastewater Treatment
FA-TEP	Thermoelectric plant	TE	Thermoelectric
FA-WDS	Water-distribution system	WS	Water Supply
FA-WIW	Waste injection well	All National Water-Use codes	
FA-WTP	Water-supply treatment plant	RM	Remediation
FA-WTP	Water-supply treatment plant	WS	Water Supply
FA-WU	Water-use establishment	All National Water Use codes	
FA-WWD	Wastewater disposal	ST	Wastewater Treatment

Site Type Code	Site Type Long Name	National Water-Use Category Code	National Water-Use Category Name
FA-WWTP	Wastewater-treatment plant	RM	Remediation
FA-WWTP	Wastewater-treatment plant	ST	Wastewater Treatment
GW	Well	All uses except PH, Hydroelectric power	
GW-CR	Collector or Ranney type well		
GW-IW	Interconnected wells		
GW-MW	Multiple wells		
LK	Lake, Reservoir, Impoundment	All National Water-use codes	
SB-GWD	Groundwater drain	All uses except PH, Hydroelectric power	
SP	Spring		

Table 38. National Water-Use Category Codes

2. The SWUDS database is based on a network data structure. Water can be tracked as it moves between sites (nodes). Sites are linked to form conveyances. However, to associate the water-use network to the natural water resource system, the GWSI aquifer code and SWUDS surface-water name attributes are used.

   If a well (GW) is being entered, then the aquifer code in the Sitefile is used to associate the site to the natural groundwater system. If a surface-water site is being entered, then surface-water name in the water-use Sitefile can be used to associate the site to the natural surface-water body (lake, stream, or reservoir). Surface-water information (surface-water body name, surface-water type) can be entered only for surface-water site types. Surface-water site types include Lake, Reservoir, or Impoundment (LK), Diversion (FA-DV), Outfall (FA-OF), Spring (SP), and Aggregated Surface-water (AS). It is suggested that the user obtain valid surface-water names from the Geographic Names Information System: (***http://geonames.usgs.gov/domestic/***). To enter surface-water information, the two attributes, surface-water body name and surface-water type must be populated.

3. The Instream Use code can also be used to classify a hydroelectric power plant as Instream Use (IU) or Offstream Use (OU). A site must be classified as Instream Use in the Water-Use Site View before Instream Use data can be entered with the place-of-use site quantity view. Hydroelectric plants may also be classified as Instream- or Offstream-Use Pumped Storage (IU-PS or OU-PS). If the use of water is unknown, an Unspecified (UN) code is available.

Code	Name	Description
IU	Instream Use	Water use takes place within the stream channel for such purposes as hydroelectric power generation, navigation, water-quality improvement, fish propagation, and recreation. Sometimes called non-withdrawal use or in-channel use. Currently, the National Water-Use code is restricted to hydroelectric (PH).

Code	Name	Description
OU	Offstream Use	Water withdrawn and diverted from ground- or surface-water source for public water supply, industry, irrigation, livestock, thermoelectric power generation, and other uses. Sometimes called off-channel use or withdrawal use.
IU-PS	Instream-Use Pumped Storage	IU-PS Instream-Use Pumped Storage A hydroelectric power plant (an instream-use hydroelectric system) in which electricity is generated during periods of high demand by the use of water that has been pumped into a reservoir at a higher altitude during periods of low demand.
OU-PS	Offstream-Use Pumped Storage	A hydroelectric power plant (an offstream-use hydroelectric system) in which electricity is generated during periods of high demand by the use of water that has been pumped into a reservoir at a higher altitude during periods of low demand.
UN	Unspecified	The instream or offstream use of water is unknown or unspecified. Unspecified is the default code.

Table 39. Instream/Offstream Codes.

4. The Standard Industrial Classification Code (SIC) (Office of Management and Budget, 1987, Standard industrial classification manual: [Washington D.C.], 705 p.) and /or the 2002 North American Classification System Codes (NAICS) (www.census.gov/epcd/www.naics.html), when entered, must be consistent with (1) the National Water-Use Category code in the Sitefile and (2) each other (if both SIC and NAICS is present). Reference lists of valid SIC or NAICS codes related to the National Water-Use Category Code can be obtained using the reference list option of the template builder within the water-use site view.

Modifying Data:

The agency code and site number are required to modify water-use site data. All attributes other than agency code and site number may be modified. To modify surface-water information the user can enter a new surface-water body name or surface-water type. A modify action will either create a new surface-water body entry in the database and assign it to the site or it will assign an existing surface-water body entry. To remove or un-assign a surface-water body name, the user should enter a "$" or "*" in the surface-water body name using a modify transaction. The system will remove surface-water body name or surface-water type. The user cannot remove or blank out the surface-water type by entering a "$" or "*" for those attributes (a surface-water entry must consist of the following two surface-water attributes: surface-water body name and surface-water type). To remove the contents of a specific attribute, enter a "$" or "*" for a value.

Deleting Data:

Enter the agency code, site number, and a "$" or "*" for the delete record indicator using the water-use view to indicate which water-use site record to delete. Deleting a water-use site record will cause all data related to that site to be deleted from the SWUDS database with the following exceptions: Sitefile, site owner, owner, owner contact, site contact, contact, permitting agency, permit, site permit, and surface-water names.

Any site having an approved or published date, cannot be deleted. The data aging code will need to be set to something other than approved and the published date will need to be removed before the site can be deleted. Only a user with DBA access can remove the published date or change a data aging code to something other than approved. A DBA is a user that has been assigned to either the nwdba or nwws access groups or the user nwis.

3.3.8 Thermoelectric Fuel View

Purpose:

The Thermoelectric Fuel View is used to enter one to three fuel types and one cooling method code. Thermoelectric power fuel codes are used to describe the types of fuels used at a thermoelectric plant site. Thermoelectric power includes water that is used with fossil fuel, nuclear, or geothermal energy in the generation of electric power (Solley and others, 1990).

Dependencies:

A site with a National Water-Use Category Code of TE (thermoelectric) must exist in the Sitefile and the site type must be FA-TEP (thermoelectric plant) before fuel type codes and cooling method code can be entered.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Fuel Code 1 (fuel_1_cd)
Fuel Code 2 (fuel_2_cd)
Fuel Code 3 (fuel_3_cd)
Cooling Method Code (cooling_cd)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The following attributes comprise the minimum data set: agency code, site number, one of the three fuel type codes, and one cooling method code. The cooling method is a mandatory data element; however, the cooling method will be set to Other (OT) if the user does not enter cooling method. Fuel codes do not default, at least one fuel code must be entered The site type must be FA-TEP (Thermoelectric Plant). The National Water-Use category code must be TE (Thermoelectric Power).
2. For thermoelectric power sites, the following cooling methods can be used:

Cooling Method Code	Cooling Method Name
DC	Dry cooling system
EV	Evaporation pond
HC	Hybrid: recirculation pond/canal and dry cooling
HT	Hybrid: recirculation cooling tower and dry cooling
OC	Once through with cooling pond/canal
ON	Once-through cooling
RC	Recirculation pond/canal
TR	Cooling tower
OT	Other, not specified above
EV	Evaporation pond

Table 40. Thermoelectric Power Cooling Method Codes.

The order of the entry of fuel type codes has no meaning. For example, fuel type code one is not meant to be the primary source of fuel. A single fuel code of unspecified (UN) cannot be entered. However, if one or more fuel codes are entered without the UN setting, then the remaining codes may be set to UN. The order that fuel codes are entered on an Add transaction does not matter, because the codes will be shifted to the left to populate the first fuel code, the second code, and finally the third code. Null values are set to the code UN for unspecified. The table below shows how codes may be placed on the Add transaction and how they will actually be stored in the database.

ADD Transaction		
Fuel_1_cd	**fuel_2_cd**	**fuel_3_cd**
NULL	Value	NULL
value	NULL	value
NULL	NULL	value

Table 41. Codes Placed on the Add Transaction

Modifying Data:

1. The cooling method and any of the three fuel codes can be modified. The order of the fuel codes does not imply primary, secondary, and tertiary sources. Allowing the entry of multiple fuel codes from a single input record is for convenience.

2. If the delete record indicator was entered on a fuel code, then the fuel code will be changed to UN – unspecified. The following will occur depending on which fuel code was set to the delete record indicator:

   - If "$" or "*" is entered for fuel_1_cd and if the code fuel_2_cd is set to a code other than UN, then fuel_1_cd is set to fuel_2_cd, fuel_2_cd is set to fuel_3_cd, and fuel_3_cd is set to UN.
   - If "$" or "*" is entered for fuel_2_cd, then fuel_2_cd is set to fuel_3_cd and fuel_3_cd is set to UN.
   - If "$" or "*" is entered for fuel_3_cd, then fuel_3_cd is set to UN.

   For example, if fuel_1_cd is set to oil (OI), fuel_2_cd is set to natural gas (GA), and fuel_3_cd is set to biomass (BI), a modify transaction that deletes the contents of fuel_1_cd will have the following results. The system will change fuel_1_cd to natural gas (GA) and fuel_2_cd to biomass (BI). The system will set fuel_3_cd to unspecified (UN).

   A modify transaction cannot result in the fuel_1_cd being set to unspecified. If a thermoelectric record exists, then the fuel_1_cd must be set to some value other than unspecified.

3. If the delete record indicator was entered on cooling method, then the cooling method will be changed to OT (other).

Deleting Data:

To delete a Thermoelectric Fuel record, enter the site number, agency code, and the delete record indicator. The delete record indicator needs to be set to "$" or "*".

3.4 GWSI Data Entry

The SWUDS Create Template and Batch Entry programs can be used to create GWSI transaction records for updating data in GWSI. For detailed information on data entry rules, refer to the GWSI user manual: *http://wwwnwis.er.usgs.gov/currentdocs/index.html.*

3.4.1 Construction (CONS) View

Purpose:

The Construction View is used to access the NWIS Construction file. SWUDS does not directly add or modify construction data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files.

To create construction transaction records use the SWUDS Batch Entry System with the Construction View.

Dependencies:

A site must exist in the Sitefile before construction records can be added for the site. The primary key for the Construction file includes the Site_no. A CONS record must be established before HOLE, CSNG, and OPEN records can be added for a well.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Construction Record Sequence Number (cons_seq_nu)
Date of Construction (cons_dt)
Name of Contractor (contractor_nm)
Source of Data (cons_src_cd)
Method of Construction (cons_meth_cd)
Type of Finish (finish_cd)
Type of Seal (seal_cd)
Bottom of Seal (seal_depth_va)
Method of Development dev_meth_cd)
Hours of Development (dev_du)
Special Treatment (special_treat_cd)
Construction Web Ready Code (cons_web_cd)

Adding data to the construction file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write

access can perform Option 4. The Construction View of SWUDS is used to create GWSI Construction transaction files.

These are some points that the user should keep in mind when processing CONSTRUCTION data:

1. The minimum fields required to add a new construction record are: agency code, site number, and sequence number. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

2. The CONS sequence number is used as the parent sequence number in the HOLE, CSNG, and OPEN tables. That is, every record in the HOLE, CSNG, and OPEN tables must have an overarching CONS parent record. If one CONS record is added for a site, then the subsequent HOLE, CSNG, and OPEN records will all have the same CONS parent record number, which will be equal to the cons_seq_nu in the CONS table.

Modifying data:

Use the Construction View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update).

Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information. To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for CONS records. Use the Construction View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.2 Hole (HOLE) View

Purpose:

The Hole View is used to access the NWIS HOLE file. SWUDS does not directly add or modify hole data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create hole transaction records use the SWUDS Batch Entry System with the Hole View.

Dependencies:

A site must exist in the Sitefile before hole records can be added for the site. Furthermore, a parent Construction (CONS) record must exist before hole records can be added. The primary key for the Hole file includes the Site_no and the Construction Parent Record number.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Parent Sequence Number (cons_seq_nu)
Record Sequence Number (hole_seq_nu)
Hole Web Code (hole_web_cd)
Depth to Top of This Interval (hole_top_va)
Depth to Bottom of This Interval (hole_bottom_va)
Diameter of This Interval (hole_dia_va)

Adding data to the hole file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Hole View of SWUDS is used to create GWSI Hole transaction files.

Below are some points that the user should keep in mind when processing HOLE data: The minimum fields required to add a new hole record are: agency code, site number, parent (CONS) sequence number, record sequence number, and depth to the top of this interval. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

The HOLE, CSNG, and OPEN tables each require that a parent CONS sequence number already exists. That is, every record in the HOLE, CSNG, and OPEN tables must have an overarching CONS parent record. If one CONS record is added for a site, then the subsequent HOLE, CSNG, and OPEN records will all have the same CONS parent record number, which will be equal to the cons_seq_nu in the CONS table.

Modifying data:

Use the Hole View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for HOLE records. Use the Hole View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.3 Casing (CSNG) View

Purpose:

The Casing View is used to access the NWIS CSNG file. SWUDS does not directly add or modify casing data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create casing transaction records use the SWUDS Batch Entry System with the Casing View.

Dependencies:

A site must exist in the Sitefile before casing records can be added for the site. Furthermore, a parent Construction (CONS) record must exist before casing records can be added. The primary key for the Casing file includes the Site_no and the Construction Parent Record number.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Parent Sequence Number (cons_seq_nu)
Record Sequence Number (csng_seq_nu)
Hole Web Code (csng_web_cd)
Depth to Top of This Casing Interval (csng_top_va)
Depth to Bottom of This Casing Interval (csng_bottom_va)
Diameter of This Casing Interval (csng_dia_va)

Adding data to the casing file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Casing View of SWUDS is used to create GWSI Casing transaction files.

These are some points that the user should keep in mind when processing CSNG data:

1. The minimum fields required to add a new casing record are: agency code, site number, parent (CONS) sequence number, record sequence number, and depth to the top of this casing interval. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.
2. The HOLE, CSNG, and OPEN tables each require that a parent CONS sequence number already exists. That is, every record in the HOLE, CSNG, and OPEN tables must have an overarching CONS parent record. If one CONS record is added for a site, then the subsequent HOLE, CSNG, and OPEN records will all have the same CONS parent record number, which will be equal to the cons_seq_nu in the CONS table.

Modifying data:

Use the Casing View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update).

Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information. To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for CSNG records. Use the Casing View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.4 Openings (OPEN) View:

Purpose:

The Openings View is used to access the NWIS OPEN file. SWUDS does not directly add or modify openings data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create openings transaction records use the SWUDS Batch Entry System with the Openings View.

Dependencies:

A site must exist in the Sitefile before openings records can be added for the site. Furthermore, a parent Construction (CONS) record must exist before openings records can be added. The primary key for the Openings file includes the Site_no and the Construction Parent Record number.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Parent Sequence Number (cons_seq_nu)
Record Sequence Number (open_seq_nu)
Open Web Code (open_web_cd)
Depth to Top of This Open Interval (open_top_va)
Depth to Bottom of This Open Interval (open_bottom_va)
Diameter of This Open Interval (open_dia_va)
Material in This Interval (open_material_cd)
Type of Openings in This Interval (open_cd)
Length of Openings (open_len_va)
Width of Openings (open_width_va)

Adding data to the openings file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Openings View of SWUDS is used to create GWSI Openings transaction files.

These are some points that the user should keep in mind when processing OPEN data:

1. The minimum fields required to add a new openings record are: agency code, site number, parent (CONS) sequence number, record sequence number, depth to the top of this openings interval, and type of openings. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.
2. The HOLE, CSNG, and OPEN tables each require that a parent CONS sequence number already exists. That is, every record in the HOLE, CSNG, and OPEN tables must have an overarching CONS parent record. If one CONS record is added for a site, then the subsequent HOLE, CSNG, and OPEN records will all have the same CONS parent record number, which will be equal to the cons_seq_nu in the CONS table.

Modifying data:

Use the Openings View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for OPEN records. Use the Openings View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited,

or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.5 Lift (LIFT) View

Purpose:

The Lift View is used to access the NWIS LIFT file. SWUDS does not directly add or modify lift data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create lift transaction records use the SWUDS Batch Entry System with the Lift View.

Dependencies:

A site must exist in the Sitefile before lift records can be added for the site. The primary key for the Lift file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Record Sequence Number (lift_seq_nu)
Lift Web Code (lift_web_cd)
Type of Lift (lift_cd)
Date This Lift Was Installed or Recorded (lift_dt)
Depth to Intake (intake_depth_va)
Type of Power (power_cd)
Horsepower Rating (hp_va)
Manufacturer of Lift Device (manufacturer_nm)
Serial Number of Lift Device (serial_no_va)
Name of Power Company (power_co_nm)
Power-Company Account Number (power_co_acct_va)
Power-Meter Number (power_meter_va)
Pump Rating (pump_rating_fc)
Height of Additional Lift (add_lift_va)
Name of Company That Maintains the Lift (maintainer_nm)
Rated Pump Capacity (capacity_va)
Type of Standby Power (standby_cd)
Horsepower of Standby Power Source (standby_hp_va)

Adding data to the lift file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must

process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write- access can perform Option 4. The Lift View of SWUDS is used to create GWSI Lift transaction files. When processing LIFT data, keep in mind that the fields required to add a new lift record are: agency code, site number, record sequence number, and type of lift. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

Modifying data:

Use the Lift View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for LIFT records. Use the Lift View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.6 Repairs (REPR) View

Purpose:

The Repairs View is used to access the NWIS REPR file. SWUDS does not directly add or modify repairs data. However, the SWUDS Batch Entry System has the capability to

generate GWSI Add or Modify transaction records for many GWSI files. To create repairs transaction records use the SWUDS Batch Entry System with the Repairs View.

Dependencies:

A site must exist in the Sitefile before repairs records can be added for the site. The primary key for the Repairs file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Record Sequence Number (repr_seq_nu)
Repairs Web Code (repr_web_cd)
Nature of Repairs (repr_cd)
Date of Repairs (repr_dt)
Name of Contractor Who Made Repairs (repr_contractor_nm)
Percent Change in Performance After Repairs (change_va)

Adding Data to the Repairs File:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Repairs View of SWUDS is used to create GWSI Repairs transaction files.

When processing REPR data, keep in mind that the fields required to add a new repairs record are: agency code, site number, record sequence number, and nature of repairs. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

Modifying data:

Use the Repairs View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.
The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information. To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for REPR records. Use the Repairs View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.7 Spring (SPNG) View

Purpose:

The Spring View is used to access the NWIS SPNG file. SWUDS does not directly add or modify spring data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create spring transaction records use the SWUDS Batch Entry System with the Spring View.

Dependencies:

Spring is a distinct site type in the Sitefile field C802 (station type). If the user is creating a new spring record in NWIS, he must code C802 correctly. Correct coding of C802 means placing a “Y” in the fifth position of the input field. Field C2 (site type) in the Sitefile must be coded as “S” for spring.

A spring site must exist in the Sitefile before SPNG records can be added for the site. The SPNG file is not available to any types of sites other than springs. The primary key for the Spring file includes the Site_no.

A special version of the GWSI Input Form (Form 9-1940-B) is available to record spring data in hardcopy format before entering the data into NWIS.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Record Sequence Number (spng_seq_nu)
Spring Web Code (spng_web_cd)
Name of Spring (spng_nm)
Type of Spring (spng_tp)

Attributes (continued):

Permanence of Spring (permanence_cd)
Sphere of Discharge (disc_sphere_cd)
Improvements (improvement_cd)
Number of Spring Openings (openings_nu)
Flow Variability (disc_variability_va)
Basis of Flow Variability (disc_variability_cd)

Adding data to the spring file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Spring View of SWUDS is used to create GWSI Spring transaction files.

When processing SPNG data, keep in mind that the fields required to add a new spring record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

Modifying data:

Use the Spring View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information. To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for SPNG records. Use the Spring View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process

them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.8 Measuring Point (MPNT) View

Purpose:

The Measuring Point View is used to access the NWIS MPNT file. SWUDS does not directly add or modify measuring-point data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create measuring-point transaction records use the SWUDS Batch Entry System with the Measuring Point View.

Dependencies:

A site must exist in the Sitefile before measuring-point records can be added for the site. The primary key for the Measuring Point file includes the Site_no.

In some cases, a measuring-point record must be established before water-level records can be added. Water levels can be entered in reference to one of three points: below land surface, above sea level, and below measuring point. When the user enters water levels below measuring point, he must also enter the sequence number (see Attributes) of the measuring point that was used for the measurement.

More than one measuring point can exist for a site. The date fields (see Attributes) can be populated to signify the beginning and end of a measuring point, but no database rules exist to prevent the user from associating a water-level measurement with an expired measuring point. For this reason, the user should be careful to keep the measuring-point records up to date and associate his water-level measurements with the correct measuring point.

If a user chooses to enter an altitude (above sea level) of the measuring point, he will be required to add three conditionally mandatory fields as well: method altitude determined, altitude accuracy, and altitude datum (see Attributes).

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Record Sequence Number (mpnt_seq_nu)
Measuring Point Web Code (mpnt_web_cd)
Measuring Point Begin Date (mpnt_begin_dt)
Measuring Point End Date (mpnt_end_dt)
Measuring Point Height (mpnt_height_va)
Measuring Point Altitude (mpnt_alt_va)
Method Altitude Determined (mpnt_alt_meth_cd)
Measuring Point Altitude Accuracy (mpnt_alt_acy_va)

Attributes (continued):

Measuring Point Altitude Datum (mpnt_alt_datum_cd)
Measuring Point Description (mpnt_ds)

Adding data to the measuring point file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Measuring Point View of SWUDS is used to create GWSI Measuring Point transaction files.

When processing MPNT data, keep in mind that the fields required to add a new measuring-point record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI (or, in the case of the altitude metadata fields described above, are conditionally mandatory), but they should be populated as completely as possible.

Modifying data:

Use the Measuring Point View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information. To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for MPNT records. Use the Measuring Point View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update).

Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.9 Water Level (LEV) View

Purpose:

The Water Level View is used to access the NWIS LEV file. SWUDS does not directly add or modify water-level data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create water-level transaction records use the SWUDS Batch Entry System with the Water Level View.

Dependencies:

A site must exist in the Sitefile before water-level records can be added for the site. The primary key for the Water Level file includes the Site_no.
Date of water level measurement is a mandatory field. Partial dates (such as year only, or year and month) are allowed. The user may also enter a time of measurement. If the user does not enter a time, then the primary key for the water-level record is (agency code + site number + date), and only one record per date is allowed. If the user enters a time, then the primary key for the water-level record is (agency code + site number + date + time), and the user may enter more than one record per date.

Land-surface altitude (C16 in the Sitefile) must be established before the user can enter water levels below land surface. A measuring-point record must be established before the user can enter water levels below measuring point. When the user enters water levels ***below measuring point,*** he must also enter the sequence number (see Attributes) of the measuring point that was used for the measurement. When a user enters a water level ***above sea level,*** he must also enter a vertical datum for that record.

Some water-level records do not require a water-level value (lev_va, mp_lev_va, or sl_lev_va). These cases are very specific and require a corresponding water-level status code. The cases are described in the following table:

If no water level was measured because...	Then leave lev_va, mp_lev_va, and sl_lev_va blank and enter the following status code…
ice had formed in the well	C
the well was dry	D
water was flowing out of the well, and the equipment on hand was insufficient	F
the measurement was discontinued for some reason	N
an obstruction was blocking access to the water surface	O
the well had been destroyed	W

Table 42. Water-level records that do not require a water-level value.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Measurement Date (lev_dt)
Measurement Time (lev_tm)
Water Level Web Code (lev_web_cd)
Water-Level Type Code (lev_ent_cd)
Water Level Below LSD (lev_va)
Water Level Below Measuring Point (mp_lev_va)
Water Level Above Sea Level (sl_lev_va)
Water-Level Status (lev_status_cd)
Method of Measurement (lev_meth_cd)
Statistics Code (lev_statistics_cd)
Water-Level Accuracy (lev_acy_cd)
Water-Level Source (lev_src_cd)
Date Accuracy (date_acy_cd)
Water-Level Datum (sl_datum_cd)
Water-Level Party (lev_party_tx)
Source Agency (lev_agency_cd)
Sequence Number of MP Record (lev_mpnt_seq_nu)

Adding data to the water-level file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Water Level View of SWUDS is used to create GWSI Water Level transaction files.

When processing LEV data, keep in mind that the fields required to add a new water-level record are: agency code, site number, and date. The rest of the fields are not required by GWSI (or, in the case of the some of the fields described above, are conditionally mandatory), but they should be populated as completely as possible.

Modifying data:

Use the Water Level View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for LEV records. Use the Water Level View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.10 Geohydrologic Units (GEOH) View

Purpose:

The Geohydrologic Units View is used to access the NWIS GEOH file. SWUDS does not directly add or modify geohydrologic data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create geohydrologic transaction records use the SWUDS Batch Entry System with the Geohydrologic Units View.

Dependencies:

A site must exist in the Sitefile before geohydrologic records can be added for the site. The primary key for the Geohydrologic Units file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Record Sequence Number (geoh_seq_nu)
Geohydrologic Units Web Code (geoh_web_cd)
Depth to Top of Interval (lith_top_va)
Depth to Bottom of Interval (lith_bottom_va)
Unit Identifier (lith_unit_cd)
Lithology Code (lith_cd)
Contributing Unit (contrib_unit_cd)
Lithologic Description or Modifier (lith_ds)

Adding data to the Geohydrologic Units File:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Geohydrologic Units View of SWUDS is used to create GWSI Geohydrologic Units transaction files.

When processing MPNT data, keep in mind that the fields required to add a new geohydrologic record are: agency code, site number, record sequence number, and unit identifier. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Geohydrologic Units View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting Data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for GEOH records. Use the Geohydrologic Units View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.11 Aquifer (AQFR) View

Purpose:

The Aquifer View is used to access the NWIS AQFR file. SWUDS does not directly add or modify aquifer data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create aquifer transaction records use the SWUDS Batch Entry System with the Aquifer View.

Dependencies:

A site must exist in the Sitefile before aquifer records can be added for the site. The primary key for the Water Level file includes the Site_no. A parent Geohydrologic Units record must exist for a site before Aquifer records can be added.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Aquifer Web Code (aqfr_web_cd)
Parent Sequence Number (geoh_seq_nu)
Record Sequence Number (aqfr_seq_nu)
Aquifer Date (aqfr_dt)
Aquifer Static Water Level (aqfr_static_lev_va)
Aquifer Percent Water Contribution (aqfr_Contrib_fc)

Adding data to the aquifer file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Aquifer View of SWUDS is used to create GWSI Aquifer transaction files.

When processing AQFR data, keep in mind that the fields required to add a new aquifer record are: agency code, site number, parent sequence number, record sequence number, and aquifer date. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Aquifer View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update).

Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for AQFR records. Use the Water Level View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.12 Other Identifier (OTID) View

Purpose:

The Other Identifier file stores other names and assigners for sites. The Other Identifier View is used to access the NWIS OTID file. SWUDS does not directly add or modify other identifier data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create other identifier transaction records use the SWUDS Batch Entry System with the Other Identifier View.

Dependencies:

A site must exist in the Sitefile before other identifier records can be added for the site. The primary key for the Other Identifier file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)

Attributes (continued):

Other Identifier Web Code (otid_web_cd)
Record Sequence Number (otid_seq_nu)
Other Identifier (otid_id)
Assigner (assigner_nm)

Adding data to the other identifier file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Other Identifier View of SWUDS is used to create GWSI Other Identifier transaction files. When processing OTID data, keep in mind that the *all* fields are required to add a new other identifier record.

