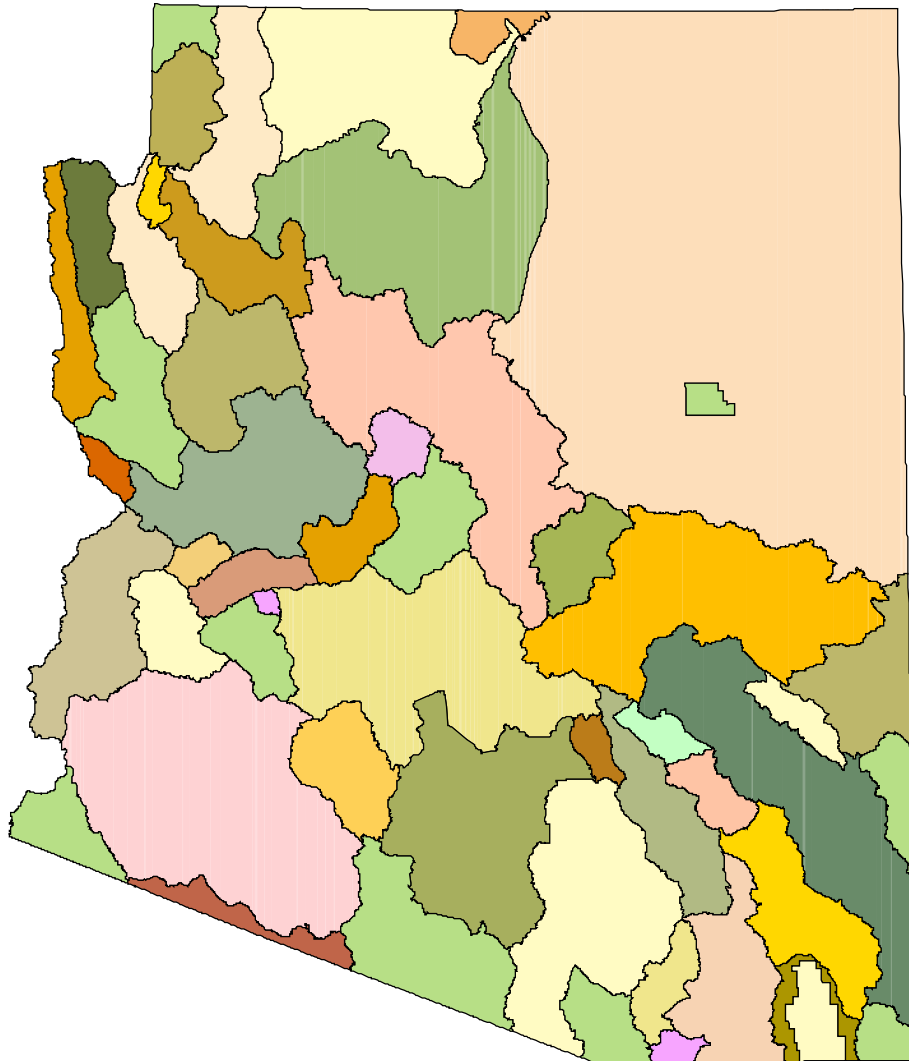


ARIZONA DEPARTMENT OF WATER RESOURCES



GROUNDWATER SITE INVENTORY (GWSI) DATABASE HANDBOOK



HYDROLOGY DIVISION
2021

Table of Contents

Table of Contents	i
Introduction.....	1
GWSI_BORE_COMPLETIONS.....	3
GWSI_CASING_COMPLETIONS.....	4
GWSI_FLOWING_DISCHARGES.....	5
GWSI_GWSI_MONITORING	6
GWSI_OWNER_SITE_NAMES	8
GWSI_PERFORATION_COMPLETIONS	8
GWSI_PUMPING_DISCHARGES	10
GWSI_REMARKS.....	12
GWSI_SITE_ALTITUDE_HISTORY	13
GWSI_SITE_CADASTRAL_HISTORY.....	15
GWSI_SITE_IMAGES.....	15
GWSI_SITE_INVENTORIES.....	16
GWSI_SITE_LOCATION_HISTORY	17
GWSI_SITES.....	18
GWSI_SPRING_NAMES	34
GWSI_TEL_TRANSDUCER_LEVELS.....	36
GWSI_TEL_TRANSDUCER_PARAMETERS	38
GWSI_TRANSDUCER_LEVELS.....	39
GWSI_TRANSDUCER_PARAMETERS	41
GWSI_WELL_COMPLETIONS	42
GWSI_WELL_LIFTS.....	45
GWSI_WELL_LOGS.....	48
GWSI_WELL_OWNERS	50
GWSI_WM_POINTS.....	51
GWSI_WQ_REPORTS	54
GWSI_WW_LEVELS.....	55
Appendices.....	60

Appendices:

Appendix A: ADWR Groundwater Basin Codes	60
Appendix B: U.S. Geological Survey Groundwater Area Codes	65
Appendix C: Geological Unit Codes	67
Appendix D: GWSI Index Well Siting Criteria	72
Appendix E: Minimum Data Set Requirements for Submittal of Well Site Details to ADWR Groundwater Site Inventory (GWSI).....	73
Appendix F: Mandatory Data Elements for Water-Level Measurements for Submittal to ADWR Groundwater Site Inventory.....	77
Appendix G: Non-Arizona Well Identification Systems	79
Appendix H: Full GWSI Oracle Database Map.....	83
Appendix I: Well Matching Check List.....	96

List of Figures

Figure 1: Arizona's well numbering system, based on the U.S. Bureau of Land Management's system....	20
Figure 2: Cadastral locations of a section over-sized in one direction.....	21
Figure 3: Cadastral locations of a section over-sized in two directions.....	21
Figure 4: Diagrammatic sketch of topographic settings	26
Figure 5: Measuring point and depth to water explanation.....	51
Figure 6: Illustrated examples of common measurement point descriptions.....	53
Figure 7: Map of ADWR Groundwater Basins and Subbasins.....	62
Figure 8: Map of ADWR Active Management Areas and Irrigation Non-expansion Areas	64
Figure 9: U. S. Geological Survey Groundwater Basin	66
Figure 10: California well numbering system.....	79
Figure 11: New Mexico well numbering system	80
Figure 12: Utah well numbering system	82

Introduction

The Groundwater Site Inventory (GWSI) database is ADWR's main repository for statewide groundwater data. The GWSI consists of field-verified data regarding wells and springs collected by personnel from the Hydrology Division's Field Services Section, the U.S. Geological Survey, and other approved co-operating agencies. The information in GWSI is constantly being updated by ongoing field investigations and through a state-wide network of water level and water quality monitoring sites.

This handbook has been developed for use by both the Field Services section and other Department personnel. With the Department's move to a PC based client-server network, the data in GWSI have become more readily available to everyone within the Department. This handbook has been developed to help Department personnel understand the GWSI database system, the data available in the system, and how the different data tables in the system can be used to extract meaningful information from the GWSI. For guidance on the data entry process and use of the GWSI application, see the GWSI User Guide.

The GWSI data reside in 41 separate Oracle data tables, with each table containing a unique set of data. For example, the GWSI_SITES data table contains the cadastral location (township, range, section, and quarter-quarter-quarter section), latitude, longitude, site elevation, well use, well depth, and other general information for each GWSI site. There are also a number of other tables in the GWSI database, such as code tables and lookup tables. These tables contain letter codes associated with fields in the main GWSI data tables and other data related to the GWSI system. The list below consists of the most commonly used GWSI data tables along with a brief description of the data they contain.

Each data site in GWSI is assigned a unique 15-character identification number, the Site ID, which is a common field in all the GWSI data tables. Though the field appears in all data tables, Site ID is only explained in the GWSI_SITES section of this document. All of the information available for a specific site can be obtained by using the Site ID number. Site-specific information can be accessed by using either the Oracle Application Forms, also known as the GWSI application, or a relational database query tool such as Oracle Browser, Microsoft Access, or Paradox. The GWSI_SITES data table is the main data table in the GWSI system and can be linked to other GWSI tables using the Site ID when using a relational database query tools. Data in any of the GWSI tables can be retrieved for any given geographic area using the townships and ranges, groundwater area designations, or latitudes and longitudes located in the GWSI_SITES data table. In addition to the data tables there is a view table, GWSI_TRS, that can be used to aid in designing queries based on a site's township, range, and section.

Listed below are the main GWSI data tables and a general description of the information available in each table. The main body of this report presents each data table and lists each field in the table, followed by an explanation of the acceptable codes for each field.

Groundwater Site Inventory (GWSI) Database Handbook

Table 1: A list of the most frequently used data tables and a brief description of the data contained in each.

Table Name	Description of Table
GWSI_BORE_COMPLETIONS	Borehole data
GWSI_CASING_COMPLETIONS	Well casing data
GWSI_FLOWING_DISCHARGES	Discharge data for flowing wells and springs
GWSI_GWSI_MONITORING	Documents which monitoring program wells belong to
GWSI_OWNER_SITE_NAMES	Other names assigned to sites
GWSI_PERFORATION_COMPLETIONS	Casing perforation information
GWSI_PUMPING_DISCHARGES	Instantaneous pumped discharges from wells
GWSI_REMARKS	Pertinent notes about the site
GWSI_SITE_ALTITUDE_HISTORY	Previous altitude data records
GWSI_SITE_CADASTRAL_HISTORY	Previous cadastral records
GWSI_SITE_IMAGES	Site photographs
GWSI_SITE_INVENTORIES	Record of completed site inventories
GWSI_SITE_LOCATION_HISTORY	Previous location data records
GWSI_SITES	General location, well depth, well altitude, and water use data
GWSI_SPRING_NAMES	Name and other data pertaining to the spring
GWSI_TEL_TRANSDUCER_LEVELS	Depth to water measurements from telemetry-equipped transducers
GWSI_TEL_TRANSDUCER_PARAMETERS	Information relating to telemetry data extraction
GWSI_TRANSDUCER_LEVELS	Depth to water measurements from transducers
GWSI_TRANSDUCER_PARAMETERS	Information relating to transducer data extraction
GWSI_WELL_COMPLETIONS	Well construction and finish data, driller's name, and completion date
GWSI_WELL_LIFTS	Information about the well's lift or pump
GWSI_WELL_LOGS	Well log data
GWSI_WELL_OWNERS	Well ownership data
GWSI_WM_POINTS	Well measurement point location and height data
GWSI_WQ_REPORTS	Water quality data
GWSI_WW_LEVELS	Water level measurements

GWSI_BORE_COMPLETIONS

The BORE_COMPLETIONS data table is used to record specific data describing the borehole for a well site.