Modifying data:

Use the Other Identifier View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for OTID records. Use the Other Identifier View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS

server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.13 Other Data Types (OTDT) View

Purpose:

The Other Data Types file is used to record the existence of data for a site that are stored in various formats and locations. The Other Data Types View is used to access the NWIS OTDT file. SWUDS does not directly add or modify other data types data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create other data types transaction records use the SWUDS Batch Entry System with the Other Data Types View.

Dependencies:

A site must exist in the Sitefile before other data types records can be added for the site. The primary key for the Other Data Types file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Other Data Types Web Code (otdt_web_cd)
Record Sequence Number (otdt_seq_nu)
Other Data Type (otdt_tx)
Other Data Location (otdt_loc_cd)
Format of Other Data (otdt_format_cd)

Adding data to the other data types file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Other Data Types View of SWUDS is used to create GWSI Other Data Types transaction files.

When processing OTDT data, keep in mind that the fields required to add a new other data type record are: agency code, site number, record sequence number, and other data type. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Other Data Types View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction

records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting Data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for OTDT records. Use the Other Data Types View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.14 Logs (LOGS) View

Purpose:

The Logs file is used to store information about geophysical and other logs that are obtained for a site. The Logs View is used to access the NWIS LOGS file. SWUDS does not directly add or modify logs data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create logs transaction records use the SWUDS Batch Entry System with the Logs View.

Dependencies:

A site must exist in the Sitefile before logs records can be added for the site. The primary key for the Logs file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)

Attributes (continued):

Logs Web Code (logs_web_cd)
Record Sequence Number (logs_seq_nu)
Type of Log (logs_cd)
Depth to Top of Logged Interval (logs_top_va)
Depth to Bottom of Logged Interval (logs_bottom_va)
Source of Log Data (logs_src_cd)
Format of Log Data (logs_format_cd)
Location of Log Data (logs_loc_nm)

Adding data to the logs file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Logs View of SWUDS is used to create GWSI Logs transaction files.

Whenever processing LOGS data keep in mind that the fields required to add a new logs record are: agency code, site number, record sequence number, and type of log. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Logs View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update).

Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for LOGS records. Use the Logs View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.15 Remarks (RMKS) View

Purpose:

The Remarks file is used to store miscellaneous remarks about a site. The Remarks View is used to access the NWIS RMKS file. SWUDS does not directly add or modify remarks data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create remarks transaction records use the SWUDS Batch Entry System with the Remarks View.

Dependencies:

A site must exist in the Sitefile before remarks records can be added for the site. The primary key for the Remarks file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Remarks Web Code (rmks_web_cd)
Record Sequence Number (rmks_seq_nu)
Remark Date (rmks_dt)
Remark (rmks_tx)

Adding Data to the Remarks File:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Remarks View of SWUDS is used to create GWSI Remarks transaction files.

When processing RMKS data, keep in mind that the fields required to add a new remarks record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Remarks View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for RMKS records. Use the Remarks View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited,

or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.16 Visit (VIST) View

Purpose:

The Visits file is used to store information about visits to a well. The Visits View is used to access the NWIS VIST file. SWUDS does not directly add or modify visits data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create visits transaction records use the SWUDS Batch Entry System with the Visits View.

Dependencies:

A site must exist in the Sitefile before visits records can be added for the site. The primary key for the Visits file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Visits Web Code (vist_web_cd)
Record Sequence Number (vist_seq_nu)
Date of Visit (vist_dt)
Name of Person (vist_person_nm)

Adding data to the visits file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Visits View of SWUDS is used to create GWSI Visits transaction files.

When processing VIST data, keep in mind that the fields required to add a new visits record are: agency code, site number, record sequence number, and date of visit. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Visits View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for VIST records. Use the Visits View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.17 Special-Cases (SPEC) View

Purpose:

The Special-Cases file is used to store information about groups of wells, radial collector wells, ponds, tunnels, and drains. The Special-Cases View is used to access the NWIS SPEC file. SWUDS does not directly add or modify special-cases data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create special-cases transaction records use the SWUDS Batch Entry System with the Special-Cases View.

Dependencies:

A site must exist in the Sitefile before special-cases records can be added for the site. The primary key for the Special-Cases file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Special-Cases Web Code (spec_web_cd)
Record Sequence Number (spec_seq_nu)
Number of Wells/Laterals in Group (wells_nu)
Depth of Deepest Well in Group (deepest_well_va)
Depth of Shallowest Well in Group (shallowest_well_va)
Method Wells in Group Constructed (spec_cons_meth_cd)
Diameter of Well Group (group_dia_va)
Length of Pond, Tunnel, or Drain (ptd_len_va)
Width of Pond, Tunnel, or Drain (ptd_width_va)
Depth of Pond, Tunnel, or Drain (ptd_depth_va)
Bearing of Pond, Tunnel, or Drain (ptd_bearing_va)
Dip of Tunnel (dip_va)
Depth of Lateral in Collector Well (lateral_depth_va)
Length of Lateral in Collector Well (lateral_len_va)
Diameter of Lateral in Collector Well (lateral_dia_va)
Mesh of Screen in Lateral (lateral_mesh_va)

Adding data to the special-cases file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Special-Cases View of SWUDS is used to create GWSI Special-Cases transaction files.

When processing SPEC data, keep in mind that the fields required to add a new special-cases record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Special-Cases View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for SPEC records. Use the Special-Cases View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.18 Cooperator's Data (COOP) View

Purpose:

The Cooperator's Data file is used to store special information about a site from a cooperator's perspective. The Cooperator's Data View is used to access the NWIS COOP file. SWUDS does not directly add or modify cooperator's data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create cooperator's-data transaction records use the SWUDS Batch Entry System with the Cooperator's-Data View.

Dependencies:

A site must exist in the Sitefile before cooperator's data records can be added for the site. The primary key for the Cooperator's Data file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Cooperator's Data Web Code (coop_web_cd)
Record Sequence Number (coop_seq_nu)
Cooperator's Site ID (coop_site_no)
Contractor's Registration Number (registration_no_va)
Inspection Status (coop_stat_cd)
Reason Unapproved (unapproved_cd)
Date Inspected (coop_inspect_dt)
Cooperator's Remarks (coop_remark_tx)

Adding data to the cooperator's data file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Cooperator's-Data View of SWUDS is used to create GWSI Cooperator's-Data transaction files.

When processing COOP data, keep in mind that the fields required to add a new cooperator's-data record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Cooperator's Data View to create GWSI Modify transaction records from

Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for COOP records. Use the Cooperator's-Data View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.19 Miscellaneous Value (MSVL) View

Purpose:

The Miscellaneous-Value file is used to store miscellaneous (and unspecified) values relating to a site. The Miscellaneous-Values View is used to access the NWIS MSVL file. SWUDS does not directly add or modify miscellaneous-values data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create miscellaneous-values transaction records use the SWUDS Batch Entry System with the Miscellaneous-Values View.

Dependencies:

A site must exist in the Sitefile before miscellaneous-values records can be added for the site. The primary key for the Miscellaneous-Values file includes the Site_no.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Miscellaneous Values Web Code (msvl_web_cd)
Record Sequence Number (msvl_seq_nu)
Miscellaneous Value 1 (msvl_1_va)
Miscellaneous Value 2 (msvl_2_va)
Miscellaneous Value 3 (msvl_3_va)
Miscellaneous Value 4 (msvl_4_va)

Adding data to the miscellaneous values file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Miscellaneous-Values View of SWUDS is used to create GWSI Miscellaneous-Values transaction files.

When processing MSVL data, keep in mind that the fields required to add a new cooperator's-data record are: agency code, site number, and record sequence number. The rest of the fields are not required by GWSI but they should be populated as completely as possible.

Modifying data:

Use the Miscellaneous-Values View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records would be submitted as a SWUDS modify transaction. SWUDS can be used to create DELETE transactions for MSVL records. Use the Miscellaneous-Values View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.20 Discharge (DISC) View

Purpose:

The Discharge View is used to access the NWIS Discharge (DISC) file. SWUDS does not directly add or modify discharge data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files, including the DISC table. To create discharge transaction records, use the SWUDS Batch Entry System with the Discharge View.

Dependencies:

A site must exist in the Sitefile before discharge records can be added for the site. The primary key for the Discharge file includes the site number (site_no).

Attributes:

Agency Code (agency_cd) MANDATORY
Site Number (site_no) MANDATORY
Discharge Record Sequence Number (disc_seq_nu) MANDATORY
Date Discharge Measured (disc_dt) MANDATORY
Type of Discharge (disc_tp) MANDATORY
Discharge Value (disc_va) MANDATORY
Accuracy of Discharge Measurement (disc_acy_cd)
Source of Discharge Data (disc_src_cd)
Method Discharge Measured (disc_meth_cd) MANDATORY
Production Water Level (disc_prod_lev_va)
Static Water Level (disc_static_lev_cd)
Source of Water-Level Data (disc_lev_src_cd)
Method of Water-Level Measurement (disc_lev_meth_cd)
Duration of Discharge Until Production Level Reached (disc_du)
Specific Capacity (spec_cap_va)
Drawdown (drawdown_va)
Discharge Web Ready Code (disc_web_cd)

Adding data to the construction file:

The Batch Entry System can be used to create/add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Discharge View of SWUDS is used to create GWSI Discharge transaction files.

The following are some points that the user should keep in mind when processing DISCHARGE data:

The minimum fields required to add a new discharge record are: agency code, site number, sequence number, date discharge measured, type of discharge, value of discharge, and method discharge measured. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

Drawdown will be calculated and stored automatically on creation of discharge records if production and static water levels are entered.

Specific capacity will be calculated and stored automatically on creation of discharge records if discharge and drawdown are known.

Drawdown and specific capacity can be entered by the user if those values are known in the absence of the production and static water levels.

Modifying data:

Use the Discharge View to create GWSI Modify transaction records from Microsoft Excel, ASCII-delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add. Note that as of NWIS 4.8, neither drawdown nor specific capacity are automatically updated if the user modifies either the production or static water level.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program Station Change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QWDATA, ADAPS, and SWUDS except for

owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records will be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for DISC records. Use the Discharge View to create GWSI Delete transaction records from Microsoft Excel, ASCII-delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.21 Test (TEST) View

Purpose:

The Test View is used to access the GWSI TEST file. TEST records are used to store information about hydraulic tests (saturated or unsaturated) in wells or boreholes. SWUDS does not directly add or modify Test data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for the GWSI TEST file. To create test transaction records, use the SWUDS Batch Entry System with the Test View.

Dependencies:

A site must exist in the Sitefile before test records can be added for the site. The primary key for the Test file includes the Site_no.

A Test record must be established before GW_Result and Related Sites records can be added for a site.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Test type (test_tp)
Test start date (test_start_dt)
Start date time zone (test_start_tz_cd)
Test end date (test_end_dt)
End date time zone (test_end_tz_cd)
Party (test_party_tx)
Remark (test_rmk_tx)
Source agency (test_src_agency_cd)
Source (test_src_cd)
Test Web Ready Code (test_web_fg)

Adding data to the test file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Test View of SWUDS is used to create GWSI Test transaction files.

These are some points that the user should keep in mind when processing TEST data: The minimum fields required to add a new Test record are: agency code, site number, test type, start date, start date time zone, and source. Source agency is required if the source code indicates an agency was involved. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

A Test record serves as a parent to a GW_Result record. That is, every record in the GW_Result table must have an overarching TEST parent record. The Test record will use agency_cd, site_no, test_tp, and test_start_dt as the fields to uniquely identify a Test record (primary key), and this combination will be carried into the GW_Result record as well.

Modifying data:

Use the Test View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

Fields that comprise the primary key (agency_cd, site_no, test_tp, and test_start_dt) for a record cannot be modified. If the user finds that one or more of those fields are incorrect after having entered the data into GWSI through edit and update, the entire record must be deleted (see below) and reentered. Other fields in the Test record can be modified. To delete a non-mandatory field, such as Remark, from a Test record by use of SWUDS, enter a "*" in the appropriate field in the Excel or ASCII input file and process the record as above.

Agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. A user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS.

Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, assigners, and surface-water resource information.

SWUDS can be used to create DELETE transactions for TEST records. Use the Test View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.22 GW_Result (RSLT) View

Purpose:

The GW_Result View is used to access the GWSI GW_Result file. RSLT records are used to store information about the results of hydraulic tests (saturated or unsaturated) in wells or boreholes. SWUDS does not directly add or modify GW_Result data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for the GWSI RSLT file. To create GW_Result transaction records, use the SWUDS Batch Entry System with the GW_Result View.

Dependencies:

A site must exist in the Sitefile before GW_Result records can be added for the site. The primary key for the GW_Result file includes the Site_no. A Test record must exist before GW_Result and Related Sites records can be added for a site.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Test type (test_tp)
Test start date (test_start_dt)
Method code (meth_cd) (of analysis)
Data type (data_tp)
Geologic unit (gw_result_unit_cd)
Top of interval (gw_result_top_va)
Bottom of interval (gw_result_bottom_va)
Remark (gw_result_rmk_tx)
Source agency (gw_result_src_agency_cd)
Source (gw_result_src_cd)
Value (gw_result_tx)
Accuracy of value (gw_result_acy_cd)
Date this value was approved (gw_result_approval_dt)
Web Ready Code (gw_result_web_fg)

Adding data to the GW result file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The GW Result View of SWUDS is used to create GWSI GW Result transaction files.

These are some points that the user should keep in mind when processing RSLT data:

1. The minimum fields required to add a new GW Result record are: agency code, site number, test type, start date, start date time zone, method code, data type, source, and value. Source agency is required if the source code indicates an agency was involved. The rest of the fields are not required by GWSI, but they should be populated as completely as possible.

A GW_Result record serves as a parent to a Related Sites record. That is, every record in the Related Sites table must have an overarching RSLT parent record. The GW Result record will use the primary key fields of its parent Test record (agency_cd, site_no, test_tp, and test_start_dt), plus method code and data type, as the fields to uniquely identify a GW Result record (primary key), and this combination will be carried into the Related Sites record as well.

Modifying data:

Use the GW Result View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

Fields that comprise the primary key (agency_cd, site_no, test_tp, test_start_dt, meth_cd, and data_tp) for a record cannot be modified. If the user finds that one or more of those fields are incorrect after having entered the data into GWSI through edit and update, the entire record must be deleted (see below) and reentered. Other fields in the GW Result record can be modified. To delete a non-mandatory field, such as Remark, from a GW Result record by use of SWUDS, enter a "*" in the appropriate field in the Excel or ASCII input file and process the record as above.

Agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. A user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, assigners, and surface-water resource information.

SWUDS can be used to create DELETE transactions for RSLT records. Use the GW Result View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.23 Relates Sites (RSIT) View

Purpose:

This View is used to access the GWSI GW Result Site file. RSIT records are used to store information about the sites that contributed to the hydraulic test results that were entered in the Test and GW Result files; for example, results from a multi-well aquifer test will be stored in the GW Results file, and the list of wells that contributed to the analysis will be stored in the Related Sites file. SWUDS does not directly add or modify Related Sites data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for the GWSI RLTD file. To create Related Sites transaction records, use the SWUDS Batch Entry System with the Related Sites View.

Dependencies:

A site must exist in the Sitefile before Related Sites records can be added for the results. The primary key for the Related Sites file includes the Site_no.
A Test and GW_Result record must exist before Related Sites records can be added for a site.

The related site must exist in the Sitefile before it can be identified as a related site. Use the SWUDS Sitefile view to create the site record.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Test type (test_tp)
Test start date (test_start_dt)
Method code (meth_cd) (of analysis)
Data type (data_tp)
Agency code of related site
Site number of related site
Remark (gw_result_site_rmk_tx)

Adding data to the related sites file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the database, but only a user with GWSI write access can perform Option 4. The Related Sites View of SWUDS is used to create GWSI Related Sites transaction files.

These are some points that the user should keep in mind when processing RLTD data:

The minimum fields required to add a new Related Sites record are: agency code, site number, test type, start date, start date time zone, method code, data type, related-site agency code, and related-site site number. The remark field is not required by GWSI.

Every record in the Related Sites table must have an overarching GW Result parent record.

Users cannot identify a site as a Related Site unless it first exists in the Sitefile.

Modifying data:

Use the Related Sites View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

Fields that comprise the primary key (agency_cd, site_no, test_tp, test_start_dt, meth_cd, data_tp, related-site agency code, and related-site site number) for a record cannot be modified. If the user finds that one or more of those fields are incorrect after having entered the data into GWSI through edit and update, the entire record must be deleted (see below) and reentered. Other fields in the Related Sites record can be modified. To delete a non-mandatory field, such as Remark, from a Related Sites record by use of SWUDS, enter a "*" in the appropriate field in the Excel or ASCII input file and process the record as above.

Agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. A user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QW, ADAPS, and SWUDS except for owner, contact, owner-contact, assigners, and surface-water resource information.

SWUDS can be used to create DELETE transactions for RLTD records. Use the Related Sites View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.4.24 Datum History (ALTH) View

Purpose:

The Datum History View is used to access the NWIS DATUM HISTORY file. SWUDS does not directly add or modify Datum History data. However, the SWUDS Batch Entry System has the capability to generate GWSI Add or Modify transaction records for many GWSI files. To create Datum History transaction records use the SWUDS Batch Entry System with the Datum History View.

Dependencies:

A site must exist in the Sitefile before Datum History records can be added for the site. The primary key for the Datum History file includes the Site_no.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Datum Type (alt_datum_hist_tp)
Begin Date of this Datum History (alt_datum_hist_begin_dt)
Altitude Value of the Datum (alt_datum_hist_va)
Datum Value Accuracy (alt_datum_hist_acy_va)
Method of Datum History (alt_datum_hist_meth_cd)
Geodetic or Local Vertical Datum (alt_datum_cd)
Source of Datum History information (alt_datum_hist_src_cd)
Source Agency of Datum History information (alt_datum_hist_agency_cd)
Change of Datum Reason (alt_datum_hist_rsn_cd)
Datum Adjustment (alt_datum_hist_adj_cd)
Datum Remark (alt_datum_hist_tx)
Datum History Web Code (alt_datum_hist_web_cd)

Adding data to the Datum History file:

The Batch Entry System can be used to create add GWSI transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format files. Once the transaction records are made, the user must transfer the files to the NWIS server. The user must process the transaction through GWSI Main Menu Option 3 (EDIT data) to check for errors and create the update file. GWSI Main Menu Option 4 then loads the data into the

database, but only a user with GWSI write- access can perform Option 4. The Datum History View of SWUDS is used to create GWSI Datum History transaction files.

When processing DATUM HISTORY data, keep in mind that nearly all the fields are required to add a new Datum History. The field not required by GWSI is Datum Remark.

Modifying data:

Use the Datum History View to create GWSI Modify transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer the records to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and loads the data into the database. A special flag is set in the edit and update files to indicate that these transactions are Modify rather than Add.

The agency code and site number cannot be modified with GWSI. Use the Station Change (stnchange) utility program to modify agency code or site number. Only a user with database administrator access can use the station change utility.

Deleting data:

The program station change (stnchange) can be used to delete a site from NWIS. Everything will be deleted from GWSI, QWDATA, ADAPS, and SWUDS except for owner, contact, owner-contact, permitting agencies, and surface-water resource information.

To delete everything in SWUDS for a site, use the Water-Use Site View with the delete record indicator. The records will be submitted as a SWUDS modify transaction.

SWUDS can be used to create DELETE transactions for DATUM HISTORY records. Use the Datum History View to create GWSI Delete transaction records from Microsoft Excel, ASCII delimited, or ASCII fixed-format input files. Once the transaction records are created, the user will transfer them to the NWIS server and then a user with GWSI write access will process them by use of GWSI main menu options 3 (edit) and 4 (update). Option 3 (edit) checks the transaction records for errors and writes an update-ready file on the NWIS server. Option 4 (update) reads the update-ready file and deletes the data from the database. A special flag is set in the edit and update files to indicate that these transactions are Delete rather than Add or Modify.

3.5 Owners and Contacts Data Entry

Names and addresses in the NWIS database are stored in a shared table and can be entered using one of multiple data entry pathways. Owners and contacts of sites can be entered with the Site Owner, Owner Contact, Owner, Site Contact, and Contact Views. The Owner, Contact, and Owner Contact are not dependent on a site existing in the water-use site table; however, the site must exist in the Sitefile and the owner, contact and owner contact must exist in the NWIS database prior to associating owners and contacts to the site.

The Owner, Owner Contact, and Contact Views can be used to enter generic names, addresses, and phone numbers. Any individual or entity can be an owner, owner contact, or contact; therefore, any of these views can be used to enter names and addresses.

When a name is assigned to a site with the Site Owner or Site Contact View, then the name takes on that particular role. The same individual or entity can serve multiple roles; in this case the name and address only needs to be entered once. These views are simply overlays for data entry into the same database tables of names or parties. Therefore, if a given name and address is entered through the Owner View, the same name and address does not need to be reentered again in the Contact or Owner Contact Views.

Site owners and site contacts can also be entered and edited with GWSI. Both the SWUDS and GWSI applications can edit owner and contact information. However, input views documented here only apply to SWUDS.

3.5.1 Site Owner, Owner Contact, and Site Contact

A site owner is the person, agency, or company that owns a site. The owner contact is normally a person that is the contact for an owner owning one or more sites. The site contact is the person, agency, or company that one should contact for a given site. The following examples illustrate the differences between a site owner, an owner contact, and a site contact.

The Potomac Power Plant is a thermoelectric power site located on the Potomac River. The owner of the plant (site) is Virginia Power with its main office in Richmond, Virginia. Virginia Power owns many power plants (sites) all over the state. John Smith is the contact for Virginia Power and for all plants (sites) that are owned by Virginia Power. John is known as the owner contact. He is located at the company headquarters office in Richmond, Virginia.

Mary Hart works in an office at the Potomac Power Plant. She is the person to contact for information from this plant. Mary is known as the site contact.

3.5.2 Current Owner and Contact

Current owner and contact information is available through the Retrieval System on selected reports such as Site Inventory. If the current site owner type code associated with the site has been reported as Individual (IN) or Other (OT), this selection will not available

for retrieval because of privacy concerns. Reports such as Site Inventory expect only one owner or contact record to be displayed. The system takes a best guess at determining a single current owner and contact record based on how the site owner and site contact records are entered. The current site owner and site contact records retrieved by the system are only as valid as the database is kept current. Consider the current site owner and site contact as the last known site owner and site contact since the database was last updated. To find out when either the site owner or site contact record was last updated, the attributes "Site Owner Modify Date" or "Site Contact Modify Date" can be retrieved.

The Retrieval System uses the following approach to make a best guess at which record is the current/last known owner or current/last known contact for a site:

1. Ignore any records having an owner or contact end date.
2. Select the record having the latest owner or contact start date.
3. If no records have a start date, then the system selects the record with the maximum site owner or contact sequence number. SWUDS users cannot enter sequence numbers; the system auto-sequences the sequence number on the entry of new site owners or site contacts. A user can directly enter a sequence number using GWSI.

3.5.3 Site Owner Type

The Site Owner View contains a code that can be set to indicate the type of owner. This data element is mandatory for all site owner entries. The codes are:

Code	Name	Description
IN	Individual	Owner is an individual, or a group of individuals who are not a legal corporation.
CP	Corporation	Owner is a legal entity composed of one or more individuals acting as a single person. A Local or National company owning an industrial or commercial facility is an example. Nonprofit natural lands trust and land conservancies are coded as corporations. Corporations that are water suppliers are coded as a water supplier.
GV	Government	Owner is a Local, State, or Federal agency. Government agencies providing water supply (a municipal water authority) are coded as a water supplier. Government agencies providing wastewater treatment (a municipal sewer authority) are coded as government. Federal- or State-recognized Indian tribal governments, including corporations wholly owned by tribal governments, are coded as Government. Government agencies providing wastewater treatment (a municipal sewer authority) are coded as government. Federally- or State-recognized Indian tribal governments, including corporations wholly owned by tribal governments, are coded as Government.
WS	Water Supplier	Owner is a private or public entity that withdraws and/or distributes water to 25 or more residents or a minimum of 15 service connections. The National Water-Use Code for the site(s) is "WS" to indicate public supply.
OT	Other	The type of owner is known and it is something other than a water supplier, a corporation, individual, or government. For example, private-public partnerships are coded as Other. The use of Other should be avoided if possible.

Code	Name	Description
MI	Military	Owner is a branch of the U.S. military.
TG	Tribal Government	Owner is a Federal- or State-recognized Indian tribal government, a subdivision of such, or a corporation wholly owned by a tribal government.

Table 43. Site Owner Type Codes

The site owner code of Water Supplier (WS) should be used for those site owners that are water suppliers. A public supply system (water supplier) is identified in SWUDS as the owner of a site. To identify a public supply system first create an owner record (using the owner view) with the name, address, and phone number of the public water supply system. Then use the Site Owner view to associate the public supply to the sites that it owns. The Retrieval System can be used to retrieve the list of sites by selecting all sites owned by a specific public supply system.

The sites associated to a water supplier should have the National Category Code in the Sitefile set to WS (water supply). Irrigation supplies should have the National Category Code in the Sitefile set to IR (irrigation).

The geographic extent of a water supply is identified by the location of the sites the water supplier owns. A water-distribution system (FA-WDS) site can be entered associated with a water supplier. A water-distribution system is the collection of pipes used to distribute water to customers. The geographic extent of the water-distribution system is primarily identified by the county FIPS code and hydrologic unit code stored in the Sitefile. A water-distribution system can have a National Category Code of WS (water supply) or IR (irrigation).

Site Owner Type Code Individual (IN) and Other (OT) do not appear as a report option on the Owner tab of the Retrieval System GUI because of privacy restrictions; however, the Site Owner report does provide a method to retrieve this data by selecting "Site All Owners" in the "Attribute Selection" window.

3.5.4 Owner View

Purpose:

An owner is a water supplier, corporation, government agency, or individual that owns a site. Owners are stored in the database in such a way that a given owner can be associated with more than one site. The approach allows a user to ask, "Give me all sites owned by this owner."

For example, the Potomac Power Plant is a thermoelectric-power site located on the Potomac River. Virginia Power is the owner of the plant and owns other plants (sites) in the state. The owner record for Virginia Power will be entered once with the Owner View. The Site Owner View will be used to associate Virginia Power to all the plants (sites) it owns.

Names and addresses can be entered with any of the following views: Owner, Owner Contact, and Contact. The entity is not considered an owner, owner contact, or contact until such time the entity is used in that context. Once a name and address have been entered under one view, it does not need to be reentered under a different view. The views are simply overlays that allow names and addresses to be entered. The user can use the SWUDS Names and Addresses report to retrieve existing names and addresses to determine if a name already exists in the database.

The NWIS database stores a master list of agency codes and agency names in a table called Agency. An existing agency entry can be used as an owner of a site. The agency's entry can be retrieved using the Names and Addresses report. The alias name for an agency will be populated with the NWIS agency code. A user should not use the owner, contact, or owner contact views to enter new agencies. To have new agencies added to the NWIS, send a request to GS-W HELP GWSI.

Dependencies:

Owners can be entered at any time. It is a good practice to retrieve names in the database existing Names and Addresses report to verify an existing name or update the addresses information. There are no dependencies. However, owner records must be entered before associating them to site records with the Site Owner View.

Attributes:

Owner Alias Name (party_alias_nm) - *system-generated, not entered by the user.*
Owner Name (party_nm)
Owner Phone (phone_no)
Owner Address Line 1 (line_1_tx)
Owner Address Line 2 (line_2_tx)
Owner City (city_nm)
Owner Postal Code (addr_post_cd)
Owner Zip (zip_cd)
Owner Country (addr_country_nm)

Adding Data:

1. The minimum data to be entered are the name of the owner (Owner Name) and at least one field from the address or the owner's phone number. If the user does not know the address or the phone number, then it is recommended that the user enter the name of the country.