BORE_WLCOMP_ID

This is typically a unique control number for each well site, though multiple sites are designated “100” and “200”. It is assigned to borehole construction data and other well completion data within the GWSI_CASING_COMPLETIONS, GWSI_PERFORATION_COMPLETION, and GWSI_WELL_COMPLETIONS tables.

BORE_HOLE_INTERVAL

This field contains a sequential number assigned by Oracle to each separate record for a specific construction entry number. A site may have multiple entries if there are multiple diameters or if the well was deepened. The interval numbers for the borehole completions data table is assigned sequentially and generally start from the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

For example, a borehole that is drilled at 16 inches in diameter from land surface to 500 feet below land surface and then drilled at 12 inches in diameter from 500 feet below land surface to 750 feet below land surface would have two borehole intervals. The first interval is 0 to 500 feet, the second borehole interval is 500 to 750 feet. If this well’s construction entry number is 451384, the first borehole interval would be assigned 451385, and the second would be assigned 451386.

BORE_HOLE_TOP

This is the depth to the top of a borehole interval, given in feet below land surface. The interval beginning at land surface is given a value of zero (0).

BORE_HOLE_BOTTOM

This is the depth to the bottom of the borehole interval, given in feet below land surface.

BORE_HOLE_DIAMETER

This is the diameter of the bit used to drill this interval of the borehole in inches. If the well was reamed, it is the diameter to which the hole was reamed in inches. Two decimal places are provided for fractional sizes.

BORE_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify or change any field in the GWSI_BORE_COMPLETIONS table.

BORE_LAST_ACT_DATE

This field is filled by Oracle with the date and time when any field in the GWSI_BORE_COMPLETIONS data table was last modified.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_CASING_COMPLETIONS

The GWSI_CASING_COMPLETIONS data table describes information about the casing of a well, such as material and diameter.

CASE_WLCOMP_ID

This is typically a unique control number for each well site, though multiple sites are designated “100” and “200”. It is assigned to casing construction data and other well completion data within the GWSI_BORE_COMPLETIONS, GWSI_PERFORATION_COMPLETION, and GWSI_WELL_COMPLETIONS tables.

CASE_INTERVAL

This field contains a sequential number assigned by Oracle to each separate casing interval record for a specific construction entry number. A site may have multiple entries if there are multiple types of casing. The interval numbers for the casing completions data table is assigned sequentially and generally starts from the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

For example, a well that is cased at 16 inches in diameter from land surface to 500 feet below land surface and then cased at 12 inches in diameter from 500 feet below land surface to 750 feet below land surface would have two casing intervals. The first casing interval is 0 to 500 feet, the second casing interval is 500 to 750 feet. If this well’s construction entry number is 451384, the first casing interval would be assigned 451385, and the second would be assigned 451386.

CASE_TOP

This is the depth to the top of a casing interval, given in feet below land surface. The interval beginning at land surface is given a value of zero (0) even if casing extends above the surface.

CASE_BOTTOM

This is the depth to the bottom of the casing interval, given in feet below land surface.

CASE_DIAMETER

This is the outside diameter of the interval’s casing, given in inches. Two decimal places are provided for fractional sizes.

CASE_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify the GWSI_CASING_COMPLETIONS data table.

CASE_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_CASING_COMPLETIONS data table was last modified.

CASE_FINISH_CODE

Code table: GWSI_CASING_FINISHES

This data table indicates the material from which the casing is made. The codes and their meanings are:

*	Undetermined	P	PVC or any Plastic
A	ABS	R	Rock or Stone
B	Brick	S	Steel
C	Concrete	T	Tile
D	Copper	U	Coated Steel
G	Galvanized	W	Wood
I	Wrought Iron	Z	Other
M	Other Metal		

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_FLOWING_DISCHARGES

The GWSI_FLOWING_DISCHARGES data table is used to record water discharge data for wells or springs that flow naturally. Occasionally data for both flowing and pumped conditions will be collected for the same site. In the event data are collected at a flowing site during natural flow while also being pumped to increase discharge or during a time of no natural flow, the pumped data should be entered in the GWSI_PUMPING_DISCHARGE data table.

FLWD_ID

Each flowing discharge entry for a site is assigned a unique identifying number by Oracle. The discharge numbers are assigned sequentially starting from the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID) and including any sequential numbers already assigned to records in other data tables with the same Site ID.

FLWD_DISCHARGE_RATE

This is the discharge rate of the site in gallons per minute. If discharge is determined in other units such as cfs or other metric units, convert to gallons per minute. Two decimal places are provided for very small discharges.

FLWD_DSCMTH_CODE_ENTRY

Code table: GWSI_DISCHARGE_METHODS

This is the method by which the discharge was measured. The methods and their codes are:

*	Undetermined	P	Pitometer
B	Bailer	R	Reported
C	Current Meter ¹	S	Ultrasonic Transit-Time
E	Estimated	T	Trajectory
F	Flume	V	Volumetric
M	Totaling Meter	W	Weir
O	Orifice Plate	Z	Other

¹ A current meter may be either a propeller-type meter in a discharge pipe or an induction-type in a channel (e.g. Marsh-McBirney).

FLWD_DATASRC_CODE_ENTRY

Code table: GWSI_DATA_SOURCES

This code indicates who provided the discharge data. The codes are listed below:

*	Undetermined	L	AZ State Land Department
3	Third Party	M	Bureau of Land Management
A	AZ Department of Water Resources	O	Owner
B	US Bureau of Reclamation	R	Other Reported
C	Consultant	S	Salt River Project
D	Driller	T	City of Tucson
E	New Mexico Office of the State Engineer	U	U.S. Geological Survey
F	Arizona Public Service	W	Wellton-Mohawk Irrigation & Drainage
G	University of Arizona		District
J	Military	Z	Other

FLWD_MEASURE_DATE

This field records the date on which the discharge was measured.

FLWD_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_FLOWING_DISCHARGES data table.

FLWD_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_FLOWING_DISCHARGES data table was last modified.

FLWD_DATE_VALID

This field contains a flag that indicates the accuracy of the flowing discharge date. Prior to being loaded into the Oracle data tables, GWSI was located on an IBM mainframe computer. Some of the date fields in GWSI while on IBM mainframe had no month or day values. The Oracle GWSI date fields would not accept the null date entries when the IBM data were loaded into the Oracle forms. To get around this problem, values were added to those GWSI entries with null dates. The month field was assigned a value of one (1) if it was empty, and the day field was assigned a value of one (1) if it was empty. The letter code 'M' in the FLWD_DATE_VALID field indicates the month value has been assigned and the date is only accurate to the year. The letter code 'D' in the Date Valid field indicates the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_GWSI_MONITORING

MON_ID

Each monitoring entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number.

MON_START_DATE

The date for which the selected type of monitoring started.

MON_END_DATE

The date for which the selected type of monitoring ended. If the site is still being monitored, this field is blank.

MON_PROG_SUPPORTED

Code table: GWSI_GWSI_MON_CODES

This field contains codes that correspond to the monitoring programs that a site may be involved with. Program codes are listed below.

<u>Code</u>	<u>Description</u>	<u>Code</u>	<u>Description</u>
AZ001	D aquifer	AZ017	Seasonal statewide monitoring
AZ002	N aquifer	AZ018	Del Rio Springs - hydraulic connection investigation
AZ003	R aquifer	AZ019	Joseph City INA support
AZ004	C aquifer	AZ020	Douglas INA support
AZ005	Modeling - Phoenix AMA	AZ021	Arizona State Land agreement - McMullen Valley
AZ006	Modeling - Tucson AMA	AZ022	Land subsidence - Tonopah recharge project
AZ007	Modeling - Prescott AMA	AZ023	Willcox basin - water level declines
AZ008	Modeling - Santa Cruz AMA	AZ024	USGS RWI request - Mohave County
AZ009	Modeling - Pinal AMA	AZ025	USGS RWI request - Middle San Pedro
AZ010	Bowie Power Plant agreement	AZ026	Picacho pecan groves - director's request
AZ011	Drought	AZ027	Management goal assessment
AZ012	Queen Valley governor's inquiry	AZ028	Flood monitoring
AZ013	Recharge estimate - near gaging station	AZ029	National groundwater monitoring network
AZ014	Buckeye water-logged area	AZ030	Water quality statewide monitoring
AZ015	Big Chino - Verde headwaters support	AZ031	Underground storage facility (USF) - recharge program
AZ016	Annual statewide monitoring		

MON_STATUTE_REQ

If the site is monitored in support of a specific statute, the statute number is recorded in this field.

MON_COMMENTS

This field contains any comments about monitoring at the site, such as associated projects or permits.

MON_CREATEDT

This is the date that the monitoring record for the site was first created.

MON_CREATEBY

This field contains the User ID of the person that created the monitoring record for the site.

MON_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_GWSI_MONITORING data table was last modified.

MON_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_GWSI_MONITORING data table.

GWSI_OWNER_SITE_NAMES

The OWNER_SITE_NAMES data table contains identifying numbers or names that have been assigned to a site, other than its GWSI Site ID or 55-number.

OWNS_OTHER_ID

This field documents the name or number used to identify the site. There is a thirty (30) character limit on the field.

OWNS_ASSIGNER

This field contains thirty (30) spaces for recording the organization or person that assigned the Other ID.

OWNS_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the OWNER_SITE_NAMES data table.

OWNS_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the OWNER_SITE_NAMES data table was last modified.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_PERFORATION_COMPLETIONS

The GWSI_PERFORATION_COMPLETIONS data table is used to record information about the openings through which water enters a well.

PERF_WLCOMP_ID

This is typically a unique control number for each well site, though multiple sites are designated “100” and “200”. It is assigned to perforation data and other well completion data within the GWSI_BORE_COMPLETIONS, GWSI_CASING_COMPLETIONS, and GWSI_WELL_COMPLETIONS tables.

PERF_INTERVAL

This is a sequential number assigned to each perforation interval for a specific construction entry number. The interval numbers are assigned sequentially and generally start from the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID). For example, a well that is perforated from 200 feet below land surface to 500 feet below land surface and then perforated from 600 feet below land surface to 750 feet below land surface would have two perforation intervals. The first perforated interval is 200 to 500 feet, the second perforated interval is 600 to 750 feet.

PERF_TOP

This is the depth to the top of the perforated interval, given in feet below land surface.

PERF_BOTTOM

This field contains the depth to the bottom of the perforated interval, given in feet below land surface.

PERF_DIAMETER

This field records the outside diameter, in inches, of the perforated casing, slotted pipe, screen, or the hole if the well is finished as an open hole. Two decimal places are provided for fractional sizes.

PERF_WIDTH

This field records the short dimension of the perforations, slots, or the mesh size of the screen in inches.