2. One owner can be entered for each unique combination of owner name and unique address including phone number. Identification of a unique owner is done using a case-insensitive match on both the owner name and address. This means that "SALTVILLE, TOWN OF" and "Saltville, town of" are considered the same owner name. The format of owner names should be standardized. The use of a standard naming convention may eliminate the duplication of owner records. For example, you may choose to enter all Town names using the following format "NAME, TOWN OF", i.e. "SALTVILLE, TOWN OF".

3. An alias name for an owner record is not entered by the user when new owners are added. The system generates unique owner alias names based on the owner name. The owner alias name is used to uniquely identify owner records when doing modifies or when accessing specific owners in other views or the Retrieval System. The owner alias name allows the user to identify a unique owner without having to enter a full address and phone number. The owner alias name allows the user to select specific owners in the case where two or more owners have the same name.

   The system generates the owner alias name by left-justifying, uppercasing, and removing all extra white space from the alias name (i.e. 'Virginia Power Company' would become 'VIRGINIA POWER COMPANY').

   If two different owners have the same owner name but different addresses or phone numbers, the system uses a numbering scheme as part of the owner alias name to generate a unique owner alias name. The first owner alias name will be generated with no sequence number. Subsequent owner alias names will have an integer sequence number appended to the names. The sequence number starts with one.

   The owner alias name attribute was new starting at the NWIS 4.2 release. Existing owner records had owner alias names created by the system as part of the NWIS 4.2 transfer. The system appended zero to the end of the owner name to generate an owner alias name.

4. On the entry of a new owner, two mandatory web access codes (accs_cd) are entered by the system. One access code is used to set access on just the owner's name. The other access code is used to set access on the owner's address and phone number. The access codes are automatically set by the system to "3" (District Use Only) by both GWSI and SWUDS. SWUDS cannot be used to enter or modify the access codes.

Modifying data:

When modifying the owner record, an Owner Alias Name, not the Owner Name is required. The owner alias name is used to retrieve the appropriate owner record to modify. Owner alias names can be retrieved using either the Names and Addresses report or the Site Owner reports found in the Retrieval System.

The owner name, address, and phone number can be modified. The user cannot modify the owner alias name. The user cannot modify (add an address and phone number) an owner record if it was initially entered without an address or phone number.

If the modified owner record results in a combination of attributes that already exist for another owner record, the transaction will be rejected.

SWUDS cannot be used to modify information about agencies. Contact GS-W HELP GWSI to request any change to the NWIS AGENCY reference list.

To remove (blank out) a specific attribute, enter a "$" or "*" for a value. The owner name cannot be deleted.

Deleting Data:

An owner cannot be deleted using SWUDS or GWSI. A DBA utility for deleting owners will be made available for a later NWIS release.

3.5.5 Owner Contact View

Purpose:

An owner contact is an individual who provides information about the owner, particularly if the owner is an agency or corporation.

For example, the Potomac Power Plant is a thermoelectric power site located on the Potomac River. Virginia Power is the owner of the plant and many other plants (sites) in the state. John Smith is a common contact for all sites owned by Virginia Power. John is the owner contact. He is located in the company headquarters' office in Richmond, Virginia.

Another example is where Frederick Jones is the owner of a farm with several wells in Greene County. Mr. Jones is no longer able to handle his affairs. His son, James Jones, is the contact in providing information for his father.

Note the distinction between the owner contact and the site contact. The owner contact provides information about the owner and possibly about the owner's sites. An example is the contact for a corporation which owns multiple industrial facilities. The site contact provides information for a specific site, such as the plant engineer at an industrial facility. It is possible particularly with farms, that the owner, owner contact, and contact (for the site) are all the same person. In this example the name and address need only be entered once, preferably on the owner record.

Names and addresses can be entered with any of the following views: owner, owner contact, and contact. The entity is not considered an owner, owner contact, or contact until such time the entity is used in that context. Once a name and address has been entered under one view, it does not need to be reentered under a different view. The views are simply overlays that allow names and address to be entered. The user can use the SWUDS Names and Addresses report to retrieve existing names and addresses to determine if the person, corporation, or other entity already exists in the database.

The NWIS database stores a master list of agency codes and agency names in a table called Agency. An existing agency entry can be used as an owner contact of a site. The agency's entry can be retrieved using the Names and Addresses report. The alias name for an agency is populated with the NWIS agency code. A user should not use the owner, contact, or owner contact views to enter new agencies. To have new agencies added to the NWIS send a request to GS-W HELP GWSI.

Dependencies:

Owner contacts can be entered at any time. There are no dependencies; however, owner contacts must be entered before the user attempts to use the contact when entering site owner information using the Site Owner View.

Attributes:

Owner Contact Alias Name (party_alias_nm) - *system generated, not entered by the user.*
Owner Contact Name (party_nm)
Owner Contact Phone (phone_no)
Owner Contact Address Line 1 (line_1_tx)
Owner Contact Address Line 2 (line_2_tx)
Owner Contact City (city_nm)
Owner Contact Postal Code (addr_post_cd)
Owner Contact Zip (zip_cd)
Owner Contact Country (addr_country_nm)

Adding Data:

1. The minimum data to be entered is the name of the owner contact (Owner Contact Name) and one attribute from the address fields. If the owner's address or phone number is not available, the user should enter the appropriate Country Name.

2. One owner contact can be entered for each unique combination of owner contact name and unique address including phone number. Identification of a unique owner contact is done using a case-insensitive match on both the owner contact name and address.

3. "JOHN SMITH" and "John Smith" are considered the same owner contact name. The format of owner contact names should be standardized. The use of a standard naming convention will help minimize the entry of multiple records for the same owner contact. For example, the user may choose to enter all names of individuals using the following format "Last name, First name, Middle initial", i.e. "Smith, John A.". Office policy may dictate the format to be used.

4. An unique alias name for an owner contact record is generated by the system based on the owner contact name. The owner contact alias name is used to uniquely identify owner contact records when doing modifies or when accessing specific owner contacts in other views or the Retrieval System. The owner contact alias name allows the user to identify a unique owner contact without having to enter a full address and phone number, and to select specific owner contacts in the case where two or more owner contacts have the same name.

5. The system generates the owner contact alias name by left-justifying, uppercasing, and removing all extra white space from the alias name (i.e. 'John Smith' would become 'JOHN SMITH').

6. If two different owner contacts have the same name but different addresses or phone numbers, the system uses a numbering scheme as part of the owner contact alias name to generate a unique owner contact alias name. The first owner contact alias name will be generated with no sequence number. Subsequent owner contact alias names will have an integer sequence number appended to the names. The sequence number starts with one.

   The alias name attribute and address fields were new starting at the NWIS 4.1 release. Existing owner contact records had owner contact alias names created by the system as part of the NWIS 4.2 transfer. The system appended zero to the end

of the owner contact name to generate an owner contact alias name. Records with zero on the end of the alias name do not have an address and cannot be modified. To add address information for one of these records, enter a new owner contact record to replace the "zero record".

7. On the entry of a new owner contact, two mandatory web access codes (accs_cd) are entered by the system. One access code is used to set access on just the owner's name. The other access code is used to set access on the owner's address and phone number. The access codes are automatically set by the system to "3" (District Use Only) by both GWSI and SWUDS. SWUDS cannot be used to enter or modify the access codes.

Modifying data:

An owner contact alias name is required to modify an existing owner contact record. The owner alias name is used to retrieve the appropriate owner contact record to modify. Owner contact alias names can be retrieved using the Names and Addresses report found in the Retrieval System.

The owner contact name, address, and phone number can be modified. The user cannot modify the owner contact alias name. The user cannot modify (add an address and phone number) an owner contact record if it was initially entered without an address or phone number.

If the modified owner contact record results in a combination of attributes that already exist for another record, the transaction will be rejected. SWUDS cannot be used to modify information about agencies. Contact GS-W HELP GWSI to request any change to the NWIS AGENCY reference list. To remove (blank out), a specific attribute, enter an "$" or "*" for a value. The owner contact name cannot be deleted.

Deleting Data:

An owner contact cannot be deleted using SWUDS or GWSI. A DBA utility for deleting owner contacts will be made available for a later NWIS release.

3.5.6 Site Owner View

Purpose:

The Site Owner view is used to associate one or more owner records with a site. A site-owner alias name MUST be entered for the system to identify the correct owner record. For example, the SWUDS Site Owner view allows the user to associate the "Virginia Power Company" as the owner of a site. The site-owner start date, site-owner end date, and the type of owner can also be entered. If there is a separate contact name for the owner, this may be entered as the site owner contact by including the site owner contact alias name. For example, if the plant engineer at the Virginia Power Company-owned site is Jimmy Smith, his name can be entered as the site owner contact.

Multiple owners can be associated with a site over time and can have begin and end dates of ownership; however, only one owner can be used by the system as the current/last known site owner.

Dependencies:

The site must exist in the Sitefile before entering site owner records. Owners and owner contacts must exist in the database before they can be associated with a site.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Site Owner Alias Name (site_owner_alias_nm)
Site Owner Type Code (site_owner_cd)
Site Owner Contact Alias Name (site_owner_contact_alias_nm)
Site Owner Start Date (site_owner_start_dt)
Site Owner End Date (site_owner_end_dt)
Delete Record Indicator (Modify) (delete_record_cd)
Edit Site Owner Alias Name (Modify) (new_site_owner_alias_nm)
Edit Site Owner Start Date (Modify) (new_site_owner_start_dt)

Adding Data:

1. The minimum data to be entered is the agency code, site number, site owner type code, and site owner alias name. The site owner start date, if known, should also be entered.

   Owners are uniquely identified using site owner alias name. The system forces the site owner alias name to be unique, whereas the owner names are not unique. In most cases the owner name should be the same as the site owner alias name with the exception of agencies. The Names and Addresses report in the retrieval system can be used to help locate the owner alias name for the desired site owner.

   For agencies, the site owner alias name is the agency code. For example, entering a site owner alias name of "USGS" will assign the U.S. Geological Survey as the owner of the site, because the USGS/U.S. Geological Survey owner record already exists in the database. The site owner alias name of "USGS" is used to identify the official U.S. Geological Survey agency record. Do not enter U.S. Geological Survey as the site owner alias name.

A sample of the top three rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Start Date
USGS	13136500	JOHN SMITH COMPANY	CP	20000101
USGS	393318074253638	R. W. JOHNSON	IN	

2. A site owner record can be entered for each unique combination of site number, agency code, site owner alias name, site owner type code, and site owner start date.

3. Start and end dates can be partial dates (e.g. YYYY, YYYYMM, or YYYYMMDD). Dates are optional. A single owner can be entered without start and end dates. If a site owner history is to be stored, then dates are suggested. Year must be a value between 1582 and the current date.

3. The end date cannot be entered without a start date. The end date must also be later than the start date. The user can enter a start date with no end date. If the start date is missing and the end date is known, the user must leave the end date blank.

4. Even though a site can have multiple owners over time (ownership-history), a site can only have one current/last known owner. The current/last known owner is based on the dates that have been entered. In a list of owner sequence numbers, the highest number is assumed to be the current owner. The Site Owner report will retrieve the site owner history and sequence numbers.

5. The site owner type code is mandatory. The site owner type code of Individual (IN) is considered proprietary and is not found in the list of owner type codes under the Owner tab when creating retrieval specifications with the retrieval system.

   Additionally, security policy prohibits the user from using individuals as a retrieval criterion. The site owner type code is not the only way to identify a water supplier. A site may have a National Water Use Code (C39) of water supply (WS). However, the definition of water supply varies somewhat between the Site Owner type code and the National Water Use Code. The National Water Use Code includes a water supplier that provides water for irrigation and the owner type code does not. A water supply system is assumed to be all sites owned by the same water supplier where the owner type code identifies the owner as a water supplier. Owner type codes are validated against the reference list table SITE_OWNER_CD**.**

Code	Name	Description
IN	Individual	Owner is an individual, or a group of individuals who are not a legal corporation.
WS	Water Supplier	Owner is a private or public entity that withdraws and/or distributes water to 25 or more residents or a minimum of 15 service connections. The National Water Use code for the site(s) should be "WS" to indicate public supply.
CP	Corporation	Owner is a legal entity composed of one or more individuals acting as a single person. A local or national company owning an industrial or commercial facility is an example. Nonprofit natural lands trust and land conservancies should be coded as corporations. Corporations that are water suppliers should be coded as a water supplier.
GV	Government	Owner is a local, State, or federal agency. Government agencies providing water supply (such as a municipal water authority) should be coded as a Water Supplier. Government agencies providing wastewater treatment (a municipal sewer authority) or other services than water supply should be coded as Government. Federal- or state-recognized Indian tribal governments, including corporations wholly owned by tribal governments, should be coded as Indian tribal government.
MI	Military	Owner is a branch of the U.S. military.
TG	Tribal Government	Owner is a Federal- or state-recognized Indian tribal government, a subdivision of such, or a corporation wholly owned by a tribal government.
OT	Other	The type of owner is known and is something other than a water supplier, a corporation, individual, government, Indian tribal government, or military. For example, private-public partnerships should be coded as Other. The use of Other should be avoided if possible.

Table 44. Site Owner Codes.

Modifying data:

Agency code, site number, site owner alias name, site owner type code, and site owner start date are required for the system to find the record to be modified. If the user is trying to modify a site owner record where the start date *was never entered*, including the start date as a column in the input data set is optional. If the user is trying to modify a site owner record where the start date *was entered*, then including the start date as a column in the input data set is mandatory; however, the user only needs to enter the start date if the

site owner record being modified has a start date. The following modifications are allowed:

1. To modify the site owner end date, enter the agency code, site number, site owner alias name, site owner start date, and the new value for the site owner end date. A sample of the top three rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Start Date
USGS	13136500	SMITH AND SONS, LLC	CP	20000101
USGS	393318074253638	R. W. JOHNSON	IN	

2. To modify the site owner contact alias name, enter the agency code, site number, site owner alias name, site owner start date, and the new value for the site owner contact alias name. A sample of the top two rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Contact Alias Name	Site Owner Start Date
USGS	13136500	SMITH AND SONS, LLC	CP	BOB HOPE	20000101

3. To modify the site owner, enter the agency code, site number, site owner alias name (that currently exists in the database), site owner start date and edit site owner alias name. A sample of the top two rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Start Date	Edit Site Owner Alias Name (Modify)
USGS	13136500	SMITH AND SONS, LLC	CP	20000101	J.P. SMITH COMPANY

4. To modify the start date, enter the agency code, site number, site owner alias name, the site owner start date (that currently exists in the database), and new site owner start date. A sample of the top two rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Start Date	Edit Site Owner Start Date (Modify)
USGS	13136500	SMITH AND SONS, LLC	CP	20000101	20090524

5. To blank (remove) the end date or owner contact alias name, enter a "$" or "*" for a value. A sample of the top two rows of a batch entry spreadsheet for the site owner follows:

Agency Code (C4)	Site Number (C1)	Site Owner Alias Name	Site Owner Type Code	Site Owner Start Date	Site Owner End Date
USGS	13136500	SMITH AND SONS, LLC	CP	20000101	$

Deleting data:

On a modify operation, the delete record indicator can be set to the value "$" or "*" to indicate that the site owner association should be deleted. Agency code, site number, site owner alias name, and site owner start date are required for the system to find the record to be deleted.

On the deletion of a site owner record, the system only removes the association of the site to an owner. The system will not delete the actual owner name since it may be associated with another site. SWUDS does not delete names and addresses. Therefore, deleting site owner records could cause orphaned name and address records to exist in the database.

Orphaned name and address records are records that are not associated with any site in the NWIS database. The UNIX program /usr/opt/nwis/admin/get_orphaned_party can be used by a user with nwis_privacy access to get a list of existing orphaned names and addresses. The UNIX program /usr/opt/nwis/admin/delete_orphaned_party can be used by user nwis to delete all orphaned name and address records.

During the process of correcting the spelling of owner names or changing addresses, orphaned name and address records may get created. The site administrator should use the delete orphaned party program occasionally to remove the orphaned records.

Available Reports:

The complete site owner history is available in the Site Owner report.

The current Site Owner data can be retrieved in the following SWUDS report formats:

- Withdrawal
- Return
- Water Quantity (From- and To-sites)
- Site Inventory
- Place-of-Use Site Quantity
- Permit
- Population Served
- Conveyance Inventory (From- and To-sites)

3.5.7 Contact View

Purpose:

The Contact View is used to enter names, addresses, and phone number of contacts.

A contact is the individual or organization that one would contact about a site. Contact records must be entered before associating them to site records.

For example, the Potomac River Power Plant is a thermoelectric-power site located on the Potomac River. The owner of the plant is the Virginia Power. However, the actual site, the Potomac River Power Plant, is located on the Potomac River. Mary Hart is the site contact. She works in an office at the Potomac River Power Plant.

Names and addresses can be entered with any of the following views: owner, owner contact, and contact. The entity is not considered an owner, owner contact, or contact until such time the entity is used in that context. Once a name and address has been entered under one view, it does not need to be reentered under a different view. The views are simply overlays that allow names and address to be entered. The user can use the SWUDS Names and Addresses report to retrieve existing names and addresses to determine if a name already exists in the database.

The NWIS database stores a master list of agency codes and agency names in a table called Agency. An existing agency entry can be used as a contact of a site. The agency's entry can be retrieved using the Names and Addresses report. The alias name, for an agency, will be populated with the NWIS agency code. A user should not use the owner, contact, or owner contact views to enter new agencies. To have new agencies added to the NWIS send a request to GS-W HELP GWSI.

Dependencies:

Contacts can be entered at any time. There are no dependencies. However, the contact must exist before it can be associated to a site using the Site Contact View.

Attributes:

Contact Alias Name (party_alias_nm) - *system generated, not entered by the user.*
Contact Name (party_nm)
Contact Phone (phone_no)
Contact Address Line 1 (line_1_tx)
Contact Address Line 2 (line_2_tx)
Contact City (city_nm)
Contact Postal Code (addr_post_cd)
Contact Zip (zip_cd)
Contact Country (addr_country_nm)

Adding data:

1. The minimum data to be entered are the name of the contract (Contact Name) and at least one field from the address or the contact's phone number. If the user does not know the address or the phone number, then it is recommended that the user enter the name of the country.

2. One contact can be entered for each unique combination of contact name and unique address including phone number. Identification of a unique contact is done using a case-insensitive match on both the contact name and address. This means that "Mary Hart" and "MARY HART" are considered the same contact name. The format of contact names should be standardized. The use of a standard naming convention may eliminate the duplication of contact records. For example, the user may choose to enter all contact names using the following format "LAST NAME, FIRST NAME", i.e. "Hart, Mary".

3. An alias name for a contact record is not entered by the user when new contacts are added. The system generates unique contact alias names based on the contact name. The contact alias name is used to uniquely identify contact records when doing modifies or when accessing specific contacts in other views or the Retrieval System. The contact alias name allows the user to identify a unique contact without having to enter a full address and phone number. The contact alias name allows the user to select specific contacts in the case where two or more contacts have the same name.

   The system generates the contact alias name by left-justifying, uppercasing, and removing all extra white space from the alias name (i.e. 'Mary Hart' would become 'MARY HART').

   If two different contacts have the same contact name but different addresses or phone numbers, the system uses a numbering scheme as part of the contact alias name to generate a unique contact alias name. The first contact alias name will be generated with no sequence number. Subsequent contact alias names will have an integer sequence number appended to the names. The sequence number starts with one.

   The contact alias name attribute was new starting at the NWIS 4.2 release. Existing contact records had contact alias names created by the system as part of the NWIS 4.2 transfer. The system appended zero to the end of the contact name to generate a contact alias name.

4. On the entry of a new contact, two mandatory web access codes (accs_cd) are entered by the system. One access code is used to set access on just the contact's name. The other access code is used to set access on the contact's address and phone number. The access codes will be automatically set by the system to "3" (District Use Only) by both GWSI and SWUDS. SWUDS cannot be used to enter or modify the access codes.

Modifying data:

A contact alias name is required to modify an existing contact record. The contact alias name is used to retrieve the appropriate contact record to modify. Contact alias names can be retrieved using either the Names and Addresses report or the Site Owner reports found in the Retrieval System.

The contact name, address, and phone number can be modified. The user cannot modify the contact alias name. The user cannot modify (add an address and phone number) a contact record if it was initially entered without an address or phone number.

If the modified contact record results in a combination of attributes that already exist for another contact record, the transaction will be rejected.

SWUDS cannot be used to modify information about agencies. Contact GS-W HELP GWSI to request any change to the NWIS AGENCY reference list.
To remove (blank out) a specific attribute, enter a "$" or "*" for a value. The contact name cannot be deleted.

Deleting data:

A contact cannot be deleted using SWUDS or GWSI. A DBA utility for deleting contacts will be made available for a later NWIS release.

3.5.8 Site Contact View

Purpose:

The Site Contact View is used to associate one or more contact records to a site. Multiple contacts can be associated to a site. However, only one site can be is used by the system as the current/last known contact.

For example, Mary Hart is a site contact. She works in an office located at the Potomac Power Plant. The Site Contact View is used to associate Mary Hart to the Potomac Power Plant site. Virginia Power is the owner of the site located in Richmond, VA. John Smith is the owner contact located in Richmond, VA.

Dependencies:

The site must exist in the Sitefile before entering site contact records. Contacts must exist in the database before they can be associated to a site.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Site Contact Alias Name (site_contact_alias_nm)

Attributes (continued):

Site Contact Start Date (site_contact_start_dt)
Site Contact End Date (site_contact_end_dt)
Delete Record Indicator (Modify) (delete_record_cd)
Edit Site Contact Alias Name (Modify) (new_site_contact_alias_nm)
Edit Site Contact Start Date (Modify) (new_site_contact_start_dt)

Adding Data:

1. The minimum data to be entered is the agency code, site number, and site contact alias name. A site contact record can be entered for each unique combination of site number, agency code, owner alias name, and site owner start date.
2. Start and end dates can be partial dates (e.g. YYYY, YYYYMM, or YYYYMMDD). Dates are optional. A single contact can be entered without start and end dates. If a site contact history is to be stored, then dates are suggested.
3. The user will receive a data integrity error if the end date was entered but the start date was not entered. The end date must also be later than the start date. The user can enter a start date with no end date.
4. Contacts are uniquely identified using contact alias name. The system forces contact alias name to be unique. Contact names are not unique. In most cases the contact name should be the same as the contact alias name with the exception of agencies. For agencies, the contact alias name is the agency code.
5. Even though a site can have zero to many contacts over time, a site can only have one current/last known contact. The current/last known contact is based on the dates that have been entered.

Modifying Data:

Agency code, site number, site contact alias name, and site contact start date are required for the system to find the record to be modified. If the user is trying to modify a site contact record where the start date *was never entered*, then including the start date as a column in the input data set is optional. If the user is trying to modify a site contact record where the start date *was entered,* then including the start date as a column in the input data set is mandatory. The following modifications are allowed:

1. To modify the site contact end date, enter the agency code, site number, site contact alias name, site contact start date, and a new value for the site contact end date.
2. To modify the contact, enter the agency code, site number, site contact alias name (that already exists in the database), site contact start date and the new site contact alias name.
3. To modify the start date, enter the agency code, site number, site contact alias name, site contact start date (that already exists in the database), and new site contact start date.
4. To modify the end date, enter a “$” or “*” for a value.

Deleting Data:

On a modify operation the delete record indicator can be set to the value "$" or "*" to indicate that the site contact association should be deleted. Agency code, site number, site contact alias name, and site contact start date are required for the system to find the record to be deleted.

On the delete of a site contact record, the system only removes the association of the site to a contact. The system will not delete contact records (names, addresses, and phone numbers).

3.6 Permit Data Entry

The Permit and Site Permit views allow the input of information about permits and related items, generally those which confer a legal authorization to conduct an activity such as withdrawing water or drilling a well. Numerical identifiers which do not convey a legal authorization or are not issued under a regulatory program may be stored in the Other ID table. Permit identifiers can be output in place of or in addition to the USGS site identification number. Once the permitting agency and permits have been entered, then the Site Permit View can be used to associate sites to permits. A site can have one or more permits assigned to it. One or more sites can be assigned to the same permit. The sites must exist in the Sitefile before associating a site to a permit with the Site Permit View.

3.6.1 Permits

Permit identifiers can be used to relate information in SWUDS to other sources of data. Permits can be used to store other agencies identifiers for a site as well as daily, monthly, or annual pumping restrictions.

A permit is issued by an agency. The permitting agency (permit assigner) must be a valid agency that is listed in the NWIS Agency reference list.

Since permits can be assigned to multiple sites, permits must exist before they are associated to sites. Use the Permit View to add permits.

3.6.2 Last Permit

It is possible to have multiple permits entered for the same site for the same permit code and permitting agency name. Each permit would have a unique combination of the Permit Type and Permitting Agency. For example, a site could have two Water Allocation (ALLC) numbers with the same Permitting Agency. The first permit entry would have an End Date that precedes the Start Date for the second permit. The site could also have a single State Well Permit Number (STWL).

Last permit information is available through the Retrieval System on selected reports such as Site Inventory. Reports such as Site Inventory expect only one last permit to be displayed. The Retrieval System assumes that the last permit is the permit with the most recent start date. End dates have no bearing on which permit is selected as the last permit.

It is possible to associate one or more permits to a site with no permit dates. However, if the dates are not entered, only one permit can be associated to a site for each unique combination of permit code and permitting agency. If there are no permits with start dates, then the permit record with the blank start will be displayed as the last permit. Following are five cases showing which record will be selected as the last permit where today's date is 20020806 in the Retrieval System. See table 45 below.

Permit Name/Number	Permit Type Code	Permitting Agency	Permit Start Date	Permit End Date	Comment
case1-last *	UNSP	USGS			Last, no dates.
case2-last	UNSP	USGS	19051201		Last, most recent start date.
case3-last	UNSP	USGS	19051201	20300101	Last, end dates have no bearing.
case4-last	UNSP	USGS	20031201	20041201	Last, end dates have no bearing.
case5-failed-entry	UNSP	USGS		20041201	Invalid entry, cannot enter permit with end date with no start date.
case6-failed-entry	UNSP	USGS		20300101	Invalid entry, cannot enter permit with end date with no start date.
case7-notlast-a	UNSP	USGS			
case7-notlast-b	UNSP	USGS	20000101		
case7-last	UNSP	USGS	20060101		Last, most recent start date, start date selected before blank
case8-notlast-a	UNSP	USGS	20000101	20300101	
case8-last	UNSP	USGS	20040101	20050101	Last, end dates have no bearing.
case9-notlast-a	UNSP	USGS	19060101	20300101	
case9-notlast-b	UNSP	USGS	19051201	20300101	
case9-last	UNSP	USGS	20051201	20300101	Last, end dates have no bearing.
case10-notlast-a	UNSP	USGS			
case10-notlast-b	UNSP	USGS	19500101	20000101	
case10-last	UNSP	USGS	19510101		Last, most recent start date.
case11-last	UNSP	USGS			Last, one last permit for each unique combination of permit code and permitting agency name.
case11-last	INJC	USGS			Last, one last permit for each unique combination of permit code and permitting agency name.
case11-last	ALLC	USGS			Last, one last permit for each unique combination of permit code and permitting agency

Permit Name/Number	Permit Type Code	Permitting Agency	Permit Start Date	Permit End Date	Comment
					name.
case12-notlasta	UNSP	USGS			
case12-notlastb	UNSP	USGS	20040101		
case12-last	UNSP	USGS	20040102		Last, one last permit for each unique combination of permit code and permitting agency name.
case12-notlasta	INJC	USGS			
case12-notlastb	INJC	USGS	20000101		
case12-last	INJC	USGS	20000201		Last, one last permit for each unique combination of permit code and permitting agency name.
case12-notlasta	DRLL	USGS	19001111		
case12-notlastb	DRLL	USGS	19051201		
case12-last	DRLL	USGS	19061201	19071212	Last, one last permit for each unique combination of permit code and permitting agency name.