PERF_LENGTH

This field records the long dimension of the perforations, slots, or the individual openings in the screen in inches.

PERF_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_PERFORATION_COMPLETIONS data table.

PERF_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_PERFORATION_COMPLETIONS data table was last modified.

PERF_MATERIAL_CODE

Code table: GWSI_SCREEN_MATERIALS

This is a code that indicates the type of material from which the screen or other open section is made. The codes and their meanings are:

*	Undetermined	M	Other Metal
A	ABS	P	PVC or any Plastic
B	Brass or Bronze	R	Stainless Steel
C	Concrete	S	Steel
G	Galvanized Iron	T	Tile
I	Wrought Iron	Z	Other

PERF_TYPE_CODE

Code table: GWSI_PERFORATION_TYPES

This entry indicates the type of open section that allows groundwater to enter the well. The codes and their meanings are:

*	Undetermined	R	Wire Wound
F	Fracture	S	Screen (Type Unknown)
K	Mills Knife	T	Sand Point
L	Louvered or Shuttered	W	Walled
M	Mesh	X	Open Hole
P	Perforated or Slotted	Z	Other

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_PUMPING_DISCHARGES

The GWSI_PUMPING_DISCHARGES data table is used to record water levels and discharge data needed to estimate well performance for pumped well sites. Occasionally data for both flowing and pumped conditions will be collected for the same site. In the event data are collected at a flowing site during natural flow while it is also being pumped to increase discharge or during a time of no natural flow, the pumped data should be entered in this data table.

PMPD_ID

Each discharge entry for a site is assigned a unique identifying number by Oracle. The discharge numbers are assigned sequentially starting from the site's construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID) and including any sequential numbers already assigned to records in other data tables with the same Site ID.

PMPD_DISCHARGE_RATE

This field contains the measured discharge rate of the site in gallons per minute. If discharge is determined in other units (such as cfs or other metric units) convert to gallons per minute. Two decimal places are provided for very small discharges.

PMPD_STATMTH_CODE_ENTRY

Code table: GWSI_STATIC_METHODS

This field records the code that indicates the method used to measure the depth to water at a pumping well site. If the static and production water levels were measured by different methods, record the method considered least accurate. The water level measurement codes are listed below.

A	Airline	H	Calibrated Pressure Gage
B	Analog or Graphic Recorder	L	Geophysical Logs
C	Calibrated Airline	M	Manometer
D	Differential GPS	N	Non-Recording Gauge
DC	Downhole Camera	O	Observed
E	Estimated	P	Acoustic Pulse
F	Automated Device	R	Reported
G	Pressure Gauge	S	Steel Tape

Groundwater Site Inventory (GWSI) Database Handbook

PMPD_STATMTH_CODE_ENTRY codes continued

T	Electric Tape (Uncalibrated)	VT	ADWR Calibrated Electric Tape
U	Undetermined	Z	Other
V	Electric Sounder or Non-ADWR Electric Tape		

PMPD_PMPDMTH_CODE_ENTRY

Code table: GWSI_PUMP_DISCHARGE_METHODS

This field records the method by which the discharge was measured. The methods and their codes are listed below.

*	Undetermined	R	Reported
B	Bailer	S	Ultrasonic Transit-Time
C	Current Meter	T	Trajectory
E	Estimated	U	Venturi
F	Flume	V	Volumetric
M	Totaling Meter	W	Weir
O	Orifice Plate	Z	Other
P	Pitometer		

PMPD_STATIC_SOURCE

Code table: GWSI_DATA_SOURCES

This field contains the code that indicates the source of the static water level measurement. The codes and their meanings are as follows:

*	Undetermined	L	AZ State Land Department
3	Third Party	M	Bureau of Land Management
A	AZ Department of Water Resources	O	Owner
B	US Bureau of Reclamation	R	Other Reported
C	Consultant	S	Salt River Project
D	Driller	T	City of Tucson
E	New Mexico Office of the State Engineer	U	U.S. Geological Survey
F	Arizona Public Service	W	Wellton-Mohawk Irrigation District
G	University of Arizona	Z	Other
J	Military		

PMPD_DATA_SOURCE

Code table: GWSI_DATA_SOURCES

This field indicates who provided the discharge rate data. The codes are the same as for the PMPD_STATIC_SOURCE field above.

PMPD_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_PUMPING_DISCHARGES data table.

PMPD_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_PUMPING_DISCHARGES data table was last modified.

PMPD_MEASURE_DATE

This field records the date on which the discharge was measured.

PMPD_PRODUCTION_WATER_LEVEL

This field records the depth to water measurement in feet below land surface, taken while the well was discharging. The difference between this value and the static water level is the well's production drawdown.

PMPD_STATIC_WATER_LEVEL

This field records the static water level in feet below land surface, measured before pumping. If the static water level is above the land surface, the head (if measurable) is preceded by a minus sign (-).

PMPD_PUMPING_PERIOD

This field contains the length of time, in hours, that the well was pumped prior to the collection of the production depth to water measurement. Two decimal points are provided for fractions of an hour.

PMPD_SPECIFIC_CAPACITY

The specific capacity is rate of discharge of a production well per unit of drawdown. This field is calculated by Oracle based on the PMPD_WELL_DRAWDOWN and PMPD_DISCHARGE_RATE fields.

PMPD_WELL_DRAWDOWN

This field contains the drawdown, in feet, of the pumping well. Oracle calculates the field by subtracting the production water level from the static water level.