Table 45. Records Indicating Last Permit

*** Only one permit for each unique combination of permit code and permitting agency name can be associated to a site where the start date and end date are not entered.**

Some report types in the Retrieval System can display the one or more last permit numbers as columns. The user identifies which permit numbers to display by specifying the associated permit code and permitting agency name. A column will be added to the report for each unique combination of permit code and permitting agency name the users selects.

3.6.3 Permitting Agency

The permitting agency name is an agency that assigns the permit name or number. For example, the user might enter U.S. Environmental Protection Agency in the case where EPA assigns public water supply identifiers. Permitting agencies must exist as an Agency Code before associating them to permit records.

The NWIS database stores a master list of agency codes and agency names in a table called Agency. An existing agency entry can be used as an permitting agency of a site. The agency's entry can be retrieved using the Names and Addresses report. The alias name for an agency must be populated with the NWIS agency code. The owner, contact, or owner contact views cannot not be used to enter new agencies. To have new agencies added to the NWIS send a request to GS-W HELP GWSI.

3.6.4 Permit View

The permit record must be created before associating it to a site. The same permit record can be associated to one or more sites.

Permits are treated as standalone entities. Permit information can be entered once for each permit. The same permit can be associated with one or more sites. The Permit View does not assign sites to a permit. Once the user has entered the permit, the Site Permit View can be used to associate the permit number to a specific site.

Dependencies:

Permitting Agency (Agency Code) must exist before permit records can be entered.

Attributes:

Permit Name/Number C121 (permit_tx)
Permit Type Code C123 (permit_cd)
Permitting Agency C122 (permitting_agency_cd)
Permit Start Date C124 (permit_start_dt)
Permit End Date C125 (permit_end_dt)
Permitted Average Duration Code C131 (avg_du_cd)
Permitted Average Flow Rate C128 (avg_fc)
Permitted Average Flow Unit C130 (avg_unit_abbrv_tx)
Permitted Maximum Duration Code C137 (max_du_cd)
Permitted Maximum Flow Rate C137 (max_fc)
Permitted Maximum Flow Unit C136 (max_unit_abbrv_tx)
Legal Water Body Name C127 (legal_water_body_nm)

Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The minimum data that can be entered include: the permit type code, permitting agency, and permit name/number. The permit type code must be one of the valid permit codes found in the reference list. See permit type code in the Data Dictionary in the Options tab of the Template Builder for a list.
2. Permit start date and end date are not required; however, to track changes in permits over time, it is a good practice to enter the dates. If adding dates, the start date range is from January 1, 1582 to the current year plus one year. If the current year is 2010, then you can add a start date beginning throughout 2010 and 2011, but not 2012. The end date range is from January 1, 1582 to infinity. All end dates must be at least the same date as the start date or later.
3. The user will receive a data integrity error when entering records where there is an end date but no start date. To allow the user to enter the record, a start date must be entered. If the user does not know the start date, then the value of the end date should also be entered as the start date. The user can enter a start date with no end date.

4. If a permitted average flow rate or maximum flow rate is entered, the permitted duration code and permitted reporting unit must also be entered. The average and maximum values entered are the value that is restricted for any single day, month, or year.

5. The permitted average flow duration code (avg_du_cd) and the permitted maximum flow duration code (max_du_cd) are validated against the nationally maintained Reference List DU_CD; values are single day (D), month (M), or year (Y).
6. The permitted average flow units (avg_wu_unit_tx) and the permitted maximum flow units (max_wu_unit_tx) are validated against the nationally maintained Reference List WU_UNIT; see the Data Dictionary in the Options tab of the Template Builder for a list.
7. The legal water body name may or may not be the same name entered for surface-water resource in the Water-Use Site View. The difference between the two attributes is that the water body name entered on the Permit View is the spelling or name that needs to be maintained for a legal purpose.

Modifying Data:

Any attributes of permit can be modified except the Permit Name/Number, permit type code and permitting agency. If the user makes changes to a permit using the Permit View then the changes will be reflected in all sites that are associated to that permit.

To remove (blank out) a specific attribute, enter a "$" or "*" for a value. If the user blanks out an permitted average flow rate or permitted maximum flow rate, the system will automatically also remove the associated permitted duration code and permitted flow unit.
.
If you entered the wrong permit and associated the permit with the wrong site, the associated records must be deleted using the Site Permit View, then the Permit View must be used to delete the incorrect permit. The correct permit information should be added using the Permit View and associated with the site using the Site Permit View.

Deleting Data:

To delete a permit, first delete all site permit records associated to the permit using the Site Permit View. Then delete the permit by entering permit name/number (permit_tx), permitting agency, permit type code, and the delete record indicator (delete_record_cd) set to "$" or "*". The permit will only be deleted if the permit is not associated with any sites. The system will not delete the Permitting Agency from the database.

3.6.5 Site Permit View

The Site Permit View is used to associate a permit to a site.

Dependencies:

A site must exist in the Sitefile before a permit record can be entered. The permit must also exist in the permit table before a site can be assigned to the permit. The permitting agency of the permit must exist as an agency in the agency code reference list.

Attributes:

Agency Code C4 (agency_cd)
Site Number C1 (site_no)
Permitting Agency C122 (permitting_agency_cd)
Permit Type Code C123 (permit_cd)
Permit Name/Number C121) (permit_tx)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. All attributes are required except for the delete record indicator.
2. One or more permits can be associated to a site. One or more sites can be assigned to the same permit.
3. The permit type code must be one of the valid permit codes found in the Reference List; see the Data Dictionary in the Options tab of the Template Builder for a list.
4. One permit can be associated to a site for each unique occurrence of permit type code, permitting agency, and permit start date.
5. One permit can be associated to a site for each unique occurrence of permit type code and permitting agency where the permit start date and permit end date are blank (not entered).

One permit can be associated to a site for each unique occurrence of permit type code and permitting agency where the permit start date and permit end date are blank (not entered).

Modifying Data:

Nothing can be modified directly through this view. If the original permit was entered with a misspelling using the Permit View and associated with one or more sites using the Site Permit View, the Edit Name/Number attribute in the Permit View can be used to modify the existing permit name or number and maintain the association. This technique should only be used when all the associated sites share this error because this modification is reflected in all associated sites.

Deleting Data:

To delete a site permit association, enter site identifier, agency code, permit name/number, permitting agency, and the delete record indicator set to "$" or "*". The association will be deleted. The permit and permitting agency records will not be deleted. To delete the permit, use the Permit View. Neither SWUDS nor GWSI can be used to delete a permitting agency.

3.7 Conveyance Data Entry

After water-use sites have been created, conveyances can be entered with the Conveyance View. After conveyances have been entered, monthly and annual water-quantity data can be entered with the Water Quantity View.

3.7.1 Conveyances

A conveyance is used to model the physical structure that is actually used to convey water, such as ditches, culverts, streams, pipes, and canals. Water can be transferred between two locations or sites. A conveyance which may also be called a "constructed conveyance' is the smallest building block of a water-use network. In SWUDS a conveyance links two water use sites, like a well and a public water supplier together. Conveyances form the infrastructure upon which water quantities can be entered. All water quantities, such as withdrawal, return, and transferred water, require conveyances to exist. Even if the database consists of standalone withdrawal sites, conveyances must exist to represent the point of withdrawal. The term "standalone" means that the conveyance consists of one site that includes both the point of withdrawal and the point of use or return. The Place-of-Use Site Quantity View is used to create a standalone conveyance.

3.7.2 Conveyance View

Purpose:

The Conveyance View is used to create water transfers between sites and store the transfer capacity information. Losses or gains of water may occur during water transmission.. A conveyance may be created to document wastewater movement. Movement of water/wastewater occurs along a conveyance from the point source to a point destination. A source site can be a place where water is withdrawn from the hydrologic system, such as a well, or it can be a place of use (starting point of a transfer). The source site is known as the from-site and the destination site is known as the to-site. The direction of flow is assumed to be in the direction of the from-site to the to-site.

Dependencies:

Sites must exist in the Sitefile (entered with GWSI) and must be established in SWUDS by entering the site using the Water-Use Site View before conveyance records can be entered. For both the from-site and the to-site the agency code is needed in addition to the site number to define a conveyance. The site type controls which sites can be valid to sites and which can be valid from sites. The relationship between to sites and potential from sites is controlled by site type conveyance roles. For example a lake (LK) is a valid from-site and to-site.

Attributes:

From Agency Code (from_agency_cd)
From Site Number (from_site_no)
To Agency Code (to_agency_cd)

Attributes (continued):

To Site Number (to_site_no)
Conveyance Type Code (cn_cd)
Capacity Value (cn_cap_va)
Capacity Reporting Unit Name (wu_unit_abbrv_tx)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The minimum amount of data that can be entered is the from-agency code, from-site number, to-agency code, and to-site number.
2. If the capacity value is entered, the capacity reporting unit name must also be entered. The capacity reporting unit name is validated against the flow unit reference list; see the Data Dictionary in the Options tab of the Template Builder for a list.
3. One conveyance record can exist for each unique combination of from-site and to-site pairs. When entering a new conveyance, the combination of the from-agency code, from-site number, to-agency code, to-site number must not already exist in the conveyance table.
4. The conveyance type code (cn_cd) identifies the actual physical conveyance structure. Conveyance type code defaults to unspecified "UN" if not entered. Other types include: Canal (CN), Ditch (DT), Other (OT), Pipe (PI), And Stream (ST).

Code	Name	Description
CN	Canal	An artificial watercourse or channel used for navigation, drainage, irrigation, or to move water.
DT	Ditch	A long narrow excavation dug in the earth that can be used for drainage or to move water.
OT	Other (Flumes, Tunnels, Other Untypical Structures)	Included in "other" are flumes, tunnels, and any conveyance that does not fit in the categories provided.
PI	Pipe	A long tube or hollow body that can be used to conduct a liquid.
ST	Stream	A general term that denotes the flow of water within any natural channel. A small creek and a large river are both classified as streams.
UN	Unknown	The physical structure used to move water is unknown or unspecified.

Table 46. Conveyance Codes

5. A conveyance record logically tracks the flow of water in only one direction. Water flows in the direction of the from-site to the to-site. If a physical conveyance is used to move water in both directions, enter two conveyance records (one for each direction of flow).
6. The system will check the Sitefile to make sure that the from-site and to-site have compatible National Water-Use Category and site type codes.

Modifying Data:

The only attributes that can be modified are the conveyance type code (cn_cd), capacity value (cn_cap_va), and capacity reporting unit name. Once entered, it is not possible to modify the from-agency code, from-site number, to-agency code, and to-site number.

The minimum data set needed to identify a conveyance record for modifying is the from-agency code, from-site number, to-agency code, and to-site number.

An attribute can be set to a null or blank by entering a single "$" or "*".

Deleting Data:

Enter a "$" or "*" in the Delete Record Indicator attribute to delete the conveyance record. Deleting a conveyance record will cause all data related to that conveyance to be deleted from the database. This includes water quantities for all years; however, the site data (in the Sitefile), water-use site, site owner, site contact, and site-permit data for the sites are not affected.

A conveyance cannot be deleted if it has published or approved data.

3.7.3 Conveyance View and Site Types

Sites can be combined in conveyances to track the flow of water from site-to-site (node-to-node) throughout a network. There are restrictions on which sites can be combined, based on the type of site. In summary, sites can be used as sources of water, facilities or establishments that use/reuse, recycle, treat, distribute, collect, receive, or transfer water. Sites can also discharge water back to the natural system.

The site types that are sources of water include the following:

SP-Spring
GW-Well
GW-CR-Collector or Ranney-type Well
GW-IW-Interconnected Wells
GW-MW-Multiple Wells
SB-GWD-Groundwater Drain
AG-Aggregate Groundwater Use
FA-DV-Diversion
FA-AWL-Animal Waste Lagoon
AS-Aggregate Surface-Water Use

Facilities that receive water from the hydrologic resource or other water users include:

AW-Aggregate Water-Use Establishment
FA-FON-Field, Pasture, Orchard, or Nursery
FA-GC-Golf Course
FA-HP-Hydroelectric Plant

FA-TEP-Thermoelectric Plant
FA-WU-Water-Use Establishment
FA-WDS-Water-Distribution System
FA-WTP-Water-Supply Treatment Plant

Water leaving a water user moves to a treatment, collection, or destination site including:

FA-AWL-Animal Waste Lagoon
FA-SPS-Septic System
FA-STS-Storm Sewer
FA-CS-Combined Sewer
FA-SEW-Wastewater Sewer
FA-WTP-Water-Supply Treatment
FA-OF-Outfall
FA-WWD-Wastewater Disposal
FA-WIW-Waste Injection Well

The remainder of this section describes the detail rules on which sites can be connected based on site type.

3.7.3.1 Conveyance Roles

Not all site types can be used as from-sites or to-sites of a conveyance. Whether a site can be used as a from-site or a to-site in a conveyance depends on the characteristics of the site type.

Conveyance roles define groups of sites that share common conveyance characteristics. For example, a site with type groundwater well (GW), can serve as a groundwater resource (GWSR). The role the site plays is a source of groundwater. When a site is used as a source of water the site is entered as a from-site. A groundwater well can also serve as a groundwater recharge (GWRC). The role the site plays is a recharge of water. When a site is used to recharge groundwater , then the site is entered as a to-site.

The possible conveyance roles are shown below.

Role Code	Role Names	Description
AGRI	Agriculture	Agriculture conveyance role has only the Field, Orchard, or Nursery (FA-FON) site types and must have the National Water-Use Code of Irrigation (IR).
COLL	Collection	Pipes and other infrastructure used to transport storm water or wastewater to a wastewater treatment plant or a hydrologic resource.
DEST	Destination	The return point to the hydrologic resource.
DIST	Distribution	A water-supply or irrigation water distribution system.

Role Code	Role Names	Description
DRAN	Groundwater Drain	An underground pipe or tunnel through which groundwater is artificially diverted to surface-water for the purpose of reducing erosion or lowering the water table.
ESTB	Establishment	Establishment or physical location where commercial services are conducted or industrial operations are performed.
GWRC	Groundwater Recharge	A to-site well (GW) where water is returned to the groundwater system.
GWSR	Source of Groundwater	Withdrawal points of groundwater.
HYDR	Hydroelectric	Hydroelectric power plants (FA-HY) are the only site types in the Hydroelectric (HYDR) role, but there are four types of plants depending on the location of the water sources. The Instream/Offstream code in the Water-Use Site View should be used to identify Instream (IU), Instream-Pumped Storage (IU-PS), Offstream (OF), or Offstream-Pumped Storage (OF-PS).
LAKE	Lake	A lake, reservoir, or impoundment that acts as a storage site for surface-water and not a point of withdrawal.
LAGN	Animal Waste Lagoon	Animal waste lagoons (FA-AWL) are the only site type included in this conveyance role.
STOR	Storage	A cistern that stores water from any source.
SWSR	Source of Surface-water	Withdrawal points of surface-water.
TRMT	Treatment	A water supply or wastewater treatment facility.

Table 47. Conveyance Roles

The table below contains the list of site types that are in each role when a site is entered as a from-site of a conveyance:

From Role	Role Code	Site-Type Code	Site-Type Long Name
Agriculture	AGRI	FA-FON	Field, Pasture, Orchard, or Nursery
Collection	COLL	FA-STS	Storm Sewer
		FA-CS	Combined Sewer
		FA-SEW	Wastewater Sewer

From Role	Role Code	Site-Type Code	Site-Type Long Name
Distribution	DIST	FA-WDS	Water-Distribution System
Establishment	ESTB	FA-WU	Water-Use Establishment
		FA-GC	Golf Course
		AW	Aggregate Water-Use Establishment
		FA-TEP	Thermoelectric Plant
Groundwater Resource	GWSR	AG	Aggregate Groundwater
		GW	Well
		GW-CR	Collector or Ranney-type well
		GW-IW	Interconnected Wells
		GW-MW	Multiple Wells
		SP	Spring
Groundwater Drain	DRAN	SB-GWD	Groundwater Drain
Hydroelectric	HYDR	FA-HP	Hydroelectric Plant
Lake	LAKE	LK	Lake, reservoir, impoundment
Animal Waste Lagoon	LAGN	FA-AWL	Animal waste lagoon
Storage	STOR	FA-CI	Cistern
Surface-water Resource	SWSR	FA-DV	Diversion
		SP	Spring (surface-water source)
		AS	Aggregated Surface-water
Treatment	TRMT	FA-WTP	Water-supply treatment plant
		FA-WWTP	Wastewater-treatment plant

Table 48. Site Entered as From-Site of a Conveyance.

The table below contains the list of site types that are in each role when a site is entered as a to-site of a conveyance:

To Role	Role Code	Site Type Code	Site Type Long Name
Agriculture	AGRI	FA-FON	Field, Pasture, Orchard, or Nursery
Collection	COLL	FA-STS	Storm Sewer

To Role	Role Code	Site Type Code	Site Type Long Name
Collection	COLL	FA-CS	Combined Sewer
		FA-SEW	Wastewater Sewer
Destination	DEST	AS	Aggregate Surface-Water Use
		FA-OF	Outfall
		AG	Aggregate Groundwater Use
		FA-SPS	Septic System
		FA-WIW	Waste Injection Well
		FA-WWD	Wastewater Disposal
Distribution	DIST	FA-WDS	Water-Distribution System
Establishment	ESTB	FA-WU	Water-Use Establishment
		FA-GC	Golf Course
		AW	Aggregate Water-Use Establishment
		FA-TEP	Thermoelectric Plant
Groundwater Recharge	GWRC	GW	Well
		GW-CR	Collector or Ranney-type well
		GW-IW	Interconnected Wells
		GW-MW	Multiple Wells
Hydroelectric	HYDR	FA-HP	Hydroelectric Plant
Lake	LAKE	LK	Lake, Reservoir, Impoundment
Animal Waste Lagoon	LAGN	FA-AWL	Animal waste lagoon
Storage	STOR	FA-CI	Cistern
Treatment	TRMT	FA-WTP	Water-Supply Treatment Plant
		FA-WWTP	Wastewater-Treatment Plant

Table 49. Site Entered as To-Site of a Conveyance.

There are restrictions on which site types can be combined to create a conveyance based on the from-role and to-role.

3.7.3.2 Restrictions for Agriculture (AGRI) Conveyance Role

The Agriculture (AGRI) conveyance role has only the Field, Orchard, or Nursery (FA-FON) site type and must have the National Water-Use Code of Irrigation (IR). An Agricultural (AGRI) role was added because FA-FON is different from other water-use establishment (facility) site types. There are two distinctions that create this role. A FA-FON site cannot convey water to a hydroelectric site, but other establishments can. A FA-FON site can receive water from a Groundwater Drain (SB-GWD) site type.

The table below indicates the roles that can be associated with a FA-FON site type in the AGRI role as a from-site and as a to-site.

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
AGRI	Agriculture	AGRI	Agriculture
		COLL	Collection
		DEST	Destination
		ESTB	Establishment
		GWRC	Groundwater Recharge
		STOR	Storage
		TRMT	Treatment
DIST	Distribution	AGRI	Agriculture
DRAN	Groundwater Drain		
ESTB	Establishment		
GWSR	Source of Groundwater		
STOR	Storage		
SWSR	Source of Surface-Water		
TRMT	Treatment		

Table 50. Roles associated with a FA-FON Site Type.

3.7.3.3 Restrictions for Animal Waste Lagoon (LAGN) Conveyance Role

The Animal Waste Lagoon (LAGN) conveyance roles is designated for water or wastewater transported to an animal waste lagoon or between animal waste lagoons. Water can originate from an establishment (FA-WU), a groundwater source (GW, SP), a surface-water source (FA-DV, SP), or another animal waste lagoon (FA-AWL). The water type codes that can be used are Groundwater (GW), Surface-water (SW), Unknown (UN), or Untreated Waste Water (WW). For transfers between animal waste lagoons, only Untreated Waste Water (WW) can be used.

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
ESTB	Establishment	LAGN	Animal Waste Lagoon
GWSR	Source of Groundwater		
LAGN	Animal Waste Lagoon		
SWSR	Source of Surface-water		

Table 51. Roles associated with animal waste lagoon conveyance role.

3.7.3.4 Restrictions for Collection (COLL) Conveyance Role

A Collection (COLL) conveyance role defines the site types that transport water that has been used by a water user or collected as storm-water runoff. These site types include wastewater sewer (FA-SEW), storm sewer (FA-STS), and combined wastewater and storm

sewers (FA-CS). Sites sharing the collection role are typically part of a water transfer to a wastewater treatment plant or outfall and share the National Water-Use code of Sewage Treatment (ST). For the site type wastewater sewer (FA-SEW), only the water codes Treated Wastewater (TR), Untreated Wastewater (WW) or Unknown (UN) are allowed. For the site type combined sewers (CS), the water codes UN or WW can be used. For the site type storm sewer (FA-STS), the water codes of UN or SW (Surface-water) are allowed when entering water-quantity data on this conveyance role.

The roles associated with site types in the Collection conveyance role when used as from-site or to-sites are outlined below.

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
COLL	Collection	COLL	Collection
		DEST	Destination
		HYDR	Hydroelectric
		TRMT	Treatment
AGRI	Agriculture	COLL	Collection
DIST	Distribution		
DRAN	Groundwater Drain		
ESTB	Establishment		
STOR	Storage		
TRMT	Treatment		

Table 52. Roles associated with site types in collection conveyance role.

3.7.3.5 Restrictions for Destination (DEST) Conveyance Role

The Destination (DEST) conveyance role includes site types that serve as to-sites discharge water or wastewater to a hydrologic resource or the land. The site types include Outfall (FA-OF) discharging to a surface-water body, Septic System (FA-SPS) and Waste Injection Well (FA-WIW) to groundwater , Wastewater Disposal (FA-WWD) to a land surface, and Aggregate Groundwater (AG) representing aggregate septic systems to groundwater.

A Destination Conveyance role can represent a return conveyance of a standalone site where no from site has been designated or modeled.

Under restricted conditions, Aggregate Groundwater and Aggregate Surface-Water site types can serve as destinations or intermediaries between hydrologic resources (wells and diversions) and water-use facility site types (FA-FON, FA-GC, FA-HP, FA-TEP, FA-WDS, FA-WTP, and FA-WU). For example, the use of either a virtual aggregate groundwater or aggregate surface-water sites may be useful in linking individual sources that are under the same water allocation permit where the permit and permitted aggregate withdrawal amount is stored on the aggregate site. A facility, such as a golf course may have more than one allocation permit associated with an aggregate amount of water. The

permits may be for different aquifers, or different sources of surface-water. The model depicted in the diagram below allows a facility to be linked to a virtual aggregate groundwater or surface-water site so that the permit and permitted amount of water can be entered. In addition, the virtual aggregate groundwater or surface-water site can also be linked to the actual source of withdrawal where permitted, reported, data can be disaggregated and entered to its actual source location.

Water quantities of withdrawal (WD) can be entered for individual wells and surface-water sources to record the actual amount and location of where water was removed. The permitted, reported aggregate withdrawal amount, can be entered as a delivery (DL) of water to the facility (golf course). To avoid double accounting withdrawals or deliveries from withdrawal, the delivery values-to or withdrawal values-from the aggregate sites (permits A and B) would not be entered.

For example, the following data may be entered:

- Withdrawal from well 1 (GW site type) to Permit A (AG site type) which would be 1/3 of reported withdrawal through Permit A
- Withdrawal from well 2 (GW site type) to Permit A (AG site type) which would be 1/3 of reported withdrawal through Permit A
- Withdrawal from well 3 (GW site type) to Permit A (AG site type) which would be 1/3 of reported withdrawal through Permit A
- Withdrawal from Potapsco River (FA-DV) to Permit B (AS site type) which would be equal to reported withdrawal through Permit B
- Delivery from Permit A (AG site type) to Golf Course (FA-GC site type) which would be equal to reported withdrawal through Permit A
- Delivery from Permit B (AS site type) to Golf Course (FA-GC site type) which would be equal to reported withdrawal through Permit B

The following from-site type roles are allowed to transfer water to a destination role:

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
AGRI	Agriculture	DEST	Destination
COLL	Collection		
ESTB	Establishment		
GWSR	Source of Groundwater		
HYDR	Hydroelectric		
STOR	Storage		
SWSR	Source of Surface-water		
TRMT	Treatment		

Table 53. Restrictions for Destination (DEST) Conveyance Role.

3.7.3.6 Restrictions for Distribution (DIST) Conveyance Role

The site type water distribution system (FA-WDS) is the sole example of the Distribution (DIST) role. A FA-WDS has a National Water-Use code of Public Supply (WS) and is part of a public supply network and typically receives treated water and transports it to

water-use establishments or other distribution systems. The water codes for this role are Finished Water (FN), Raw Water (RA), or Unknown (UN).

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
DIST	Distribution	AGRI	Agriculture
		COLL	Collection
		DIST	Distribution
		ESTB	Establishment
		GWRC	Groundwater Recharge
		HYDR	Hydroelectric
		STOR	Storage
		TRMT	Treatment
GWSR	Source of Groundwater	DIST	Distribution
STOR	Storage		
SWSR	Source of Surface-Water		
DRAN	Groundwater Drain		
TRMT	Treatment		

Table 54. Restrictions for Distribution (DIST) Conveyance Role

3.7.3.7 Restrictions for Establishment (ESTB) Conveyance Role

The Establishment role (ESTB) relates to the shared characteristics of water-use facilities. These site types include Water-Use Establishment (FA-WU), Golf course (FA-GC), and Thermoelectric.

Power plant (FA-TEP), and the Aggregate Water-Use Establishment (AW) site types:

Typically, an establishment role receives water from a hydrologic resource or water transfers from public suppliers or other water users and can be associated with all the water codes.

From Site Type Role Code	From Site Type Role Name	To Site Type Role Code	To Site Type Role Name
ESTB	Establishment	AGRI	Agriculture
		COLL	Collection
		DEST	Destination
		ESTB	Establishment
		GWRC	Groundwater Recharge
		HYDR	Hydroelectric
		STOR	Storage
		TRMT	Treatment
AGRI	Agriculture	ESTB	Establishment
DIST	Distribution		
ESTB	Establishment		
GWSR	Source-Of-Groundwater		

From Site Type Role Code	From Site Type Role Name	To Site Type Role Code	To Site Type Role Name
STOR	Storage		
SWSR	Source of Surface-Water		
TRMT	Treatment		

Table 55. Restrictions for Establishment (ESTB) Conveyance Role.

3.7.3.8 Restrictions for Groundwater Drain (DRAN) Conveyance Role

The Groundwater Drain (SB-GWD) is the only site type included in the Groundwater Drain (DRAN) conveyance role. The SB-GWD site type is an underground pipe or tunnel through which groundwater is artificially diverted to surface-water for the purpose of reducing erosion or lowering the water table. Typically, this role only acts as a from-site for water transferred to the site type Field, Orchard, or Nursery (FA-FON). Water from a

SB-GWD can also be conveyed for collection, storage, treatment, or used for groundwater recharge. The only water code associated with the role is groundwater (GW).