PMPD_DATE_VALID

This field contains a flag that indicates the accuracy of the PMPD_MEASURE_DATE field. The letter code 'M' in the PMPD_DATE_VALID field indicates the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_REMARKS

The GWSI_REMARKS data table contains remarks or comments from field investigators that may help clarify data entered in other data tables regarding the site. Note that these comments are about the site itself; comments explaining water level measurements are entered in the GWSI_WW_LEVELS table.

REM_ID

Each remarks entry for a site is assigned a unique identifying number by Oracle that is assigned sequentially starting from the site's construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID) and including any sequential numbers already assigned to records in other data tables with the same Site ID.

REM_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_REMARKS data table.

REM_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_REMARKS table was last modified.

REM_REMARKS_DATE

This entry is the date that the remarks for the site were recorded.

REM_DATE_VALID

This field contains a flag that indicates the accuracy of the REM_REMARKS_DATE field. The letter code 'M' in the REM_DATE_VALID field indicates the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

REM_REMARKS

This field contains spaces to record remarks used to clarify information associated with the site. More than one entry may be used to record the site remarks.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_SITE_ALTITUDE_HISTORY

The GWSI_SITE_ALTITUDE_HISTORY data table contains previous altitude information for a site. The information contained in this table is not current and should be treated as historic data. Current altitude data is found in the GWSI_SITES table.

ID

Unique identification number for each entry. This value is automatically assigned by Oracle.

SITE_WELL_ALTITUDE

Displays previous altitude values for the site. Values are given in feet above datum.

SITE_ALTMETH_CODE

Code table: GWSI_ALTITUDE_METHODS

Method used to determine a previous altitude for a site. The relevant codes can be found below.

A	Altimeter	M	Interpolated from topographic map
D	Differential GPS	N	Interpolated from digital elevation model (DEM)
E	Reported	O	Other
G	Hand-held GPS unit	P	Photo
H	Reported by source agency	R	Real-time kinematic GPS
I	Interferometric synthetic aperture radar (IFSAR)	S	Transit, theodolite, or other surveying method
J	Light detection and ranging (LiDAR)	U	Unknown
K	Post-Processed static survey GPS	V	Instrument surveying method
L	Level or other surveying method	X	Interpolated from USGS 7.5' map

SITE_ACCURACY

Displays previous altitude accuracy data for a site. Values are given in feet. Site altitudes taken from a topographic map are generally accurate to one-half the map's contour interval. Sites that are leveled in from a benchmark are considered accurate to within 1 foot.

SITE_DATUM_CODE

Code table: GWSI_DATUM_CODES

This field records the datum that was used to determine the altitude of the site. GWSI uses the National Geodetic Vertical Datum of 1929 (NGVD 29). GWSI uses the North American Datum Conversions of the National Geodetic Survey to convert from NGVD 29 to NAVD 88 or vice-versa. The relevant datum codes are as follows:

A	NGVD 29	O	Other
B	NAVD 88	Z	Unknown

SITE_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

This field contains the source of the previous altitude data. Codes for this field are listed below.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_ALT_MEASURE_DT

The date on which the previous altitude was determined.

CREATEDT

The date on which the altitude change was made.

CREATEBY

This field is filled by Oracle with the User ID of the person that changed the altitude data.

GWSI_SITE_CADASTRAL_HISTORY

The GWSI_SITE_CADASTRAL_HISTORY data table contains previous cadastral information for a site. The information contained in this table is not current and should be treated as historic data. Current data is found in the GWSI_SITES table.

ID

Each cadastral entry for a site is assigned a unique identifying number by Oracle.

SITE_LOCAL_ID

Displays previous cadastral for a site.

SITE_CADASTRAL_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

Displays source of the previous cadastral for a site. The acceptable codes are listed below.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_LOCAL_ID_MEASURE_DATE

The date on which the previous cadastral was determined.

CREATEBY

This field is filled by Oracle with the User ID of the last person to modify the site's cadastral information.

CREATEDT

The date which the local ID change was made.

GWSI_SITE_IMAGES

The SITE_IMAGES table contains images taken by field investigators that may help clarify location, access, or measuring point information regarding the site.

IMAGE_ID

Each image entry for a site is assigned a unique identifying number by Oracle.

IMAGE

The table shows "OLE Object" for every record. The images are only visible within the GWSI application.

LAST_ACT_DATE

This is the date and time that any field in the SITE_IMAGES data table was last modified.

LAST_ACT_OPER

This is the User ID of the last person to modify any fields in this table.

SYNCH_ID

This is a legacy field and is no longer used.

IMAGE_DATE

This entry is the date that the images for the site were taken.

DIRECTIONS

This entry is the view directions of the images. These directions are in the form of compass quadrant bearings (N, NE, SW, etc).

COMMENTS

This comment describes in short detail the significance of the image for the site.

GWSI_SITE_INVENTORIES

The GWSI_SITE_INVENTORIES data table contains information on the date that an inventory of the site was conducted and the name of the person that completed it.

SITI_ID

Each site inventory entry is assigned a unique identifying number sequentially by Oracle, starting from the site's construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID) and including any sequential numbers already assigned to records in other data tables with the same Site ID.

SITI_INVENTORY_DATE

This field records the date that the site was inventoried.

SITI_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_SITE_INVENTORIES data table was last modified.

SITI_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_SITE_INVENTORIES table.

SITI_INVENTORIED_BY

This field is used to record the name of the person completing the site inventory. The person's last name is entered first followed by a comma, a space, and the first and middle initials. Periods and extra spaces

are not included. Examples are listed below.

BARNES, RL

BLACK, K

MASON, DA

RASCONA, S

SITI_VALID_DATE

This field contains a flag that indicates the accuracy of the SITI_INVENTORY_DATE field. The letter code 'M' in the SITI_DATE_VALID field indicates the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_SITE_LOCATION_HISTORY

The GWSI_SITE_LOCATION_HISTORY data table contains previous latitude and longitude information for a site. The information contained in this table is not current and should be treated as historic data. Current data is found in the GWSI_SITES table.

ID

Each location entry for a site is assigned a unique identifying number by Oracle.

SITE_LATIT_DEGREE; SITE_LATIT_MIN; SITE_LATIT_SEC

Displays previous latitude values for a site.

SITE_LONGIT_DEGREE; SITE_LONGIT_MIN; SITE_LONGIT_SEC

Displays previous longitude data for a site.

SITE_LATLONG_MEASURE_DATE

The date on which the previous location data was collected for a site.

SITE_LATLONG_METHOD_CODE

Code table: GWSI_LATLONG_METHOD_CODES

Displays the method used to collect previous location data for a site. Codes are as follows:

C	Calculated from Land Net	K	Post-Processed Static Survey System
D	Differential GPS (DGPS)	L	Long-Range Navigation System
E	Reported	M	Interpolated from Map
F	Calculated from Cadastral	N	Interpolated from Digital Map
G	Globe Positioning System (GPS)	O	Other
H	Reported by Source Agency	P	Photo
SITE_LATLONG_METHOD_CODE codes continued			

R	Real-Time Kinematic GPS Position	V	Instrument Survey Method
T	Survey-grade GPS	X	Interpolated from USGS 7.5' Map

Groundwater Site Inventory (GWSI) Database Handbook

U Unknown Source

Y Calculated Using GIS TRS Cover

SITE_LAT_LONG_DATUM_CODE

CODE TABLE: GWSI_DATUM_CODES

Displays the datum of previous location data for a site.

C WGS 84

F NAD 83 HARN

D NAD 27

O Other

E NAD 83

Z Unknown

SITE_LLACCR_CODE_ENTRY

Code table: GWSI_LON_LAT_ACCURACIES

Displays previous location accuracy data for a site. The appropriate codes are listed below. These values note variations in both directions, + and -.

1 0.1 second

O 0.001 second

2 2 seconds

Q 0.4 second

5 0.5 second

R 3 seconds

B 0.2 second

S 1 second

F 5 seconds

T 10 seconds

H 0.01 second

U Undetermined

M 1 minute

V 0.005 second

SITE_LATLONG_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

Displays source of previous location data for a site.

ADWR AZ Department of Water Resources

USBR U.S. Bureau of Reclamation

DRILR Driller

USGS U.S. Geological Survey

CREATEBY

This is the User ID of the person that changed the location data.

CREATEDT

The date which the location data change was made.

GWSI_SITES

The GWSI_SITES data table is used for recording general information about the site, including location information, general well construction, and well use information. The GWSI_SITES data table is the main table in the GWSI system. All other GWSI tables are linked to it via the site ID (SITE_WELL_SITE_ID) field.

WELL_SITE_ID

This field contains the 15-digit identification number assigned to the site, formatted as text. The site ID contains no blanks or alphabetic characters. It is used as a unique identification number that allows users to link records in the GWSI_SITES data table with records in other GWSI data tables. By linking across

to other GWSI data tables all the data for one specific site can be retrieved. Although the site identification number is initially derived from the latitude and longitude of the site, the number is a unique identifier and not a locator. It cannot be too strongly emphasized that the site identification number, once assigned, is strictly used for identification and has no locational significance. The site identification number never changes once it is established except under unusual conditions.

The site identification number is automatically derived from the original latitude and longitude acquired when the site was first inventoried. The location of this point is always scaled to the nearest second of latitude and longitude, even if there is doubt as to the exact location of the site or the accuracy of the map. The first six digits of the site identification number are the value of the latitude, the seventh through thirteenth digits are the value of the longitude, and the value 01 is typically used for the fourteenth and fifteenth numbers. Leading zeros are used if the value of the minutes or seconds of the latitude or longitude is less than 10. For example: 01, 02, ...09. As described previously, no blanks or alphabetic letters are to be used in the Site ID field.

The site identification number usually ends in 01; however, specific instances require sequential numbers such as 00, 02, or 03 to be assigned to these last two digits. Generally, this happens when more than one well occupies the same latitude and longitude, most commonly occurring in nested piezometers. In this instance, the hole and casing that contains the nested piezometers (known as the primary hole) is assigned a site identification number that meets the minimum site requirements and ends in 00. The primary hole's Site ID will have no water levels associated with it. Each piezometer or casing in the nest then has its own unique site identification number that meets minimum site requirements and will contain detailed construction information, water levels, and a measuring point. Latitude and longitude for each piezometer and the primary hole are identical. The primary hole and any piezometers' site identification numbers share the same first 13 characters and require that each piezometer is assigned a unique identification number ending in 01, 02, 03, and so on, while the primary hole ends in 00, as stated above.