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
DRAN	Groundwater Drain	AGRI	Agriculture
		COLL	Collection
		GWRC	Groundwater Recharge
		STOR	Storage
		TRMT	Treatment

Table 56. Restrictions for Groundwater Drain (DRAN) Conveyance Role

3.7.3.9 Restrictions for Groundwater Recharge (GWRC) Conveyance Role

The Groundwater Recharge (GWRC) role includes site types that serve as sources of groundwater withdrawals. The site types include Well (GW), Collector or Ranney type well (GW-CR), Interconnected wells (GW-IW), and Multiple wells (GW-MW). Sites with the GWRC role serve only as to-sites. Site types in the GWRC role can be any National Water-Use Code except Hydroelectric power (PH). The Water-Quantity Code allowed for this conveyance role is either Withdrawal (WD) or Delivery (DL). See section on Special Cases section on Aquifer Recharge for GWSI coding restrictions.

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
AGRI	Agriculture	GWRC	Groundwater Recharge
DIST	Distribution		
DRAN	Groundwater Drain		
ESTB	Establishment		
GWSR	Source of Groundwater		

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
STOR	Storage		
SWSR	Source of Surface-Water		
TRMT	Treatment		

Table 57. Restrictions for Groundwater Recharge (GWRC) Conveyance Role

3.7.3.10 Restrictions for Groundwater Resource (GWSR) Conveyance Role

The Groundwater Resource (GWSR) role includes site types that serve as sources of groundwater withdrawals. The site types include Well (GW), Collector or Ranney type well (GW-CR), Interconnected wells (GW-IW), and Multiple wells (GW-MW). Site types with the GWSR role do not serve as to-sites. A spring (SP) with a groundwater source is also included in the GWSR conveyance role. Site types in the GWSR role can be any National Water-Use Code except Hydroelectric power (PH). A GWSR conveyance role can represent a withdrawal conveyance of a standalone site where no To-site has been designated or modeled.

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
GWSR	Source of Groundwater	AGRI	Agriculture
		DIST	Distribution
		ESTB	Establishment
		GWRC	Groundwater Recharge
		STOR	Storage
		DEST	Destination (see documentation for destination role)
		TRMT	Treatment
		Standalone withdrawal or spring site not modeled with a To-Site	

Table 58. Restrictions for Groundwater Resource (GWSR) Conveyance Role

3.7.3.11 Restrictions for Hydroelectric (HRDR) Conveyance Role

Hydroelectric power plants (FA-HP) are the only site type in the Hydroelectric (HYDR) role, but there are four types of plants depending on the location of the water sources. The Instream code in the Water Use Site View should be used to identify Instream (IU), Instream-Pumped Storage (IU-PS), Offstream (OU), or Offstream-Pumped Storage (OU-PS). When the water source is located on the stream (on which the plant is located), the code would be Instream (IU). When the water source is a stream diversion or lake, reservoir, or impoundment located offsite, the code would be Offstream (OU)). In addition, a hydroelectric plant could be part of a pumped-storage system (PS). This site type must have a National Water-Use code of hydroelectric power (PH) and the water code that can be used with this conveyance role is surface-water (SW).

Hydroelectric power plants cannot be used in a conveyance if they are coded as either Instream use (IU) or Instream use pumped storage (IU-PS). Instream-use data is entered using the place-of-use water-quantity view. Conveyance records are not required to enter Instream-use data.

When hydroelectric power plants are used with a conveyance, the Instream/Offstream code must be OF or OF-PS.

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
HYDR	Hydroelectric	DEST	Destination
		HYDR	Hydroelectric
COLL	Collection	HYDR	Hydroelectric
DIST	Distribution		
ESTB	Establishment		
SWSR	Source of Surface-Water		
TRMT	Treatment		

Table 59. Restrictions for Hydroelectric (HRDR) Conveyance Role.

3.7.3.12 Restrictions for Lake (LAKE) Conveyance Role

The site type lake (LK) is the only member of the Lake (LAKE) conveyance role group. This role was created to allow for a reservoir and reservoir-to-reservoir transfers. The Lake role is limited to the following National Water-Use codes: Aquaculture (AQ), Industrial (IN), Livestock (LV), Mining (MI), and Public Supply (WS).

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role	To-Site Type Role Name
LAKE	Lake	LAKE	Lake

Table 60. Restrictions for Lake (LAKE) Conveyance Role.

3.7.3.13 Restrictions for Storage (STOR) Conveyance Role

The Storage conveyance role was created for the site type cistern (FA-CI). A cistern can serve as a from-site or a to-site. The cistern can accept any water code and National Water-Use code except Hydroelectric Power (PH).

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
STOR	Storage	AGRI	Agriculture
		COLL	Collection
		DEST	Destination
		DIST	Distribution
		ESTB	Establishment
		GWRC	Groundwater Recharge

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
		STOR	Storage
		TRMT	Treatment
AGRI	Agriculture	STOR	Storage
DIST	Distribution	STOR	Storage
DRAN	Groundwater Drain		
ESTB	Establishment		
GWSR	Source of Groundwater		
SWSR	Source of Surface-Water		
TRMT	Treatment		

Table 61. Restrictions for Storage (STOR) Conveyance Role.

3.7.3.14 Restrictions for Surface-Water Resource (SWSR) Conveyance Role

The Surface-Water Resource (SWSR) role includes the site type Diversion (FA-DV), Aggregated Surface-water (AS), and Spring (SP) with a surface-water source. This site type can be assigned any National Water-Use code, but only the water code of Surface-water (SW) can be entered for conveyances. The FA-DV site type can only be used as a From-site.

A SWSR Conveyance role can represent a withdrawal conveyance of a standalone site where no To-site has been designation or modeled.

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
SWSR	Source-Of-Surface-Water	AGRI	Agriculture
		DIST	Distribution
		ESTB	Establishment
		GWRC	Groundwater Recharge
		HYDR	Hydroelectric
		STOR	Storage
		TRMT	Treatment
		Standalone diversion or spring site not modeled with a To-Site	

Table 62. Restrictions for Surface-Water Resource (SWSR) Conveyance Role.

3.7.3.15 Restrictions for Treatment (TRMT) Conveyance Role

The Treatment (TRMT) conveyance role includes facilities that provide water treatment of raw water from hydrologic resources or wastewater. The site types Water treatment Plant (FA-WTP) and Wastewater Treatment Plant (FA-WWTP) have restrictions on the use of National Water-Use codes. Water-Supply Treatment Plants must be assigned a National Water-Use Code of Public Supply (WS) or Remediation (RM). For FA-WWTP, the only

acceptable National Water-Use codes are ST or RM. The water codes associated with FA-WTP include Raw Water (RA), Finished Water (FN), Untreated Wastewater (WW) or Unknown (UN). For wastewater treatment plants, conveyances can include RA, WW, UN, and Treated Wastewater (TR).

From-Site Type Role Code	From-Site Type Role Code	To-Site Type Role Name	To-Site Type Role Name
TRMT	Treatment	AGRI	Agriculture
		COLL	Collection
		DEST	Destination
		DIST	Distribution
		ESTB	Establishment
		GWRC	Groundwater Recharge
		HYDR	Hydroelectric
		STOR	Storage
		TRMT	Treatment
AGRI	Agriculture	TRMT	Treatment
COLL	Collection		
DIST	Distribution		
DRAN	Groundwater Drain		
ESTB	Establishment		
GWSR	Source of Groundwater		
STOR	Storage		
SWSR	Source of Surface-Water		

Table 63. Restrictions for Treatment (TRMT) Conveyance Role

3.7.4 Creating Water-Use Networks

A conveyance is the smallest building block of a water-use network. It connects two nodes (sites) together. A node is the starting point and/or the ending point for one or more conveyances. The end point of a conveyance is a point of inflow or outflow. A network node that is a starting point ("from" node) is known as the source. A network node that is an ending point ("to" node) is the sink or the destination. All conveyances to be used on a network should have a starting and ending point.

A water-use network is formed when two or more conveyances are joined using the same site as a from/source site or a to/destination site. The quantity-of-water can be tracked from one site to another throughout the network.

3.7.5 Creating Withdrawal Conveyances

The withdrawal of water occurs at a source site. A source site is an entity that withdraws water from a hydrologic resource and is used to identify the location of the point-of-withdrawal. Valid source site types include:

Site Type	Description
AG	Aggregate groundwater use
AS	Aggregate surface-water use
FA-DV	Diversion
SP	Spring (Groundwater or surface-water source)
GW	Well
GW-CR	Collector or Ranney type well
GW-IW	Interconnected wells
GW-MW	Multiple wells
SB-GWD	Groundwater drain

Table 64. Source Site Types.

The site representing the point-of-withdrawal is always entered as the From-Site of a conveyance using the Conveyance View. Withdrawal conveyances can be created as standalone From-Sites or complete conveyances having both a From-Site and a To-Site. The To-Site is a facility site type.

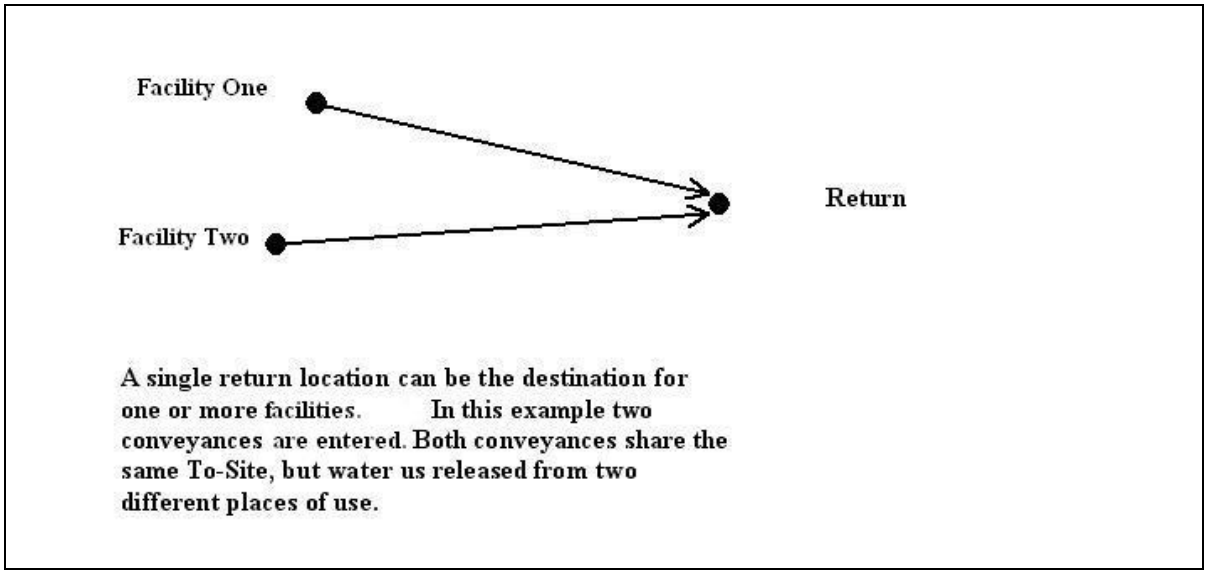

Figure 81. Standalone From-Site.

When creating a standalone withdrawal conveyance, the to-site is not entered. The from-site is used to represent the point-of-withdrawal. Withdrawal implies that the conveyance is used to remove water from a hydrologic source and is immediately used close to the withdrawal point (from-site). For standalone source sites, applications can assume that the spatial information stored with the withdrawal point (from-site) represents both the withdrawal and use locations. Standalone withdrawal conveyances can be used to enter

withdrawal water quantities. Deliveries and loss/gains water quantities cannot be entered for standalone withdrawal conveyances.

To actually track the flow of water in a water-use network, the user will enter both sides of the link: a from-site and to-site. The from-site represents the point-of-withdrawal. The to-site represents a site to which the water is transferred.

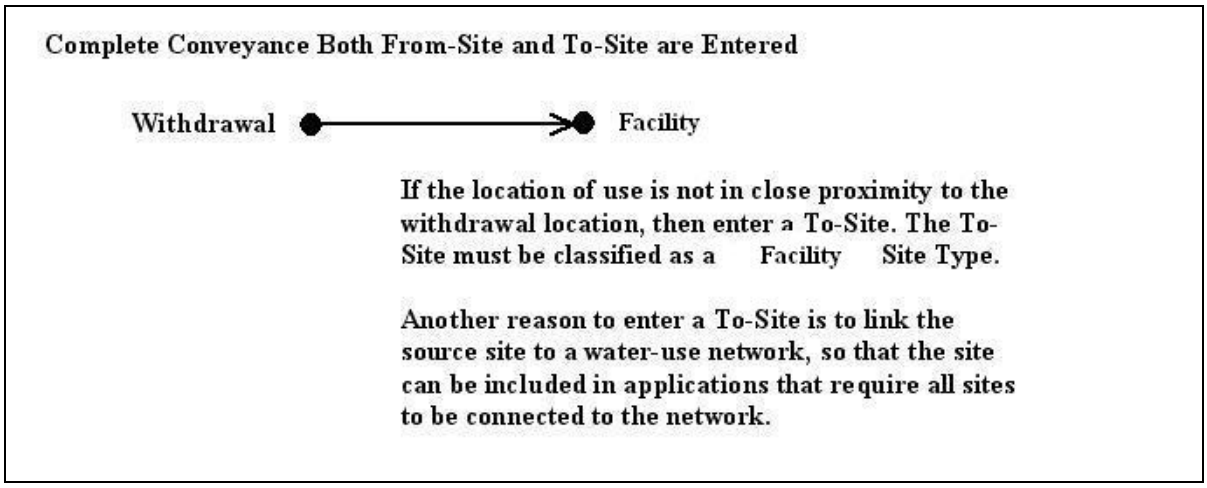

Figure 82. Complete Withdrawal Conveyance

A complete withdrawal conveyance can be used to enter withdrawal, delivery, and loss/gains volumes. The withdrawal is assumed to be associated with the From-Site location and the delivery the To-Site location. The loss/gain represents the total loss or gain when the water was transferred.

A source site can be the source of water for more than one facility. For example, a large water supply well (GW) can directly supply two industrial water-use establishments (FA-WU). In this case the user creates two conveyances where both of the industrial water-use establishments obtained water from the same well.

3.7.5.1 Process to Create Standalone Site-Specific Sources of Withdrawal

A standalone site-specific source-of-withdrawal is a specific point location where water is withdrawn and immediately used in close proximity to the withdrawal location. To create a standalone site-specific source-of-withdrawal where sites are not connected to a network:

1. Create a site with GWSI for each point-of-withdrawal using site types of Diversion (FA-DV), Spring (SP), or groundwater wells (GW-Well, GW-CR-Collector or Ranney type well), GW-IW-Interconnected wells, GW-MW-Multiple wells, or SB-GWD-Groundwater drain.

2. In SWUDS, enter at least the agency code and site number using the Water-Use Site View to register this site as a site used with SWUDS. Use the Conveyance View and enter the site as a from-site of a conveyance.

3. In SWUDS, enter withdrawal data with the water-quantity view. Enter data using the water-quantity code of withdrawal (WD).

3.7.5.2 Process to Link a Source Site (Withdrawal) to a Facility Site Type

To link a source site to a facility site type do the following:

1. Create a facility site type with GWSI to represent the user receiving water from the source site. The following facilities can receive water from the source:
   FA-WU-Water-Use Establishment
   - AW-Aggregate Water-Use Establishment
   - FA-FON-Field, Pasture, Orchard, or Nursery
   - FA-GC-Golf Course
   - FA-HP-Hydroelectric Plant
   - FA-TEP-Thermoelectric Plant
   - FA-WDS-Water-Distribution System
   - FA-WTP-Water-Supply Treatment Plant
   - FA-CI-Cistern

2. Create a site with GWSI for each point-of-withdrawal using the following site types:
   - Aggregate Surface-Water (AS)
   - Diversion (FA-DV)
   - Spring (SP)
   - Aggregate Groundwater (AG)
   - Groundwater wells (GW-Well, GW-CR-Collector or Ranney type well, GW-IW-Interconnected wells, or GW-MW-Multiple wells)
   - SB-GWD-Groundwater drain (only to site type Field, Orchard, or Nursery (FA-FON)

3. In SWUDS, enter at least the agency code and site number using the Water-Use Site View to register the source and facility sites as sites used with SWUDS.

4. In SWUDS, create a conveyance for each source site that connects it to the facility. The facility will be entered as the to-site of a conveyance.

5. In SWUDS, the water-quantity view can be used to enter withdrawals, loss-gains, and deliveries on each conveyance (water-quantity codes of WD-withdrawal, LG – loss/gain, or DL – delivery).

3.7.6 Creating Return Conveyances or Destinations

The Destination or return conveyance role includes site types that serve as to-sites discharge water or wastewater to a hydrologic resource or the land. The site types include Outfall (FA-OF) discharging to a surface-water body, Septic System (FA-SPS) and Waste Injection Well (FA-WIW) to groundwater , Wastewater Disposal (FA-WWD) to a land surface, and Aggregate Groundwater (AG), representing aggregate septic systems, to groundwater. The site types that serve as return sites are outlined below.

Site-Type Code	Site-Type Name
AS	Aggregate Surface-Water-Use
FA-OF	Outfall
AG	Aggregate Groundwater Use
FA-SPS	Septic System
FA-WIW	Waste Injection Well
FA-WWD	Wastewater Disposal

Table 65. Return Conveyances or Destinations

The roles that serve as from-sites are outlined below.

From-Site Type Role Code	From-Site Type Role Name	To-Site Type Role Code	To-Site Type Role Name
AGRI	Agriculture	DEST	Destination
COLL	Collection		
ESTB	Establishment		
HYDR	Hydroelectric		
STOR	Storage		
TRMT	Treatment		

Table 66. From-Sites.

A return site is an entity that discharges/returns water or wastewater to a hydrologic resource. The return point can be a surface-water body or an aquifer.
A return conveyance can consist of a single site, such as a well or outfall. Standalone return sites are not connected to a p-site.

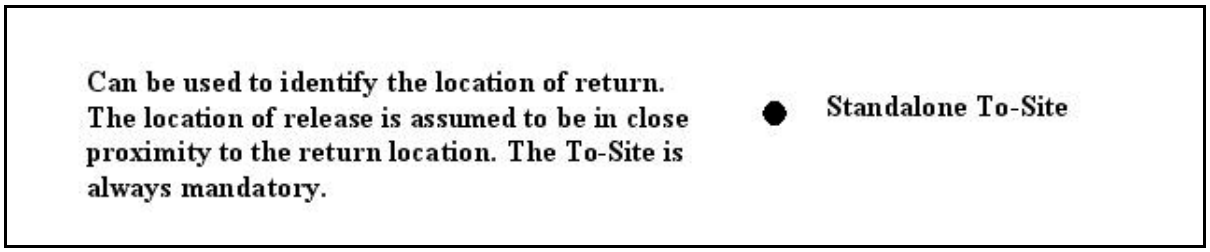

Figure 83. Standalone To-Site.

A standalone return site is not connected to the water-use network. However, the conveyance record must be created before entering water quantities. Standalone conveyances can be used if the user does not want to track the movement of water. The from-site of a conveyance is not entered for a standalone return site.
For standalone return sites, applications assume that the spatial information stored with the return point (to-site) represents both the release and discharge (return) locations.

To actually track the flow of water in a water-use network the user needs to enter both a from-site and to-site.

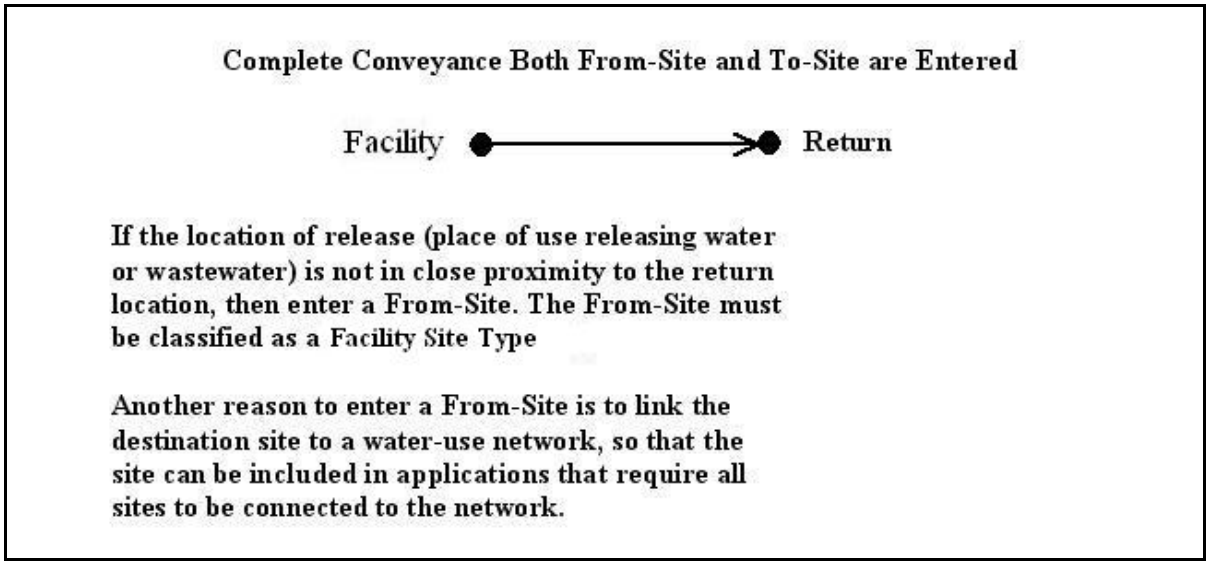

Figure 84. Complete Conveyance – From-Site and To-Site.

The to-site should be the point-of-return. The from-site can represent the source where water or wastewater is released (i.e. wastewater treatment plant).

A destination site can be the return point for more than one facility. For example, a single outfall can be the return point for two industrial facilities. In this case the user creates two conveyances where the industrial facilities discharge wastewater to the same outfall.

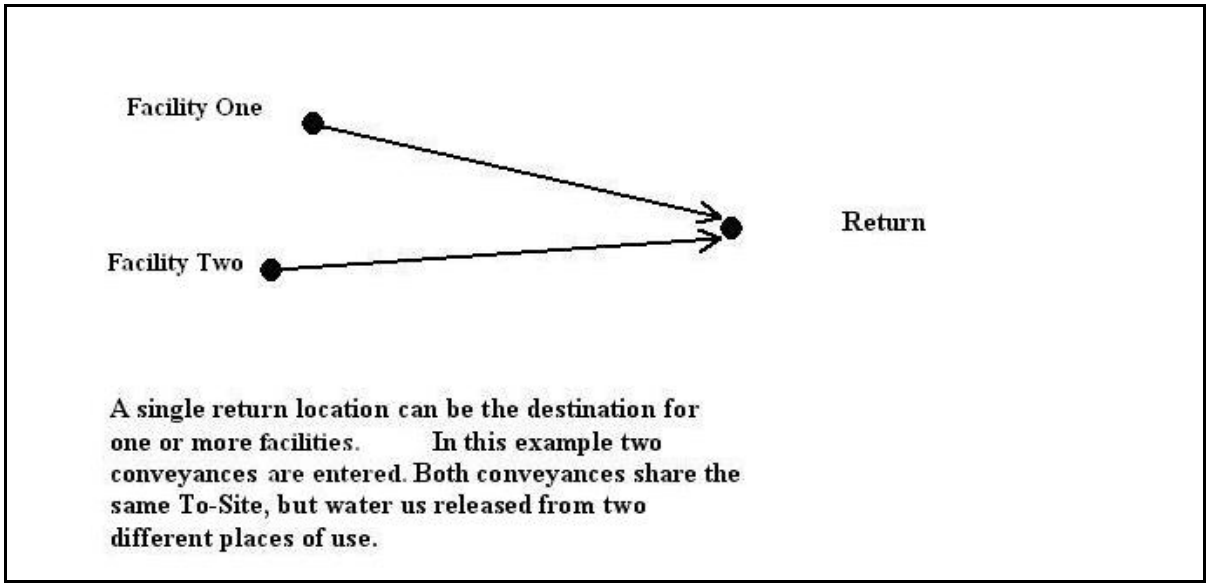

Figure 85. Two Conveyances Sharing Same To-Site.

When a point-of-return is a destination of water/wastewater for more than one facility then split the return amounts before data entry so double accounting of returns do not occur.

3.7.6.1 Process to Create Standalone Site-Specific Return

A standalone site-specific return is usually a specific point location where water is returned (discharged) in close proximity to the release location. However, aggregate surface-water and aggregate groundwater sites can also be entered as standalone return sites. To create a standalone return site not connected to a network:

1. Create a site with GWSI for each point-of-return using site types of outfall (FA-OF), land application (FA-WWD), groundwater site types (GW, GW-MW, GW-IW, GW-CR) (for wells and well-fields), aggregate groundwater (AG), or aggregate surface-water (AS).
2. In SWUDS, enter at least the agency code and site number using the Water-Use Site View to register this site as a site used with SWUDS. Use the Conveyance View and enter the site as a to-site of a conveyance.
3. In SWUDS, enter return data with the water-quantity view. Enter data using the water-quantity code of return (RT).

3.7.6.2 Process to Link a Return Site to a Facility

A return site can be linked to a facility, tracking the flow of water from users to returns. Examples:

- Wastewater returns – the source site can be a wastewater treatment plant (FA-WWTP) and the destination site an outfall (FA-OF).
- Septic systems - the source site can be an aggregate, domestic, facility (AW) (e.g. represents all the domestic users in a county that are on septic systems) and the destination site can be an aggregate groundwater site (AS) where the National Water-Use Category Code is set to ST (sewage treatment).

To link a destination site to a facility do the following:

1. Create a facility with GWSI to represent the user releasing water to the return site. A facility can release water to many return sites.
2. Create a site with GWSI for each point-of-return using site types of outfall (FA-OF), groundwater site types (for wells and well-fields), aggregate ground- water (AG), aggregate surface-water (AS), and land application (FA-WWD).
3. In SWUDS, enter at least the agency code and site number using the Water-Use Site View to register the sites as sites used with SWUDS.
4. In SWUDS, create a conveyance for each return site that connects it to the facility. The facility will be entered as the from-site of a conveyance. The outfall, groundwater other than spring (for wells and well-fields), aggregate groundwater, aggregate surface-water, and land application sites will be entered as the to-site of a conveyance.
5. In SWUDS, the water-quantity view can be used to enter releases, loss-gains, and returns on each conveyance (water-quantity codes of RL -release, LG – loss/gain, or RT – return).

3.7.7 Special Cases for Return Sites

3.7.7.1 Aquifer Recharge

Aquifer recharge is typically coded using either a well (GW), multiple wells (MW), or interconnected wells (IW). If the aquifer recharge value represents a value for a geographic area, then the site type aggregate groundwater (AG) should be used.

The site should be entered as a to-site of a conveyance.

If only recharge values are entered, set the primary use-of-site in the Sitefile to recharge (R). If water is injected part of the year and withdrawn from the same site at other times of the year, then set the primary use-of-site, in the Sitefile, to withdrawal/return (V).
The Conveyance Role for this model is Groundwater Recharge (GWRC). The Water-Quantity Code in the Water-Quantity view must be entered as either Withdrawal (WD) or Delivery (DL).

3.7.7.2 Individual Septic System

An individual septic system can be entered using a site type of Septic System (FA-SPS) where the National Water-Use Category Code is set to sewage treatment (ST). Create a conveyance where the to-site is a septic system site. Optionally, the user can create a water use establishment (FA-WU) or other facility site types to represent the user on a septic system and enter it as the from-site.

3.7.7.3 Aggregate Septic System (Discharge within an Area)

An aggregation of septic systems for an area is represented as a single aggregate groundwater site (AG) that has a National Water-Use Category Code set to sewage treatment (ST). Create a conveyance where the to-site is an aggregate groundwater site. Optionally, to represent the group of users on septic system a second site can be created. Create a domestic aggregate user (AW) site to represent the domestic users on septic system in a county or other geographic area and enter it as the from-site.

3.7.7.4 Aggregate Irrigation Return Flows to Surface-Water

An aggregate surface-water site (AS) can be used to identify the area containing a variety of surface-water resources that have an aggregate amount of water returned to the resource from irrigation use. The aggregate surface-water site will be created with a National Water-Use Category Code set to irrigation (IR). The aggregate surface-water site can then be entered as a standalone to-site of a conveyance. The water-quantity data are entered using the Water Quantity View where the water-quantity code is set to return (RT) and the water type is set to unknown (UN). Optionally, the user can create a water distribution system site to represent the irrigation district as the from-site using the National Water-Use Category Code set to irrigation (IR).

3.7.8 Creating Supplier-to-Supplier Conveyances

Two sites having the National Water-Use Category Code of water supply (WS) can be connected to track the flow of water between two public suppliers. The site types can be water distribution systems or water treatment plants.

3.7.8.1 Process to Create Supplier-to-Supplier Conveyances

To link two water supply sites, perform the following:

1. Create a facility with GWSI to represent the facility providing water. Create a second facility with GWSI to represent the facility receiving water.
2. In SWUDS, create owner records using the owner and site owner views to identify the public water supplies that own the facilities.
3. In SWUDS, create a conveyance that connects the two facilities.
4. In SWUDS, the water-quantity view can be used to enter user releases, user deliveries, or loss-gains and on each conveyance (water quantity codes UR, UD, or LG).

3.7.9 Creating Generic Transfer Conveyances

Water or wastewater can be transferred between any two facilities. In addition, reclaimed wastewater can be transferred from a wastewater treatment plant to another facility.

3.7.9.1 Process to Create a Generic Transfer

To link two sites perform the following:

Examples:

- Reclaimed wastewater for irrigation at a golf course – the source site can be a wastewater treatment plant (FA-WWTP) and the destination site a facility (FA-GC, golf course).

- Public supply of water to all domestic users in a county – the source site can be a water distribution system and the destination site a domestic, aggregate user (AW).

- Irrigation deliveries from an irrigation district – the source site can be a distribution system and the destination site an aggregate user. For both sites the National Water-Use Category Code in the Sitefile will be set to IR for irrigation.

To enter a generic transfer:

1. Create a facility with GWSI to represent the facility or user providing water. Create a second facility with GWSI to represent the facility or user receiving water.
2. In SWUDS, create a conveyance that connects the two sites.
3. In SWUDS, the water-quantity view can then be used to enter user releases, user deliveries, or loss-gains on each conveyance (water-quantity codes of UR, UD, or LG). The water type is usually entered as unknown (UN). However, reclaimed wastewater (RW), raw water (RA), and finished water (FN) can also be entered.

3.7.10 Conveyances Used to Transfer Water Between Reservoirs

Reservoirs are entered as site type Lake (LK). Reservoirs can be linked in a chain by creating the upstream reservoir as the from-site and the downstream reservoir as the to-site in the conveyance. Since water is transferred and not withdrawn, the water-quantity code in the Water-Quantity view must be either Use-Release (UR) or Use-Delivery (UD).

3.7.11 Process to Link a Surface-Water Resource to a Site

The Water-Use Site View allows the user to associate a surface-water name (water body that is a source or destination of water) to a site. If the site is used as a from-site or to-site of a conveyance then application programs can assume the conveyance is connected to the surface-water resource as identified in the water-use site table.

The following site types may have one associated surface-water resource:

- Diversion (FA-DV)
- Outfall (FA-OF)
- Aggregate surface-water (AS)
- Spring (SP)

The following data set is the minimum required to associate a surface-water name to a site:

Attribute in the Water-Use Site View	Description
agency_cd	site agency code
site_no	site identifier
surface_water_nm	surface-water name
surface_water_cd	surface-water code

Table 67. Attributes in the Water-Use Site View

Possible values for surface-water codes are:

Code	Name	Description
ST	Stream	Stream
ES	Estuary	Estuary
LK	Lake	Lake
RS	Reservoir	Reservoir
CN	Canal/Aqueduct	Canal or Aqueduct
LD	Lock-and-Dam	Lock-and-Dam
RC	Ranney Collector	Ranney Collector
CS	Coastal	A location that is off-shore but within the Coastal Shore Zone defined by The Submerged Lands Act, which establishes the seaward boundary of a state's coastal zone as three nautical miles from shore or to the international boundary with Canada in the Great Lakes.
SG	Storage Reservoir	Storage Reservoir is a reservoir that stores water after it is withdrawn from the primary source of supply, such as a river or a canal and before it is treated at the treatment plant. Also known as a terminal reservoir or up-ground reservoir, the contributing area for this reservoir is actually the contributing area for the intake on the river or canal/river system.

Code	Name	Description
MQ	Mine or Quarry	Mine or Quarry that is being used as a source of supply for a community water system
OT	Other	Other

Table 68. Possible Values for Surface-Water Code.

3.7.12 Process to Link a Groundwater Resource to a Site

The aquifer and national aquifer codes in the Sitefile can be used to associate a groundwater site to an aquifer. The following site types can be associated to an aquifer:

- Well
- Interconnected Wells
- Multiple Wells
- Collector Or Ranney Type Well
- Spring
- Aggregate groundwater

3.8 Water-Quantity Data Entry

Once conveyances have been entered, monthly and annual water-quantity data can be entered with the Water Quantity View. In the Water-Quantity View, annual and monthly data may be entered for conveyances.

All water quantities, such as withdrawal, return, and transferred water, require conveyances to exist. Even if the database consists of standalone withdrawal sites, conveyances must exist to represent a point-of-withdrawal or a point-of-return.

3.8.1 What is Water Quantity?

Water quantity is a volume or rate of water that is either measured or estimated at some point within a water-use network. Water quantities describe the quantity-of-water being conveyed along a conveyance.

For most conveyances up to three types of water-quantity values can be entered in a calendar year. A water-quantity value can be entered for the source, a value to represent the total quantity- of-water lost or gained, and a value for the quantity-of-water arriving at the destination. The Water Quantity Code identifies the water-quantity value as either a withdrawal from a source, a transfer between water-use facilities, or a return to a hydrologic resource, and also whether the value was measured or estimated at the from-site or to-site of the conveyance.

All water-quantity values are entered as positive real numbers except loss-gain. A positive loss-gain is considered a gain, whereas a negative value is considered a loss.

Values are stored with a maximum of 15 characters including the decimal and a negative (-) sign. The system will remove a plus sign that precedes a value, if the user enters a value with a plus sign (+).

A value can be entered with a limit of 15 characters. However, the largest value having 14 significant figures that can be entered is: “99999999999999”.

The smallest value with 14 significant figures that can be entered is “.10000000000001”. Every conveyance can have zero, one, two, or three types of values.

3.8.2 Water Type Code

Three water-quantity values can be entered for each type of water being conveyed. This is dependent on the from-site type of the conveyance. If the conveyance is a standalone to-site, then the water type is dependent on the to-site type. The type of water can also be dependent on the National Water-Use Code. For example, a conveyance from an aggregate water-use establishment (AW) to another AW site could have a water code of raw water (RA), reclaimed wastewater (RW), treated wastewater (TR), unknown water type (UN), or untreated wastewater (WW). For the water codes RW, TR, and WW, the from-site should have the National Water-Use code of sewage treatment (ST). For the other water codes associated with this conveyance, there would not be a National Water- Use code restriction.

A list of water types that can be conveyed is on the following page:

Code	Name	Description
GW	Groundwater	For water-use estimates. If the water is below ground, it is considered groundwater. If it requires a pipe driven into the ground, classify it as groundwater.
SW	Surface-Water	For water-use estimates. If you can see it, it is surface-water; this includes water in a dewatering pit. If a spring bubbles above ground on its own, classify it as surface-water.
RW	Reclaimed Wastewater	Wastewater treatment plant effluent that has been treated to remove solids and to improve water quality. This treated effluent is diverted for beneficial use, such as irrigation for golf courses.
TR	Treated Wastewater	Wastewater is water that carries wastes from homes, businesses, and industries. After treatment, it becomes treated wastewater.
WW	Untreated Wastewater	Wastewater is water that carries wastes from homes, businesses, and industries. Before treatment it is called untreated wastewater.
RA	Raw Water	Raw water is water that has not been chemically treated or otherwise treated to maintain purity.
FN	Finished Water	Water that has been chemically treated or otherwise treated to maintain purity is called "finished" water, also known as "metered at high service" water.
UN	Unknown	The water type is unknown or unspecified.

Table 69. Water Type Codes for Water Quantity.

The following table lists the types of water that can be conveyed based on site type where From/To code of F means from-site of a conveyance and T means to-site:

From/ To Code	Site Type Code	Site Type Long Name	Water Code	Water Code Name
F	AG	Aggregate groundwater use	GW	Groundwater
F	AS	Aggregate surface-water-use	SW	Surface-water
F	AW	Aggregate water-use establishment	RA	Raw Water
			RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	FA-AWL	Animal waste lagoon	WW	Untreated Wastewater
F	FA-CI	Cistern	FN	Finished Water
			GW	Groundwater
			RA	Raw Water
			RW	Reclaimed Wastewater
			SW	Surface-water
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater

From/ To Code	Site Type Code	Site Type Long Name	Water Code	Water Code Name
F	FA-CS	Combined sewer	UN	Unknown
F	FA-CS	Combined sewer	WW	Untreated Wastewater
F	FA-DV	Diversion	SW	Surface-water
F	FA-FON	Field, Pasture, Orchard, or Nursery	UN	Unknown
F	FA-GC	Golf course	WW	Untreated Wastewater
			UN	Unknown
F	FA-HP	Hydroelectric plant	SW	Surface-water
F	FA-SEW	Wastewater sewer	TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	FA-STS	Storm sewer	SW	Surface-water
			UN	Unknown
F	FA-TEP	Thermoelectric plant	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	FA-WDS	Water-distribution system	FN	Finished Water
			RA	Raw Water
			UN	Unknown
F	FA-WIW	Waste injection well	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	FA-WTP	Water-supply treatment plant	FN	Finished Water
			RA	Raw Water
			UN	Unknown
			WW	Untreated Wastewater
F	FA-WU	Water-use establishment	FN	Finished Water
			RA	Raw Water
			RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	FA-WWTP	Wastewater-treatment plant	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
F	GW	Well	GW	Groundwater
F	GW-CR	Collector or Ranney type well	GW	Groundwater
F	GW-IW	Interconnected wells	GW	Groundwater

From/ To Code	Site Type Code	Site Type Long Name	Water Code	Water Code Name
F	GW-MW	Multiple wells	GW	Groundwater
F	LK	Lake, Reservoir, Impoundment	SW	Surface-water
F	SB-GWD	Groundwater drain	GW	Groundwater
F	SP	Spring	GW	Groundwater
			SW	Surface-water
T	AG	Aggregate groundwater use	RW	Reclaimed Wastewater
T			TR	Treated Wastewater
T			UN	Unknown
T			WW	Untreated Wastewater
T	AS	Aggregate surface-water-use	RW	Reclaimed Wastewater
T			TR	Treated Wastewater
T			UN	Unknown
T			WW	Untreated Wastewater
T	FA-AWL	Animal waste lagoon	GW	Groundwater
			SW	Surface-water
			UN	Unknown
			WW	Untreated Wastewater
T	FA-OF	Outfall	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
T	FA-SPS	Septic system	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater
T	FA-WWD	Wastewater disposal	RW	Reclaimed Wastewater
			TR	Treated Wastewater
			UN	Unknown
			WW	Untreated Wastewater

Table 70. Water type codes, site types, and from-site or to-site role.

3.8.3 Reporting Units

Reporting Unit Name is mandatory for all water-quantity values entered. The Reporting Unit Name can be entered for the annual or the monthly values. Use gal/m if entering total gallons for a monthly value, and gal/yr if entering gallons for an annual value.

If only monthly data are entered, the user must enter the reporting unit name for monthly values. All 12 months are entered in the same units of measure. If both annual and monthly values are entered, reporting unit name can be entered only for the annual value. The system will use the reporting unit name entered for the annual value as the report unit

for monthly values. However, the user can also supply a different reporting unit name for monthly values.

Water-quantity values can be entered using any supported reporting unit. The system stores the original values entered as text fields exactly as entered by the user. The system also converts the entered values to Million Gallons per Day (Mgal/d) and stores the Mgal/d value. Either the original values or stored Mgal/d values can be retrieved.

Water-quantity values can be entered in any of the following units:

Reporting Unit Name	Reporting Unit Phrase
acre-feet/d	acre-feet per day
acre-feet/m	acre-feet per month
acre-feet/yr	acre-feet per year
acre-inch/yr	acre-inch per year
bbl/d	barrels per day (42 gallons)
bbl/m	barrels per month (42 gallons)
bbl/yr	barrels per year (42 gallons)
cf/d	cubic feet per day
cf/s	cubic feet per second
gal/d	gallons per day
gal/m	gallons per month
gal/min	gallons per minute
gal/yr	gallons per year
Mgal/d	million gallons per day
Mgal/m	million gallons per month
Mgal/yr	million gallons per year
Tacre-feet/yr	thousand acre-feet per year
Tcf/d	thousand cubic feet per day
Tcf/m	thousand cubic feet per month
Tcf/yr	thousand cubic feet per year
Tgal/d	thousand gallons per day
Tgal/m	thousand gallons per month
Tgal/yr	thousand gallons per year

Table 71. Water-Quantity Values

3.8.4 Preferred Values

The user can enter 12 monthly values and an annual value for each calendar year. The 13 values constitute a data record for that year. The user must also enter the method that was used to measure the value (Measuring Method Code) and the source of the data (Data Source Code). However, multiple records can be entered for each unique combination of Data Source Code and Measuring Method Code.

Even though multiple data records can be entered, the user must select one to be preferred. The preferred value is identified with the Preferred Flag where it is set to "Y", yes. Multiple non-preferred records can be entered. Non-preferred records are identified with the Preferred Flag of "N", no.

When adding new records, if a record already exists in the database where the preferred flag is already set to "Y", a newly added record will cause the old record's preferred flag to be changed to "N" and the new record will be entered as the preferred record. The Preferred Flag is mandatory. The system default is "N", no.

3.8.5 Measuring Method Code

The Measuring Method Code is used to identify how the data was estimated or measured. The Measuring Method Code must be a valid code in the reference list (see the SWUDS Data Dictionary in the Options tab of the Template Builder). The Measuring Method Code is mandatory and can be entered as Unknown or Unspecified.

3.8.6 Data Source Code

The Data Source Code is used to identify the agency that was the source of the data. The Data Source Code must be a valid Agency Code. The data source is mandatory and cannot be entered as Unspecified.

3.8.7 How to Handle Mixed Methods or Data Sources

It is possible to have monthly data for a given conveyance where some months are from one data source and the remaining months are from a second data source. However, neither source can provide a full set of 12 monthly data values. The same idea holds true if different measurement methods were used to get the monthly data.

If the user has a mix of methods and data sources, enter the water-quantity data that is actually available. Always enter an annual value with associated months for each unique method and data source combination. However, the user can only pick one water-quantity record set, and mark it preferred. Since a water-quantity record with a partial set of monthly values might still have a good annual value, the record with the best possible annual value should be marked as preferred.

If the user needs a preferred value for each month, it is suggested that the partial records be combined into one record to get 12 months of data. The annual value can then be calculated from the 12 monthly values and the record can be marked as preferred. The measuring method should be set to ESTM for estimation and the data source set to USGS to indicate that a district employee created the record. It is also recommended that a comment be entered for the record to state that the record is a combination of non-preferred partial records. The original partial water-quantity records should be stored, but marked as non-preferred. Comments should be stored for these records stating that their data was used to create the preferred estimated record.

3.8.8 How to Handle Data that is NOT Reported

Sometimes water quantities are not reported. If the user wants to record the fact that in a given year the site is active but the originator of the data did not report, enter this information using non-preferred values as follows:

For the water quantity, p-site quantity, or aggregate transfer views:

1. Enter 0.00 for the annual value.
2. Enter the water-quantity code.
3. Enter UNSP, unspecified, for the method code.
4. Enter the data source code.
5. Enter the National Water Use Category Code.
6. Enter the year.
7. Enter the expected reporting unit.
8. Enter N, no, for the preferred flag.
9. Enter "NO REPORTS SUBMITTED," for the annual comment.
   Do not enter monthly values.

In the retrieval system, the user can output preferred, non-preferred, or both sets of values in the same report. To retrieve the records where data are not reported, the user must include non-preferred values in the retrieval selection.

Also, in the retrieval system, the user has the option to "Display Years With No Data" or "Display Header Record Where There is No Data." If either or both options are selected and only preferred values are retrieved, the user will get the correct output. Years having data that are NOT reported will be treated as NULL values in the output.

3.8.9 Calculated Flag

If the user sets the attribute Calculated Flag to “Y”, yes, the system will automatically calculate the annual value from 12 monthly values, (see the Appendix, section Procedure for Calculating the Annual Value for the equation used).

The system can either be used to enter monthly and annual values or the system can calculate and store the annual value from entered monthly values. If the system is used to calculate the annual value, all 12 monthly values must be entered. If values are zero for a given month, enter zero. For any value that is left blank or null, the value is assumed to be unknown. Null is not considered a value. If the user knows that there was zero water-use for a month, the value 0 should be entered for that month.

To enter data where the system does not calculate the annual value, Calculated Flag is set to “N”, no, then at least one monthly value and reporting unit or an annual value and reporting unit must be entered. If the user does not enter the Calculated Flag, the system will default the value to “N”.

The annual value that is calculated will be displayed in the same units as the monthly values. For example, if you entered million gallons per month (Mgal/m) as the monthly

unit, the annual value will be reported as the same unit, not in million gallons per year (Mgal/yr).

Zero, an integer value 0, is an actual value that the user must enter. Zero is not the same as a null value. Null indicates the absence of a value for a particular attribute, a missing value.

In the Batch Entry System, the default indicator for a null is a blank space. The Batch Entry System allows the user to specify another string to be tested for the null value. The Retrieval System will display nulls with a user-specified character string. On output, the default null indicator is a blank space.

3.8.10 Water-Use Subtype

All water has a use in SWUDS and must be identified in the Sitefile with a National Water Use code. The Water Use Subtype code groups similar water uses in a standardized list used for national compilations and other hydrologic studies. The Water Use Subtype code was developed from the same National Water Use codes as found in the Sitefile, except the National Water Use codes for thermoelectric power (TE) was replaced with the water-use subtype codes of Once-through cooling (PO) and Thermoelectric Circulation cooling (PC) used to identify the operation's cooling system. A thermoelectric power site type (FA-TEP) must be entered in the Sitefile with the code National Water Use code of TE, whereas the codes PO and PC (water use subtype codes) are used ONLY when entering P-site Quantity and Water Quantity data.

PC describes a cooling system in which water is withdrawn, circulated through heat exchangers, then cooled and recycled. Subsequent withdrawals are used to replace water lost to evaporation, blow down, drift, and leakage.

PO describes a cooling system in which water is withdrawn, circulated through heat exchangers, and then returned to a body of water at a higher temperature.
It is also referred to as an open-loop cooling system.

3.8.11 Data Aging Code

Data aging only applies to data entered with the Water Quantity and P-site quantity views.

For new data, set the attribute Data Aging Code to either "W", working, or "O" accepted as reported. Once data are marked as approved "A", then no one can modify the water-quantity values. Also, only a DBA can change the Data Aging Code back to either "W", working, or "O" accepted as reported. A DBA is any user that has been assigned to either the nwws or nwdba NWIS access groups. If the Data Aging Code is not entered, the system marks the new data as "working".

Approved or published data cannot be modified or deleted by a user having write-access. Modifying or deleting published or approved data is a two-step process. First a user with DBA access (a user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data aging code back to either working or accepted-as-reported with a modify transaction. Then either the DBA or a user with write-access can

modify the water-quantity data.

The Data Aging Code identifies whether or not water-use values have been reviewed for accuracy and consistency with previously reported, estimated, or known values. There are three data aging classifications including working, approved, and accepted-as-reported as follows:

Data Aging Code	Description
W	Working values data was NOT reviewed.
O	Accepted-as-reported without validation
A	Approved and ready for publication

Table 72. Data Aging Classifications.

A working value (W) is a value that was NOT reviewed prior to entry into the data system. An accepted-as-reported value (O) is a value that has NOT been verified by a district QA/QC process. For example, data may be received from a cooperator and are stored as "accepted-as-reported" without any QA/QC. If the user accepts the data from a reporting source and it makes sense according to the user's knowledge and experience to QA/QC the data, the user can optionally age the data from "accepted-as-reported" to "approved". The user can directly enter data as "accepted-as-reported" assuming that the data are to be accepted as they are without any additional QA/QC.

Approved values (A) are values that have been verified by a Water Science Center QA/QC process, to indicate that the data have been reviewed for accuracy and consistency with previously entered values. Verification of the data can vary with the source data; therefore, data marked "approved" do not indicate that the data was reviewed and satisfied minimal national verification requirements. Approved data simply represent the most reliable data available. The user can directly enter data as "approved" assuming that the data were reviewed prior to entry into the data system.

If the user enters the data as "approved" and set the calculation flag to "Y", the system calculates the annual value from the monthly values and identifies all values as "approved".

The data aging code is mandatory. One data aging code can be entered for each set of values for a calendar year (12 monthly values and an annual value).The system automatically defaults the data aging code to "working" unless the user enters another value.

Once the data aging code is set to "**approved**" or the publishing date has been set, then no data can be modified unless a user with DBA access removes the published date and reverts the data aging code to either "working" or "accepted-as-reported".

On modify, the data aging code can be changed from "working" to "approved" or "accepted-as-reported". Any user with write-access can do this. Also on modify, the data aging code can be changed from "accepted-as-reported" to "approved". Any user with write-access can do this.

3.8.12 Published Date

Data can be identified as published. To identify data as published, the user enters a published date. Enter the date the values were officially published in a report. The published date is not mandatory. The publishing date is either null (not set) or it is set to the date the data value was originally published. Non-published data have a null date.

To identify data as published, enter the Published Date. However, no one can modify the water- quantity values once a published date has been entered. Also, only a DBA can remove the publishing date. A DBA is any user who has been assigned to the nwws or nwdba NWIS access groups.

SWUDS does not have a mechanism for storing revised values. A single published date is entered for a set of 12 monthly values and an annual value. Both preferred and non-preferred values can have a published date.

It is possible to set the data aging code to W (working) and enter a publishing date. This implies that the data was received from a published report and should be validated before it is accepted.

3.8.13 Accuracy Code

Accuracy code was maintained from the legacy SWUDS system. The accuracy code indicates the accuracy involved in the measurement or estimate. The reference list for accuracy code includes excellent (E), good (G), fair (F), poor (P), and unspecified (U). The accuracy code defaults to unspecified (U). One accuracy code can be entered for a set of 12 monthly values and an annual value.

3.8.14 Water-Quantity Codes for Withdrawals

A withdrawal conveyance can be used to enter the following three water-quantity values:

Withdrawal (WD):

This represents the quantity-of-water withdrawn at the location of the From-site. Withdrawal amounts will be entered with the water-quantity code of WD. One Salinity Code is entered for 12 monthly values and the annual value. Valid salinity codes include:

Code	Name
F	Fresh
S	Saline
U	Unknown
N	Unspecified

Table 73. Salinity Codes.

For water-use estimates, saline water is defined as that containing more than 1,000 milligrams per liter of dissolved solids. However, all domestic, commercial, livestock, animal specialties, and irrigation withdrawals are assumed to be fresh water, where these

withdrawals may be slightly saline (1,000 - 3,000 mg/L of dissolved solids), or moderately saline (3,000 - 10,000 mg/L of dissolved solids). Moderately saline values should be entered as fresh; mention in the annual comment that the withdrawals are slightly or moderately saline.

One Irrigation Method Code is entered for 12 monthly values and the annual value. Irrigation method codes include:

Code	Name
SP	Spray
FL	Flood
MC	Micro
UN	Unspecified

Table 74. Irrigation Method Codes.

Irrigation Method Code is only entered where the National Water-Use Category Code is irrigation (IR).

The purpose of the National Water-Use Category Code stored with the water-quantity values is to represent how the water withdrawn was used in the data collection year.

Loss/Gains (LG):

Loss/gains represent the total quantity-of-water lost or gained as the water was conveyed from the withdrawal location to the use location. Negative values are losses. Loss/gains cannot be entered for conveyances consisting of a standalone from-site.

The purpose of the National Water-Use Category Code stored with the water-quantity values is to represent the loss or gain of water for the intended use in the data collection year. Therefore, the National Water-Use Category Code defaults to the value associated with the to-site.

Withdrawal-Delivery (DL):

This is a quantity-of-water delivered to the destination site.

Delivery cannot be entered for conveyances consisting of a standalone from-site.

The purpose of the National Water-Use Category Code stored with the water-quantity values is to identify the intended use of the water delivered in the data collection year. Therefore, the National Water-Use Category Code defaults to the value associated with the to-site.

3.8.15 Water-Quantity Codes for Returns

Return-Release (RL):

This is a quantity-of-water released at the starting point of a conveyance.

National Water-Use Category Code stored with the water quantity, defaults to the value associated with the from-site of the conveyance.

Loss/Gains (LG):

Loss/gains represent the total quantity-of-water lost or gained as the water was conveyed from the release location to the return location. Negative values are losses.

Return (RT):

This is a quantity-of-water discharged/returned back to a hydrologic resource. A return is usually associated with an outfall site. The source site is optional.

The following site types are valid for sites that represent the return location (destination) :

FA-SPS-Septic System
FA-STS-Storm Sewer
FA-CS-Combined Sewer
FA-OF-Outfall
FA-WWD-Wastewater Disposal
FA-WIW-Waste Injection Well
AG-Aggregate Groundwater

National Water-Use Category Code stored with the water quantity defaults to the value associated with the to-site of the conveyance.

Irrigation Method Code and Salinity Code do not apply for returns.

3.8.16 Water-Quantity Codes for General Transfers

Use-Release (UR):

A use-release (UR) quantity-of-water released (point of transfer) from a facility.
Irrigation Method Code and Salinity Code do not apply.

Loss/Gains (LG):

Loss/gains represent the total quantity-of-water lost or gained as the water was conveyed from the release location to the return location. Negative values are losses.

Use-Delivery, (UD):

This is a quantity-of-water delivered to the destination site.
Irrigation Method Code and Salinity Code do not apply.

3.8.17 Rules for Defaulting the National Water-Use Category Code

The National Water-Use Category Code must be entered because it is part of the unique key to identify an individual data entry record and, The National Water Use Code will not default from the value stored in the Sitefile. The fields used to identify the record cannot be modified. One National Water-Use Category Code is stored for 12 monthly values and the annual value.

The National Water-Use Category Code stored with the data, represents how the water was used. Since a conveyance can consist of two sites, there is a possibility that two different National Water-Use Category Codes can be associated to a water quantity. The National Water-Use Category Code stored with the data is always the use in the year of data compilation.

National Water-Use Category Code Default from the Sitefile	Water Quantity Code Entered
The National Water-Use Category Code will default from the value stored in the Sitefile from the **from-site.**	WD, RL, or UR
The National Water-Use Category Code will default from the value stored in the Sitefile from the **to-site.**	RT, DL, or UD

Table 75. National Water-Use Category Code Default

Loss or gains (**LG**) can default to either the from-site or to-site.

In summary, if the water-quantity value represents a quantity for the from-site, then the National Water-Use Category Code that was entered in the Sitefile for the from-site is used. If the water- quantity value represents a quantity for the to-site, then the National Water-Use Category Code that was entered in the Sitefile for the to-site is used. The Sitefile should always contain the current use of the site.

3.8.18 Water-Quantity View

Purpose:

The Water-Quantity View is used to enter estimated or measured values that represent the amount of water at either the from-site or to-site of a conveyance. Quantity values may be withdrawals, returns, deliveries, releases, transferred water, and loss-gains.

Dependencies:

Water quantities are amounts of water that are conveyed along a conveyance. Therefore, a conveyance record must be created with the Conveyance View before water quantities can be entered. The attribute Data Source Code is used to identify the source of the data. The data source codes are valid NWIS agency codes. If the user needs a new agency code added to NWIS, contact GS-W HELP GWSI.

Attributes:

From Agency Code (from_agency_cd)
From Site Number (from_site_no)
To Agency Code (to_agency_cd)
To Site Number (to_site_no)
Year (cn_qnty_yr)
Data Source Code (data_source_cd)
Water-Quantity Code (cn_qnty_cd)
Water Type Code (water_cd)
Method Code (meas_meth_cd)
Accuracy Code (accuracy_cd)
Data Aging Code (data_aging_cd)
Water-Use Subtype Code (water_use_subtype_cd)
Preferred Flag (cn_qnty_pf_fg)
Irrigation Method Code (ir_meth_cd)
Salinity Code (salinity_cd)
Published Date (cn_qnty_pub_dt)
Calculated Flag (cn_qnty_yr_fg)
Annual Reporting Unit Name (cn_qnty_yr_unit_nm)
Annual Value (cn_qnty_yr_va)
Comment (cn_qnty_cm_tx)
Monthly Reporting Unit Name (cn_qnty_mo_unit_nm)
January Value (jan_va)
February Value (feb_va)
March Value (mar_va)
April Value (apr_va)
May Value (may_va)
June Value (jun_va)
July Value (jul_va)
August Value (aug_va)
September Value (sep_va)
October Value (oct_va)
November Value (nov_va)
December Value (dec_va)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The minimum amount of data required for an Add transaction is the conveyance site identifiers (from-site agency code and from-site number and/or to agency code and to-site number), the water-quantity code, the water-type code, the method code, the data source code, the water use subtype code, year, and the annual value with a reporting unit or at least one monthly value with a reporting unit. Except for the annual and monthly values with reporting units, all the other attributes identify a unique water-quantity record.

2. The year must be four digits. The year must be equal to or less than the current year and greater than or equal to 1582.

3. A water-quantity record consists of an annual value with a reporting unit and/or one to twelve monthly values with a reporting unit. The Water-Quantity Code identifies the quantity-of-water measured or estimated. One to three water quantities can be entered per conveyance as follows: a quantity at the source, a quantity at the destination, and a loss/gain quantity. A Water-Quantity Code is used to determine whether the value measured represents the source or destination of water along a conveyance.

Code	Name	Description
WD	Withdrawal	Enter a withdrawal to represent how much water was withdrawn at a source site. Withdrawal represents the amount of water withdrawn and immediately used, and is a measurement at the from-site of conveyances.
RT	Return	Enter a return value to represent the quantity-of-water or wastewater returned to the natural system. Return values are measurements at the to-site of conveyances.
RL	Return-Release	Optionally a release can be entered to represent the quantity-of-water released to the return location, and are measurements at the from-site of conveyances.
DL	Withdrawal-Delivery	Optionally a withdrawal-delivery can be entered to represent the quantity-of-water that was delivered and potentially used at the destination site. Withdrawal-delivery is a measurement at the to-site of conveyances.
LG	Loss-Gain	Optionally a loss (-) or gain (+) can be entered to represent the quantity-of-water that was lost or gained as water was conveyed.
UR	Use-Release	Use-release is used to code a generic transfer of water between any two water-use site types. The value represents the quantity of water measured or estimated at the release point, the from-site of conveyances. If the from-site is a source of water and the quantity of water represents how much water was withdrawn at the site, then enter the value with the water-quantity code of withdrawal (WD). Use-release and withdrawal values cannot be stored on the same conveyance.
UD	Use-Delivery	Use-delivery is used to code a generic transfer of water between any two water-use site types. The value represents the quantity of water measured or estimated at the delivery point, the to-site of a conveyance. If the to-site is a final destination and the quantity of water represents how much water was returned to the natural system, then enter the value with the water-quantity code of return (RT). Use-delivery and return values cannot be stored on the same conveyance.

Table 76. Water-Quantity Codes

4. The Data Source code identifies the agency that reported the data for the given water- quantity record.

5. The conveyance site identifiers, the year, the water-quantity code, the water-type code, the data-source code, and the National Water-Use Category Code uniquely identify the water-quantity record. For a given combination of conveyance site identifiers, year, water-quantity code, water-type code, and National Water-Use Category Code, there can be one preferred record and one or more non-preferred records. If a record is entered without the preferred record flag set, the flag defaults to "N" for non-preferred. The combination of the data source code and method code is unique for the preferred record and the non-preferred records.

Modifying Data:

1. The user can modify a water-quantity record by identifying the key fields that identify a unique record to modify:
   From-Site Number
   From-Agency Code
   To-Site Number
   To-Agency Code
   Water-Quantity Code
   Water Type Code
   Method Code
   Water-Use Subtype Code
   Data Source Code (Agency Code)
   Year

2. To make a change to one of these key fields, delete the record and re-enter with the new value.
3. The National Water-Use Category Code must be entered; the National Water-Use Category Code will not default from the value stored in the Sitefile.
4. If a record is modified to preferred (preferred flag = "Y", yes) then any existing preferred record is automatically set to non-preferred ("N", no).
5. Modifying published or approved data is a two-step process. First a user with NWIS DBA access (a user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data aging code back to either working or accepted-as-reported with a modify transaction. Then either the DBA or a user with write-access can modify the water-quantity data.
6. If the user changes the calculated flag to "Y", yes, the system will retrieve and verify that 12 monthly values exist. If 12 monthly values exist, the system will store a null for the original annual value, a null for annual input unit, and calculate and store the annual value as a double-precision number stored as million gallons per day.
7. If the user changes the calculated flag to "N", the system will store a null for the original annual value, a null for annual input unit, and store a null for the annual value as a double- precision number.
8. If the user changes the calculated flag to "Y" and enters fewer than 12 monthly values, the system will retrieve whatever monthly data exists; it will update the data with the months the user entered. The system will then verify that 12 monthly values exist. If 12 monthly values exist, the system will store a null for the original annual value, a null for annual input unit, and calculate and store the annual value as a double-precision number stored as million gallons per day.

9. To remove a monthly value from the database, enter a "$" or "*" for the monthly value. If the user enters a "$" or "*" for a month and sets the calculated flag to "Y", the system will reject the input record.
10. If the user enters a "$" or "*" for a month and sets the calculated flag to "N", the system will delete the monthly value. If the stored calculated flag was "Y", the system will also change the flag to "N" and store a null for the original annual value, a null for annual input unit, and a null for the annual value as a double-precision number. If the stored calculated flag was "N", the system will not change the original annual value, annual input unit, or the annual value as a double-precision number.
11. If the user enters a "$" or "*" for an annual value and the calculated flag is "Y", the system will reject the input record.
12. If the user enters a "$" or "*" for an annual value and the calculated flag is "N", the system will store a null for the original annual value, a null for annual input unit, and a null for the annual value as a double-precision number.

Deleting Data:

Water-quantity data having a published date or data marked as approved, cannot be deleted from the database.

Deleting published or approved data is a two-step process. First a user with DBA access (a user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data aging code back to either working or accepted-as-reported with a modify transaction. Then either the DBA or a user with write-access can delete the water-quantity data.

The SWUDS Batch Entry System can be used to delete non-published and non-approved water-quantity data. Entering a "$" or "*" for the delete record indicator attribute of the Water- Quantity View will cause the water-quantity record to be deleted from the database.

The DBA utility stnchange (station change) will not delete a site if the site has published or approved water-quantity data. However, station change can be used to modify a station number or agency code that has published or approved water-quantity data.

The user cannot use the SWUDS Batch Entry System to delete a conveyance or water-use site record that has published or approved data associated with it.

3.9 Place-of-Use (P-Site) Quantity Data Entry

Once water-use sites have been entered, then monthly and annual place-of-use quantity data can be entered. Place-use-quantity data consists of consumptive use, instream use, and recycled water. Consumptive use may be stored for all facilities except for hydroelectric power plants. Reservoir evaporation should be entered as a consumptive use. Recycled water can only be stored on industrial, mining, thermoelectric, remediation, and commercial sites. Instream use data may be stored for hydroelectric facilities with a type of instream use.

3.9.1 What is a P-Site Quantity?

A P-site quantity (place-of-use site quantity) is a volume or rate of water that is measured or estimated for a site, such as consumptive-use data.

Water used for instream hydroelectric power facilities (FA-HP) with an Instream Use code of Instream (IU) or Instream-Pumped Storage (IU-PS would be reported in the P-Site Quantity View, not in the Water-Quantity View. Instream use refers to all uses taking place within the river channel for such purposes as hydroelectric power generation, navigation, water-quality improvement, fish propagation, and recreation. It is sometimes called non-withdrawal use or in-channel use.

All quantity values are entered as positive real numbers except loss-gain. A positive value is considered a gain, whereas a negative value is considered a loss.

Values are stored with a maximum of 15 characters including the decimal and a negative (-) sign. The system will remove a plus sign (+) that precedes a value.

A value can be entered with a limit of 15 characters. However, the largest value that can be entered that has 14 significant figures is: "99999999999999."

The smallest value with 14 significant figures that can be entered is ".10000000000001".

3.9.2 Reporting Units

Reporting Unit Name is mandatory for all quantity values entered. The Reporting Unit Name must be entered for the annual or the monthly values.

If only monthly data are entered, the user must enter Reporting Unit Name for monthly values. All 12 months must be entered in the same units of measure. If both annual and monthly values are entered, Reporting Unit Name must be entered just for the annual value. The system will use the Annual Reporting Unit Name entered for the annual value as the report unit for monthly values. However, the user can also supply a different Reporting Unit Name for monthly values.

P-site quantity values can be entered using any supported reporting unit. The system stores the original values entered as text fields exactly as entered by the user. The system also converts the entered values to Million Gallons per Day (Mgal/d) and stores the

Mgal/d value. The original values or stored Mgal/d values can be retrieved. Quantity values can be entered in any of the following units:

Reporting Unit Name	Reporting Unit Phrase
acre-feet/d	acre-feet per day
acre-feet/m	acre-feet per month
acre-feet/yr	acre-feet per year
acre-inch/yr	acre-inch per year
bbl/d	barrels per day (42 gallons)
bbl/m	barrels per month (42 gallons)
bbl/yr	barrels per year (42 gallons)
cf/d	cubic feet per day
cf/s	cubic feet per second
gal/d	gallons per day
gal/m	gallons per month
gal/min	gallons per minute
gal/yr	gallons per year
Mgal/d	million gallons per day
Mgal/m	million gallons per month
Mgal/yr	million gallons per year
Tacre-feet/yr	thousand acre-feet per year
Tcf/d	thousand cubic feet per day
Tcf/m	thousand cubic feet per month
Tcf/yr	thousand cubic feet per year
Tgal/d	thousand gallons per day
Tgal/m	thousand gallons per month
Tgal/yr	thousand gallons per year

Table 77. Quantity Values

If different reporting units were used for individual monthly values for a given quantity record set (conveyance, year, method, National Water-Use Category, and data source), all the values must be converted to one reporting unit before entering into the database.

3.9.3 Preferred Values

The user can enter 12 monthly values and an annual value for each calendar year. The 13 values constitute a data record for that year. The user must also enter the method that was used to measure the value (Measuring Method Code) and the source of the data (Data Source Code). However, multiple records can be entered for each unique combination of Data Source Code and Measuring Method Code.

Even though multiple data records can be entered, the user must select one to be preferred. The preferred value is identified with the Preferred Flag where it is set to "Y", yes. Multiple non-preferred records can be entered. Non-preferred records are identified with the Preferred Flag where it is set to "N", no.

If a record already exists in the database where the preferred flag is set to "Y", a new record will cause the old record's preferred flag to be changed to "N" and the new record will be entered as the preferred record. The Preferred Flag is mandatory. The system default is no "N".

The Measuring Method Code is used to identify how the data was estimated or measured. The Measuring Method Code must be a valid code in reference list (see the SWUDS Data Dictionary in the Options tab of the Template Builder). The Measuring Method Code is mandatory and can be entered as Unknown or Unspecified.

The Data Source Code is used to identify the agency that is the source of the data. The Data Source Code must be a valid Agency Code. The data source is mandatory and cannot be entered as Unspecified.

3.9.4 How to Handle Mixed Methods or Data Sources

It is possible to have monthly data for a given site where some months are from one data source and the remaining months are from a second data source. However, neither source can provide a full set of 12 monthly data values. The same idea holds true if different measurement methods were used to get the monthly data.

If the user has a mix of methods and data sources, then enter the water-quantity data that is actually available. Always enter an annual value with associated months for each unique method and data source combination. However, the user can only pick one water-quantity record set and mark it preferred. Since a water-quantity record with a partial set of monthly values might still have a good annual value, the record with the best possible annual value should be marked as preferred.

If the user needs a preferred value for each month, then it is suggested that the partial records be combined into one record to get 12 months of data. The annual value can then be calculated from the 12 monthly values and the record can be marked as preferred. The measuring method should be set to ESTM for estimation and the data source set to USGS to indicate that a district employee created the record. It is also recommended that a comment be entered for the record to state that the record is a combination of non-preferred partial records. The original partial water- quantity records should also be stored but marked as non-preferred. Comments should be stored for these records stating that their data was used to create the preferred estimated record.

3.9.5 Calculated Flag

If the user sets the attribute Calculated Flag to "Y", yes, then the system will automatically calculate the annual value from 12 monthly values (see the Appendix, section Procedure for Calculating the Annual Value for the equation used).

The system can be used to enter monthly and annual values or the system can calculate and store the annual value from entered monthly values. If the system is used to calculate the annual value, all 12 monthly values must be entered. If values are zero for a given month, enter zero. Any value that is left blank or null, it is assumed to be unknown. Null is not considered a value. If the user knows that there was zero water-use for a month then the value 0 should be entered for that month.

To enter data where the system does not calculate the annual value, Calculated Flag is set to "N", no, then at least one monthly value and reporting unit or an annual value and reporting unit must be entered. If the user does not enter the Calculated Flag, the system will default the value to N".

Zero, an integer value 0, is an actual value that the user must enter. Zero is not the same as a null value. Null (a missing value) indicates the absence of a value for a particular attribute.

In the Batch Entry System the default indicator for a null is a blank space. The Batch Entry System allows the user to specify another string to be tested for the null value.

The Retrieval System will display nulls with a user-specified character string. On output, the default null indicator is a blank space.

3.9.6 Water-Use Subtype Code

All site types used in the SWUDS must be identified in the Sitefile with a National Water Use code. The Water Use Subtype code groups similar water uses in a standardized list used for national compilations and other hydrologic studies. The Water Use Subtype code was developed from the same National Water Use codes as found in the Sitefile, except the National Water Use codes for thermoelectric power (TE) was replaced with the water-use subtype codes of Once-through cooling (PO) and Thermoelectric Circulation cooling (PC) used to identify the operation's cooling system.

A thermoelectric power site type (FA-TEP) must be entered in the Sitefile with the code National Water Use code of TE, whereas the codes PO and PC (water use subtype codes) are used ONLY when entering Psite Quantity and Water Quantity data. PC describes a cooling system in which water is withdrawn, circulated through heat exchangers, then cooled and recycled. Subsequent withdrawals are used to replace water lost to evaporation, blowdown, drift, and leakage. PO describes a cooling system in which water is withdrawn, circulated through heat exchangers, and then returned to a body of water at a higher temperature. The PO system is also referred to as an open-loop cooling system.

3.9.7 Data Aging Code

Data aging only applies to data entered with the quantity and P-site quantity views.
For new data, set the attribute Data Aging Code to either "W", working, or "O" accepted as reported. Once data are marked as approved "A", then no one can modify the quantity values. Also, only a DBA can change the Data Aging Code back to either "W", working, or "O" accepted as reported. A DBA is any user that has been assigned to the nwws or nwdba NWIS access groups. If the Data Aging Code is not entered, the system marks the

new data being added as "working".

Approved or published data cannot be modified or deleted by a user having write-access. Modifying or deleting published or approved data is a two-step process. First a user with DBA access (a user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data-aging code back to either working or accepted-as-reported with a modify transaction. Then the DBA or a user with write-access can modify the Psite-quantity data.

The Data Aging Code identifies whether or not water-use values have been reviewed for accuracy and consistency with previously reported, estimated, or known values. There are three data aging classifications including working, approved, and accepted-as-reported as follows:

Data Aging Code	Description
W	Working values data was NOT reviewed
O	Accepted-as-reported without validation
A	Approved and ready for publication

Table 78. Data Aging Classifications

A working value (W) is a value that was NOT reviewed prior to entry into the data system. An accepted-as-reported value (O) is a value that has NOT been verified by a district QA/QC process. For example, data may be received from a cooperator and are stored as "accepted-as-reported" without any QA/QC. If the user accepts the data from a reporting source and it makes sense according to the user's knowledge and experience to QA/QC the data, the user can optionally age the data from "accepted-as-reported" to "approved". The user can directly enter data as "accepted-as-reported" assuming that the data are to be accepted as they are without any additional QA/QC.

Approved values (A) are values that have been verified by a district QA/QC process, to indicate that the data have been reviewed for accuracy and consistency with previously entered values. Verification of the data can vary with the source data; therefore, data marked "approved" do not indicate that the data was reviewed and satisfied minimal national verification requirements. Approved data simply represent the most reliable data available. The user can directly enter data as "approved" assuming that the data were reviewed prior to entry into the data system.

If the user enters the data as "approved" and set the calculation flag to "Y", the system calculates the annual value from the monthly values and identifies all values as "approved".

The data aging code is mandatory. One data aging code can be entered for each set of values for a calendar year (12 monthly values and an annual value).

The system automatically defaults the data aging code to "working" unless the user enters another value.

If the data aging code is set to "approved" and the publishing date ***has not been set***, data (except for the annual comment, preferred flag, and publishing date) cannot be modified unless a user with DBA access reverts the data aging code to either "working" or "accepted-as-reported". If the data aging code is set to "approved" and the publishing date ***has been set***, no data (except for the annual comment and preferred flag) can be modified unless a user with DBA access removes the publishing date and reverts the data aging code to either "working" or "accepted-as-reported".

On modify, the data aging code can be changed from "working" to either "approved" or "accepted-as-reported". Any user with write-access can do this.
On modify, the data aging code can be changed from "accepted-as-reported" to "approved". Any user with write-access can do this.

3.9.8 Published Date

Data can be identified as published. To identify data as published, the user must enter a published date. Enter the date the values were officially published in a report. The published date is not mandatory. The publishing date is either null (not set) or it is set to the date the data value was originally published. Non-published data have a null date.

To identify data as published, enter the Published Date. However, no one can modify the quantity values once a published date has been entered. Also, only a DBA can remove the publishing date. A DBA is any user who has been assigned to either the nwws or nwdba NWIS access groups.

SWUDS does not have a mechanism for storing revised values. A single published date is entered for a set of 12 monthly values and an annual value. Both preferred and non-preferred values can have a published date.
It is possible to set the data aging code to W (working) and enter a publishing date. This implies the user received the data from a published report; the data should be validated before it is accepted.

3.9.9 Accuracy Code

Accuracy code was maintained from the legacy SWUDS system. The accuracy code indicates the accuracy involved in the measurement or estimate. The reference list for accuracy code includes excellent (E), good (G), fair (F), poor (P), and unspecified (U). The accuracy code defaults to unspecified (U). One accuracy code can be entered for a set of 12 monthly values and an annual value.

3.9.10 Consumptive Use

Consumptive use refers to the amount of the water withdrawn that is evaporated, transpired, incorporated into other products or crops, consumed by humans or livestock, or otherwise removed from the immediate water environment.

3.9.11 Recycled Water Use

Recycled Water Use is the amount of water that is used more than one time at the site before being returned to the hydrologic system.
Recycled water is restrictively defined as water within a closed cooling loop in a commercial, industrial, or thermoelectric establishment. Water used in washing operations or other processes that involve additional use of the initial withdrawal of water for the same or another purpose within the water-use establishment can also be defined as recycled water. The volume of water entering this recycled water system replaces the volume of water lost to consumptive use.

3.9.12 Instream Use

Instream use is the employment of a body of water for such purposes as hydroelectric power generation, navigation, water-quality improvement, fish propagation, and recreation. For this release of SWUDS, the only instream use that can be reported is hydroelectric power.

3.9.13 Place-of-Use (P-Site) Quantity View

Purpose:

P-site quantity data are entered with the P-Site Quantity View. A P-site quantity represents the quantities of recycled water, consumptive use, and instream use. The data are estimated or measured values at an individual site.

Dependencies:

A site must exist in the Sitefile and must be entered in the Water-Use Site View; P-site quantity data can be entered.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Year (site_qnty_yr)
Site Quantity Type Code (site_qnty_cd)
Data Source Code (data_source_cd)
Method Code (meas_meth_cd)
Water-Use Subtype Code (water_use_subtype_cd)
Accuracy Code (accuracy_cd)
Data Aging Code (data_aging_cd)
Calculated Flag (site_qnty_fg)
Preferred Flag (site_qnty_pf_fg)
Published Date (site_qnty_pub_dt)
P-site Quantity Comment (site_qnty_cm_tx)
Annual Reporting Unit Name (site_qnty_yr_unit_nm)
Annual Value (site_qnty_yr_va)
Monthly Reporting Unit Name (site_qnty_mo_unit_nm)

Attributes (continued):

January Value (jan_va)
February Value (feb_va)
March Value (mar_va)
April Value (apr_va)
May Value (may_va)
June Value (jun_va)
July Value (jul_va)
August Value (aug_va)
September Value (sep_va)
October Value (oct_va)
November Value (nov_va)
December Value (dec_va)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

A P-site quantity record consists of 12 monthly values and an annual value. All values are entered as positive real numbers. The following are the values that can be entered:

Code	Description
CU	Consumptive use. The quantity-of-water consumptively used at a site. Consumptive-use data can be entered on all Facilities except for hydroelectric power plants.
IU	Instream use. The quantity-of-water used instream. The site must be defined as a hydroelectric power plant having instream use.
RY	Recycled water. The quantity-of-water recycled at a site. For example, a power plant can recycle water for cooling. Recycled water data can only be stored where the Water-Use Subtype Category Code is set to Once-through cooling (PO), Thermoelectric Circulation cooling (PC), Industrial (IN), Commercial (CO), Mining (MI), or Remediation (RM).

Table 79. P-site Quantity Records

The user can enter one P-site quantity record for each unique combination of Agency Code, Site Number, Data Source Code, Method Code, P-Site Quantity Code, Water-Use Subtype Category Code, and Year.

P-site quantity data can only be entered for facilities. Instream use data can only be stored for hydroelectric instream-use sites.

One Water-Use Subtype Category Code must be entered with a P-site quantity record. The Water-Use Category Code associated with a P-site quantity value is the use at the time when the value was collected.

Accuracy code was maintained from the legacy SWUDS system. The Accuracy Code indicates the accuracy involved in the measurement or estimate. The reference list for accuracy code includes excellent (E), good (G), fair (F), poor (P), and unspecified (U). The accuracy code defaults to unspecified (U). One accuracy code can be entered for a set of 12 monthly values and an annual value.

Modifying Data:

The user can modify P-site quantity records by identifying the record to modify by specifying Agency Code, Site Number, Data Source Code, Method Code, P-Site Quantity Code, Water Use Subtype Category, and Year. The Water Use Subtype Category Code must be entered. To make a change to one of these key fields, delete the record and re-enter with the new value.

If a record is modified to preferred (preferred flag = "Y", yes) then any existing preferred record is automatically set to non-preferred ("N", no).

Modifying published or approved data is a two-step process. First a user with DBA access (a NWIS user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data-aging code back to either working or accepted-as-reported with a modify transaction. Then either the DBA or a user with write-access can modify the water-quantity data..

If the user changes the calculated flag to "Y", yes, then the system will retrieve and verify that 12 monthly values exist. If 12 monthly values exist, the system will store a null for the original annual value, a null for annual input unit, and calculate and store the annual value as a double-precision number stored as million gallons per day.

If the user changes the calculated flag to "N", then the system will store a null for the original annual value, a null for annual input unit, and store a null for the annual value as a double-precision number.

If the user changes the calculated flag to "Y" and the user enters fewer than 12 monthly values, the system will retrieve whatever monthly data exists and it will update the data with the months the user entered. It will then verify that 12 monthly values exist. If 12 monthly values exist, the system will store a null for the original annual value, a null for annual input unit, and calculate and store the annual value as a double-precision number stored as million gallons per day.
To remove a monthly value from the database, enter a "$" or "*" for the monthly value. If the user enters a "$" or "*" for a month and sets the calculated flag to "Y", the system will reject the input record.

If the user enters a "$" or "*" for a month and sets the calculated flag to "N", the system will delete the monthly value. If the stored calculated flag was "Y", the system will also change the flag to "N" and store a null for the original annual value, a null for annual input unit, and a null for the annual value as a double-precision number. If the stored calculated flag was "N", the system will not change the original annual value, annual input unit, or the annual value as a double-precision number.

If the user enters a "$" or "*" for an annual value and the calculated flag is "Y", the system will reject the input record.

If the user enters a "$" or "*" for an annual value and the calculated flag is "N", the system will store a null for the original annual value, a null for annual input unit, and a null for the annual value as a double-precision number.

Deleting Data:

If the user enters a "$" or "*" for the Delete Record Indicator attribute, the P-site quantity record will be deleted from the database.

Deleting published or approved data is a two-step process. First a user with DBA access (a user assigned to group nwws or nwdba, or user nwis) needs to remove the published date and revert the data-aging code back to either working or accepted-as-reported with a modify transaction. Then either the DBA or a user with write-access can modify the water-quantity data.

3.10 Ancillary Data Entry

3.10.1 What is Ancillary Data?

Ancillary data include irrigation crop data (acres irrigated and production), power data, and production data in general.

The ancillary data information supplements the Standard Industrial Classification (SIC) codes and North American Industry Classification System (NAICS) codes assigned to a site with the Water-Use Site View to provide a more detailed picture of how water is used.

All values are entered as positive numbers. Values are stored with a maximum of 12 characters including the decimal. The system will remove a plus sign that precedes a value if the user enters a value with a plus sign (+).

3.10.2 Ancillary Data View

Purpose:

The Ancillary View is used to enter additional data associated to a site. Any site can have ancillary data. An ancillary data record consists of 12 monthly values and an annual value.

Dependencies:

A site must exist in the Sitefile and must be entered in the Water-Use Site View before ancillary data can be entered with the Ancillary View.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Year (ancillary_yr)
Ancillary Type Code (ancillary_cd)
Ancillary NAICS Code (naics_cd)
Ancillary SIC Code (sic_cd)
Data Source Code (data_source_cd)
Annual Value (ancillary_yr_va)
Reporting Unit Name (unit_abbrv_tx)
Ancillary Comment (ancillary_cm_tx)
January Value (jan_va)
February Value (feb_va)
March Value (mar_va)
April Value (apr_va)
May Value (may_va)
June Value (jun_va)
July Value (jul_va)
August Value (aug_va)
September Value (sep_va)

Attributes (continued):

October Value (oct_va)
November Value (nov_va)
December Value (dec_va)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The user can enter one ancillary record for each unique combination of Agency Code, Site Number, Ancillary Type Code, Ancillary NAICS Code, and Year. The system does a check for the existence of the ancillary record. If the above combination does not exist, then the record can be added.

2. The Data Source Code is not mandatory for ancillary data. It is recommended that the user should enter a data source, if practical. The Data Source Code is an Agency Code. If the Data Source Code is entered, the code must exist as an Agency Code in the NWIS AGENCY reference list.

3. The entry of a SIC code is optional. The user can add or change the SIC code, as long as the SIC code is considered valid for the ancillary_cd and/or naics_cd.

4. The NAICS code is mandatory.

5. Since the SIC and NAICS codes entered in the Water-Use Site View are not validated against the SIC and NAICS codes entered in the Ancillary View, it is suggested that the user always retrieve the SIC and NAICS codes from the Ancillary View when generating ancillary data reports.

6. Power generation (ancillary type code of "PP") can be entered on either thermoelectric plants or hydroelectric plants. Power generation can be a negative value for hydroelectric power plant (FA-HP) with an instream use code of Instream Use (IU) or Instream Use Pumped Storage (IU-PS).

7. Ancillary data does not support the entry of preferred and non-preferred data. All data are considered preferred.

8. Annual values cannot be calculated from monthly values.

9. Ancillary Reporting Unit Name is mandatory. One reporting unit is entered and is used for both the annual and monthly values. The reporting unit is dependent on the Ancillary Type Code as shown in the table below:

Ancillary Type Name	Ancillary Report Type Code	Reporting Unit Name	Description
Acres-irrigated	AC	acres	Acres
Power Production	PP	GWh	Gigawatt
Number of Employees	NE	count	Count
Production			
	PR	AT	Assay ton
	PR	bales	Bales
	PR	bbl	barrels, liquid, 31 to 42 gallons
	PR	bbl/d	barrels per day, liquid, 31 to 42 gallons
	PR	bbl-cb	barrels - Cistern barrel, 36 gallons
	PR	bbl-cb/d	barrels per day - Cistern barrel, 36 gallons
	PR	bbl-cran	barrels - standard for Cranberries
	PR	bbl-cran/d	barrels per day - standard for cranberries
	PR	bbl-dry	barrels - fruits, vegetables, dry commodities; exc. cranberries
	PR	bbl-dry/d	barrels per day - fruits, vegetables, dry commodities; exc. cranberries
	PR	bbl-oil	barrels - crude oil or petroleum, 42 gallons
	PR	bbl-oil/d	barrels per day - crude oil or petroleum, 42 gallons
	PR	bbl-ps	barrels - Proof spirits barrel, 40 gallons
	PR	bbl-ps/d	barrels per day - Proof spirits barrel, 40 gallons
	PR	bbl-st	barrels - State barrel for liquids, 31 ½ gallons
	PR	bbl-st/d	barrels per day - State barrel for liquids, 31 ½ gallons
	PR	bbl-tax	barrels - Federal tax barrel, 31 gallons
	PR	bbl-tax/d	barrels per day - Federal tax barrel, 31 gallons
	PR	bgs	bags
	PR	bu/acre	bushels per acre
	PR	bushels	bushels
	PR	bx	box
	PR	case	case
	PR	cf/d	cubic feet per day
	PR	cord	cord of wood
	PR	ctn	carton
	PR	cwt	hundredweight
	PR	fmb	board foot
	PR	ft2	square feet
	PR	ft3	cubic feet
	PR	gal	gallon

Ancillary Type Name	Ancillary Report Type Code	Reporting Unit Name	Description
	PR	gr	gross
	PR	hd	head
	PR	Hunits	hundreds of units
	PR	in3	cubic inch
	PR	lb	pound
	PR	lton	U.S. long ton
	PR	Mgal	million gallons
	PR	oz t	troy ounce
	PR	prs	pairs
	PR	sack	sack
	PR	Tlb	thousand pounds
	PR	tons	U.S. short tons
	PR	tons/acre	U.S. short tons per acre
	PR	tons/d	U.S. short tons per day
	PR	Tunits	thousands of units
	PR	unit	unit
	PR	yd2	square yard
	PR	yd3	cubic yard

Table 80. Reporting Units by Ancillary Type Code

Notes on Barrel:

There are a variety of "barrels" established by law or usage. For example, Federal taxes on fermented liquors are based on a barrel of 31 gallons; many State laws fix the "barrel for liquids" as 31-1/2 gallons; one State fixes a 36-gallon barrel for cistern measurement; Federal law recognizes a 40-gallon barrel for "proof spirits"; by custom, 42 gallons comprise a barrel of crude oil or petroleum products for statistical purposes, and this is recognized "for liquids" by four States.

1 Barrel	Volume
1 barrel (bbl), liquid	31 to 42 gallons
Federal tax barrel	31 gallons
State "barrel for liquids"	31 ½ gallons
Cistern barrel	36 gallons
Proof spirits barrel	40 gallons
Crude oil or petroleum barrel	42 gallons
1 barrel (bbl), standard for fruits	7056 cubic inches
1 barrel (bbl), vegetables, and other dry	105 dry quarts
1 barrel (bbl), commodities, except cranberries	3.281 bushels, struck measure, 5826 cubic inches; 2.709 bushels in a struck measure
1 barrel (bbl), standard, cranberry	86 45/64 dry quarts.

Table 81. Barrel Measurement.

Modifying Data:

The Site Number, Agency Code, Ancillary Type Code, Ancillary NAICS code, and Year identify a unique ancillary data record; these attributes cannot be modified. The Ancillary SIC Code, Data Source Code, Ancillary Comment, Annual Value, Reporting Unit Name, and monthly values can be modified.

The user cannot modify the Ancillary NAICS Code without deleting the ancillary record. To modify the NAICS Code, the user has to delete the ancillary record and then enter a new ancillary record that has the correct NAICS code.

To replace a value with a blank space, enter a "$" or "*" for the attribute's value.

Deleting Data:

Enter the Site Number, Agency Code, Ancillary Type Code, Ancillary NAICS code, Year, and a "$" or "*" for the Delete Record Indicator with a modify transaction to delete an ancillary record.

3.11 Population Data, Data Entry

3.11.1 What is Population Data?

SWUDS can be used to store various population numbers. All values are entered as positive integers in the range of 0 through 2147483647. Do not include commas with the value. If the user enters a value with a plus sign (+) preceding it, the system will remove this plus sign.

3.11.2 Population-Served View

Purpose:

Population served by public-supply data is entered with the Population-Served View. The population served by public-supply system (FA-WTP or FA-WDS) or a wastewater collection system (FA-CS or FA-SEW) or wastewater treatment plant (FA-WWTP) represents the retail population served. Population served by wholesale customers is not included.

Dependencies:

A site must exist in the Sitefile and must be entered in the Water-Use Site View before population-served data can be entered with the Population-Served view.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Year (pop_srv_yr)
Groundwater Factor (pop_srv_tot_yr_gw_fc)
Population-Served Type (pop_type_cd)
State FIPS Code (state_cd)
County FIPS Code (county_cd)
Hydrologic Unit Code (huc_cd)
Data Source Code (data_source_cd)
Annual Population (pop_srv_yr_nu)
January Population (jan_nu)
February Population (feb_nu)
March Population (mar_nu)
April Population (apr_nu)
May Population (may_nu)
June Population (jun_nu)
July Population (jul_nu)
August Population (aug_nu)
September Population (sep_nu)
October Population (oct_nu)

Attributes (continued):

November Population (nov_nu)
December Population (dec_nu)
Pop-Served Comment (pop_srv_cm_tx)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The site must be a Distribution System (FA-WDS), Water Treatment Plant (FA-WTP), Collection System (FA-CS or FA-SEW) or Wastewater Treatment Plant (FA-WWTP).
2. The following attributes identify a unique population served record: Site Number, Agency Code, Population Served Type (TOT=total, SUB=subtotal), and Year.
3. Total and subtotal population-served data can be entered. Total population served represents the population served within the total service area; therefore, the State FIPS Code, County FIPS Code, and Hydrologic Unit Code are not entered for total population- served data. The database will accept 2 digit, Region (09) 4digit, Subregion (0902), 6 digit, Basin (090201),8 digit, Subbasin (09020107), 10 digit, Watershed (0902010704), or 12 digit, Subwatershed (090201070406) . The subtotal population served represents the population served within a specific State, county, and hydrologic unit; therefore, the State FIPS Code, County FIPS Code, and Hydrologic Unit Code are entered for subtotal population-served data.
4. If subtotals are entered, then the State FIPS Code, County FIPS Code, and Hydrologic Unit Code are required. The area encompassing the intersection of hydrologic units and United States's counties, describes the boundary that represents the area in which the population resides. Subtotal population-served represents the population served for a specific State, county, and hydrologic unit piece of a service area.
5. A population-served data record consists of 12 monthly values and an annual value. The user must enter the annual value or at least one monthly value. Population values are entered as positive integer values in the range of 0 through 2147483647. Do not include commas in the value. The system does not calculate the annual value from the monthly values.
6. The Data Source is mandatory; enter the agency code that is associated with the agency that was the source of the population values.
7. Population values are considered a total count of the population; therefore, reporting unit is not entered.
8. The user can enter one total population served for each unique combination of Agency Code, Site Number, and Year where Population-Served Type is "TOT". In addition, one subpopulation served record can be entered for each unique combination of Agency Code, Site Number, State FIPS Code, County FIPS Code, Hydrologic Unit Code, and Year where Population-Served Type is "SUB".
9. The Percent Population Served by Groundwater can also be entered and applied to the total population-served annual value. Enter a positive integer value ranging from 0 to 100. On output, the system uses the Percent Population Served by Groundwater to calculate the Percent Population Served by Surface-Water, Population Served by Ground- Water, and Population Served by Surface-Water.

10. On output, the system uses the percent population-served values with the subtotal population-served data to calculate the subtotal population-served by groundwater and surface-water.
11. Population-served data does not support preferred and non-preferred values. The values entered are assumed to be preferred. Data Aging Codes and Published Dates are also not supported.

Modifying Data:

1. Only the annual and monthly values and annual comment can be modified.
2. To remove a value (or the annual comment) enter a "$" or "*" for the value.
3. The user cannot change the assignment of the state FIPS code, county FIPS code, or hydrologic unit code. To change a State, county, or hydrologic unit, the record needs to be deleted and then re-entered (added) with the modified codes.

Deleting Data:

To delete a population-served record from the database, enter a "$" or "*" for the delete record indicator attribute.

3.11.3 Population Self-Served View

Purpose:

Population self-served is the population not served by a water supply system and/or a wastewater collection or treatment system. The Population Self-Served view is used to enter total population of the water supply (Population Type Code is "SS") or the population that is on septic system (Population Type Code is "SP").

Dependencies:

A site must exist in the Sitefile and must be entered in the Water-Use Site view before population self-served data can be entered with the Population Self-Served view.

Attributes:

Agency Code (agency_cd)
Site Number (site_no)
Year (pop_slf_yr)
Population Type Code (pop_slf_cd)
Data Source Code (data_source_cd)
Total Population Self-Served (pop_slf_nu)
Pop Self Served Comment (pop_slf_cm_tx)
Delete Record Indicator (Modify) (delete_record_cd)

Adding Data:

1. The site type must be an Aggregate Water Use Establishment (AW). Use the National Water-Use Category Code of DO to enter domestic self-supply populations. Use the National Water-Use Category Code of ST to enter domestic populations on septic systems. The State FIPS Code, County FIPS Code, and Hydrologic Unit Code that was entered in the Sitefile represent the geographic area of the population.
2. It is possible to associate quantity data (withdrawals or returns) to the population data. Create either an aggregate groundwater user or surface-water site which will be used to enter the quantity data. Use the National Water-Use Category Code of either DO for domestic or ST for septic systems. Create a conveyance record that links the aggregate groundwater user or surface-water site to the aggregate p-site user. Quantity data can then be entered using the Quantity View.
3. The following attributes identify a unique population self-served record: Site Number, Agency Code, the Population Self-Served Type (SS=self-supplied, SP=self-septic), and the Year.
4. An annual population self-served value and the Data Source (Agency Code) must be entered. A population self-served data record consists of an annual value. Monthly data cannot be entered.
5. The annual value is entered as a positive integer value. Reporting unit is not entered.
6. Population values are entered as positive integer values that are in the range of 0 through 2147483647. Do not include commas in the value.

Modifying Data:

Any attribute other than Agency Code, Site Number, Population-Type Code, and Year can be modified.
Enter a "$" or "*" to remove (blank out) the comment. All other attributes are mandatory and cannot be removed unless the whole record is deleted.

Deleting Data:

Enter the Agency Code, Site Number, Population-Type Code, Year and a "$" or "*" for the Delete Record Indicator attribute, to delete the population self-served record.

3.12 Appendix

3.12.1 Procedure to Convert Units to Million Gallons per Day

The following describes the procedure that the system uses to convert a value from the entered reporting unit to million gallons per day.

Values are stored twice. The original value is stored as a text string, exactly as entered in the original reporting unit. The original values are converted to million gallons per day (Mgal/d) and stored a second time as a double-precision float value. Retrieval applications have the option of displaying the original values in the original units or the stored values in million gallons per day. On output, stored values can optionally be converted to a different unit.

The system uses the following procedure to convert an annual value to million gallons per day:

Check the time component of the entered unit. Time can be recorded in seconds, days, months, or years. Normalize the value to day (except when units are "cubic feet per second", in this case use the coefficient).

Next, use the coefficient listed in the "Units of Measure" section for converting to million gallons per day.

Consider leap year in the number of days in a year.

For example, to convert gallons per year to million gallons per day (Mgal/d):

$$Mgal/d = \left(Gallons/Year\right) * \left(Year/NumberOfDaysInYear\right) * 0.0000010$$

Where 0.0000010 is the conversion coefficient to convert from gallons per day to million gallons per day.

The system uses the following procedure to convert a monthly value to million gallons per day:

Check the time component of the entered unit. Time can be seconds, days, months, or years.

Normalize the value to day (except when units are "cubic feet per second", in this use the coefficient). When working with months, the number of days in each month must be considered. Failure to do so can introduce errors into the calculation.

Next, use the coefficient listed in the "Units of Measure" section for converting to million gallons per day.

Consider leap year in the number of days in a February.

For example, for a monthly January value, the system will convert 95.135506719329 acre-feet per month to 1 million gallons per day on output as follows (where 0.325851 is the conversion coefficient to convert from acre-feet per day to million gallons per day):

$$95.135506719329 * \left(1 / 31\right) * 0.325851 = 1 Mgal / d$$

For example, for a monthly January value, the system will convert million gallons per day to acre-feet per month on output as follows:

$$1\,\text{Mgal/d} * \left(1 / 0.325851\right) * 31 = 95.135506719329$$

For example, for an annual value (non-leap year), on input, the system will convert 933.45322453105 acre-feet per month to 10 million gallons per day as follows (where 0.325851 is the conversion coefficient to convert from acre-feet per day to million gallons per day):

$$933.45322453105 * \left(12 / 365\right) * 0.325851 = 10 Mgal / d$$

For example, for an annual value (non-leap year), on output the system will convert 10 million gallons per day to 933.45322453105 acre-feet per month as follows:

$$10\,\text{Mgal/d} * \left(1 / 0.325851\right) * \left(365 / 12\right) = 933.45322453105$$

For example, for an annual value (non-leap year), on output the system will convert 10 million gallons per day to 1336791.1664840 cubic feet per day as follows:

$$10\,\text{Mgal/d} * \left(1 / 0.00000748055056852184 3\right) = 1336791.1664840$$

For example, for an annual value (non-leap year), on output the system will convert 10 million gallons per day to 15.472119982453 cubic feet per second as follows:

$$10\,\text{Mgal/d} * \left(1 / 0.00000748055056852184 3\right) * \left(1\text{day} / 86400\,\text{sec}\,onds\right) = 15.472119982453$$

Constants:

Leap Year occurs every four years, except for years ending in 00. If the year ends in 00, then the year is a leap year every 200 years (if the year is divisible by 400), e.g. 2000 is a leap year.

Number of Seconds in day: 86400
Number of Minutes in day: 1440
Days in Year: 365
Days in Leap Year: 366
Days in Month:
January 31
February 28, Leap Year 29
March 31
April 30
May 31
June 30
July 31
August 31
September 30
October 31
November 30
December 31

All unit conversion calculations use the coefficients listed in the table below. Coefficients based on the time unit of month and year that are stored in table WU_UNIT, are NOT used by SWUDS for calculations and should be ignored. The entries for month and year are used for the display of the reporting unit name or phase in applications.

Unit Abbreviation	Unit Description	Conversion factor to Mgal/d
Mgal/d	million gallons per day	1.00
gal/min	gallons per minute	0.001440
cf/s	cubic feet per second	0.6463195691202873
Acre-feet/d	acre-feet per day	0.325851 **
gal/d	gallons per day	0.000001
Tgal/d	thousand gallons per day	0.001
cf/d	cubic feet per day	0.000007480550568521843
Tcf/d	thousand cubic feet per day	0.007480550568521843
Bbl/d	barrel per day (40 gallons)	0.000042

Table 82. Coefficients for Unit Conversion Calculations.

1.0 gallon = 0.13368 cf **
** Conversion factors from: U.S. Geological Survey, 1919, Hydraulic conversion tables and convenient equivalents (2d ed.): U.S. Geological Survey Water-Supply Paper 425-C, p. C71-C94.

$$1.0 cf/s \times 86400 s/day \times 1.0 gal/0.13368 cf \times 1/1000000 gal = 0.6463195691202873 Mgal/d$$

$$1.0 cf/d \times 1.0 g/0.13368 cf \times 1/1000000 gal = 0.000007480550568521843 Mgal/d$$

$$1.0 Tcf/d \times 1.0 g/0.13368 cf \times 1/1000 gal = 0.007480550568521843 Mgal/d$$

$$1.0 g/\min \times 1440 \min/d \times 1.0/1000000 gal = 0.00144 Mgal/d$$

3.12.2 Rounding and Significant Figures

In retrievals, the user can specify that water quantities are rounded based on the number of significant figures of the original values entered, or rounded to one to four decimal places.

Significant Figures:

On input, the user can enter original values with a maximum of 14 significant figures not including decimal, negative sign, or positive sign. The system determines and stores the

number of significant figures so it can accurately display the values on output. A water-quantity value can be entered with a limit of 15 characters. The largest value with 14 significant figures that can be entered is "99999999999999." The smallest value with 13 significant figures that can be entered is "-.1000000000001". The smallest value that can be entered is "-.0000000000001" (the value has one significant figure).

The values are stored as characters with a maximum of 15 characters including the decimal and a negative (-) sign. The system will remove a plus sign that precedes a value if the user enters values with a plus sign (+).

The system converts the original value to million gallons per day and stores the resulting value as an IEEE 64-bit floating-point number (referred to as the "stored value"). Stored values are used to perform calculations. The user can retrieve the original values (in the original units) or the stored values converted to any of the supported output units.
The system calculates the number of significant figures based on the original number that was entered. The significant figures are also stored and are used to round the stored values based on the original number of significant figures.

SWUDS determines the number of significant figures as follows:

Guidelines for determining the number of significant figures (modified from: *Suggestions to Authors of the Reports of the United States Geological Survey, 1991, page 119, Significant Figures*):

1. The digits one through nine are always significant.

2. The digit zero located between non-zero digits is significant.

3. The digit zero to the left of the first non-zero digit is not significant (e.g. 0.0095 has two significant figures).

4. The digit zero that falls to the right of a decimal point and that falls to the right of other non-zero digits is significant (e.g. 0.00250 has three significant figures).

5. The digit zero in very large numbers is usually not significant; however, the SWUDS batch entry program considers the zero digits to be significant (e.g. 200 is considered to have three significant figures).

6. Additional rule applied to SWUDS: The value zero (any value entered that represents zero, 0, 0.0, 0.00, etc.) is considered an exact number and will be stored with a value of 14 for significant figures. On output of stored values, the value of zero will be output as the value 0. On output of original values, the value of zero will be output in the original format entered by the user.

Examples:

Entered Value	Number of Significant Figures
2.456	4
1003.2	5
1.03000	6
0.0000402	3
230000	2 - 6 (The SWUDS software assumes 6)
0	14
0.00	14
.0	14

Table 83. Number of Significant Figures

Number of significant figures is stored for the following:

Attribute Containing IEEE 64-bit floating point Number	Attribute Containing Figure	Description
Cn_qnty_yr_mgd	cn_qnty_yr_mgd_sg	Conveyance water-quantity annual value
Cn_qnty_mo_mgd	cn_qnty_mo_mgd_sg	Conveyance water-quantity monthly value
site_qnty_yr_mgd	site_qnty_yr_mgd_sg	Site water-quantity annual value
site_qnty_mo_mgd	site_qnty_mo_mgd_sg	Site water-quantity monthly value
avg_fc	avg_sg	Permitted average flow
max_fc	max_sg	Permitted maximum flow

Table 84. Attribute Containing IEEE 64-Bit Floating Point Number

The following is a list of the codes used to identify the number of significant figures:

Significant Figures Code	Number of Significant Figures
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
:	10
;	11
<	12
=	13
>	14
?	15
@	16, currently not used in SWUDS

Table 85. Significant Figures Code.

Rounding by Significant Figures:

The user can output values rounded based on USGS rounding rules. The USGS rounding rules are documented in the *Suggestions to Authors of the Reports of the United States Geological Survey, 1991, pages 119-120, Rounding Off Numbers*. By default, values will be rounded using the USGS rounding rules; however, the user does have the option to round values by the "rounding-up" rule if the first of the discarded digits is five or greater. For example:

The user enters acre-feet as "120"; the value 120 is stored as the original value with a number of significant figures of three. The system then calculates and stores million gallons per day as follows: 120/1.121 = 107.0472792149866. On output, the user selects rounding by significant figures and selects the unit's million gallons per day; the value is rounded to the number of original significant figures, 107 Mgal/d. The number of significant figures is equal to the number of significant figures of the original value.

The number of significant figures in the result of a unit conversion is considered equal to the number of significant figures that was determined from the original value. The SWUDS unit conversion routine involves calculations using a conversion factor. Conversion factors are considered exact numbers having an infinite number of significant figures and therefore are not considered in determining the significant figures of the result of a calculation.

The largest non-decimal value that can be output that contains 14 significant figures is "99999999999999000000000". The smallest value that can be output depends on the number of significant figures as shown below:

Number of Significant Figures	Smallest Value that Can Be Output
14	-0.00000000010000000000000
13	-0.00000000001000000000000
12	-0.00000000000100000000000
11	-0.00000000000010000000000
10	-0.00000000000001000000000
9	-0.00000000000000100000000
8	-0.00000000000000010000000
7	-0.00000000000000001000000
6	-0.00000000000000000100000
5	-0.00000000000000000010000
4	-0.00000000000000000001000
3	-0.00000000000000000000100
2	-0.00000000000000000000010
1	-0.00000000000000000000001

Table 86. Smallest value that can be output.

The system will display the word "overflow" if the rounded value is larger or smaller than can be accurately displayed.

Rounding by Number of Decimal Places:

WARNING: "Rounding by number of decimal places" ignores the number of original significant figures that were in the original value entered. A value rounded to a user-specified number of decimal places may have less or more significant numbers than the original number that was entered.

The number of significant figures in the original value is ignored when the user selects "round by number of decimal places." The values are simply rounded to one to four decimal places. Zero numbers are displayed as "0". Integer and decimal numbers will be padded with zeros to the number of decimal places indicated by the user.

Examples:

1. The user enters acre-feet as "120", then 120 is stored as the original value with a number of significant figures of three. The system then calculates and stores million gallons per day as follows: 120/1.121 = 107.0472792149866. On output, the user selects rounding by two decimal places; million gallons per day value is rounded to 107.05 Mgal/d.
2. The result value of the calculation 1 / 2 rounded to two places is "0.50".
   The result value of the calculation 1 0/ 2 rounded to two places is "5.00".
   The values "0", "00.0", ".00" all round to "0".

3.12.3 Procedure for Calculating an Annual Value

If the calculation flag is set to yes (Y) on a water quantity or P-site quantity record, the annual value will get calculated from the monthly values as follows (where all values are in Mgal/d):

Leap year:

$$\begin{aligned} &AnnualValue = \\ &((JanValue * 30) + (FebValue * 29) + (MarValue * 31) + (AprValue * 30) + \\ &(MayValue * 31) + (JunValeu * 30) + (JulValue * 31) + (AugValue * 31) + \\ &(SeptValue * 30) + (OctValue * 31) + (NovValue * 31) + (DecValue * 30)) / 366 \end{aligned}$$

Not a leap year:

$$\begin{aligned} &AnnualValue = \\ &((JanValue * 30) + (FebValue * 28) + (MarValue * 31) + (AprValue * 30) + \\ &(MayValue * 31) + (JunValeu * 30) + (JulValue * 31) + (AugValue * 31) + \\ &(SeptValue * 30) + (OctValue * 31) + (NovValue * 31) + (DecValue * 30)) / 365 \end{aligned}$$

Zero values (0) are included in a calculation. Zero values must be entered in the database as an actual value. Null values are not assumed to be zero. In order for the system to calculate an annual value, all 12 monthly values must exist (including any zero values). If any of the monthly values are null (meaning they are missing or were never entered), the system will reject the input record.

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If the system calculates an annual value, the system stores a null for the original annual value, an Mgal/d for annual input unit, and calculates and stores the annual value as an IEEE 64-bit floating point number.

If the user enters an annual value but also asks the system to calculate an annual value, the system will calculate the annual value and will ignore (not store) the entered annual value. If the user sets the calculated flag to "N", then it is possible to enter less than 12 monthly values; however, to enter the remaining months at a later time, the user should submit the job as an UPDATE.

The number of significant figures in a calculated annual value, is determined by the number of significant figures in the monthly values as follows:

Text obtained and modified from the UMass Dartmouth department of Chemistry. Guidelines for determining the number of significant figures:

Addition and subtraction:

The result should be reported to the same number of decimal places as in the term with the least number of decimal places.

Example:

2.487 + 330.4 + 22.59 355.477 -->
Round off to 335.5 (Uncertainty in tenths place)

The following procedure is used to calculate the number of significant figures in the calculated annual value:

1. Count the number of decimal places in each monthly value. If there is no decimal point then the count is zero.

2. Check to see if the monthly value is exactly 0. A monthly value entered as "0" is treated as an exact number (meaning it has an infinite number of significant figures; in SWUDS the value of zero is considered to have 14 significant figures).

3. Find the month that has the least number of decimal places.

4. Determine the number of digits in the numerical portion of the calculated annual value. The number of significant figures is equal to the least number of decimal places in any month, plus the number of digits in the numerical part of the calculated annual value.