SITE_WELL_ALTITUDE

This field contains the altitude of land surface at the site in feet above datum. Precision to two decimals can be recorded. This value is determined by the person field checking the site.

SITE_LOCAL_ID

This is a 20 character-long site location based on the U. S. Bureau of Land Management's system of land subdivision. It is also commonly referred to as a site's cadastral location. The land survey in Arizona is based on the Gila and Salt River Baseline and Meridian, which divides the state into four quadrants. These quadrants are designated A, B, C, and D in a counterclockwise direction starting in the northeast corner of the state (Figure 1). All land with north Townships and east Ranges are in the A quadrant, north Townships and west Ranges are in the B quadrant, south Townships and west Ranges are in the C quadrant, and south Townships and east Ranges are in the D quadrant. The first number in the cadastral location is the Township, the second is the Range, and the third is the Section in which the site is located. Leading zeros are included in the township, range, and section numbers.

The letters following the section number indicate the well location within the section. The first letter indicates the 160-acre quarter section, the second letter indicates the 40-acre quarter-quarter section, and the third letter indicates the 10-acre quarter-quarter-quarter section. These letters are also assigned in a counterclockwise direction, beginning with the northeast quarter of the section. If more than one well or site is located within a 10-acre tract, consecutive numbers beginning with 1 are added as suffixes with the oldest known well labeled as 1.

The following example shows how to interpret a local ID based on the following description: A well with the cadastral location D-04-05 16CAA is located in Township 4 South, Range 5 East, Section 16 in the southwest quarter section, the northeast quarter-quarter section, and the northeast quarter-quarter-quarter

section.

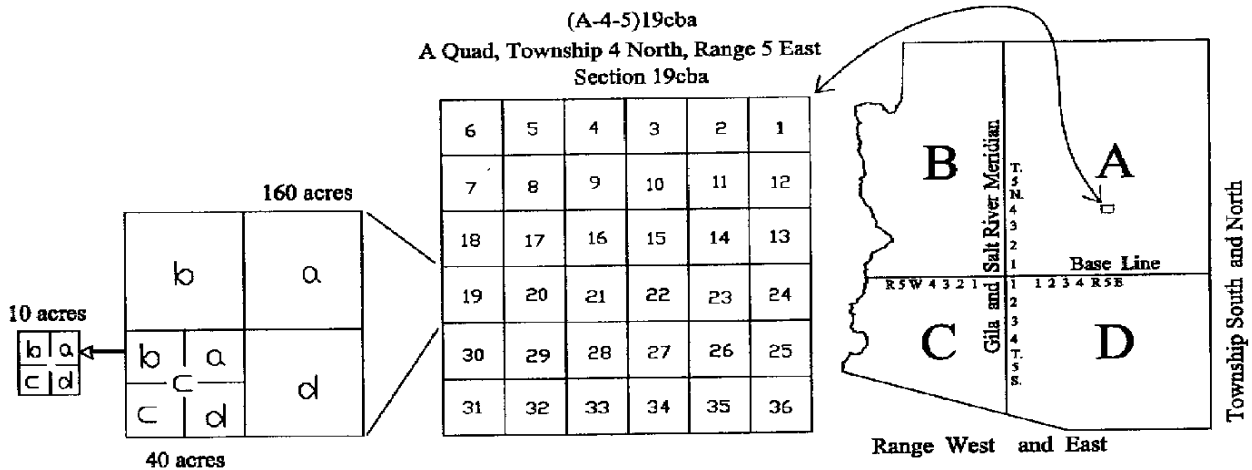


Figure 1: Arizona's well numbering system, based on the U.S. Bureau of Land Management's system

Piezometer nests have a unique convention where the primary hole is assigned a local ID without any suffix, and each of the individual piezometers will be assigned a suffix consisting of a single space followed by "PZ" and the piezometer number with no leading zeroes. The piezometer number needs to match the last number of the corresponding Site ID. For example, if the Site ID for a piezometer ends with 01, the piezometer number would be 1 and the local ID would be A-00-00 00AAA PZ1.

Oversized sections occur in several areas of the state. If a section is more than a mile in the north/south or east/west dimension, the excess area is considered a part of that section and has the same section number. A control corner is established for the section on the section corner that is closest to the center of the township (see Figures 2 and 3). The oversized section is divided so that a full square-mile unit is adjacent to the control corner, the rest of the section is considered a separate unit of land. Appropriate N, S, E, W, or X letters are assigned to the separate units of land depending on where they lie in relation to the full square-mile land unit.

For example, in Figure 2, the section is over-sized in only one direction (east-west). Well A-17-21E06AAA is in the northeast quarter, of the northeast quarter, of the northeast quarter, of the *eastern* unit of Section 6, Township 17 North, Range 21 East. The well location is determined by placing the lower right-hand corner of a map locator tool on the control corner and reading the location within the full-sized section of land. The location of well A-17-21W06AAA is determined by moving the lower right-hand corner of the map locator to the lower right-hand corner of the *western* unit of Section 6 and reading the location within the over-sized unit of land. Sections that are over-sized in the north-south direction use the same general procedure.

Figure 3 illustrates how wells are identified for sections that are over-sized in both east-west and north-south directions. Wells in the full section can be identified as being in either the *eastern* or *southern* unit of Section 6. A well located in the unit of land north of the full section are in the *northern* unit, and a well located in the unit of land to the west of the full unit is in the *western* unit of Section 6. A well in the small unit of land to the northwest of the full section uses an X as identifier, such as X06.

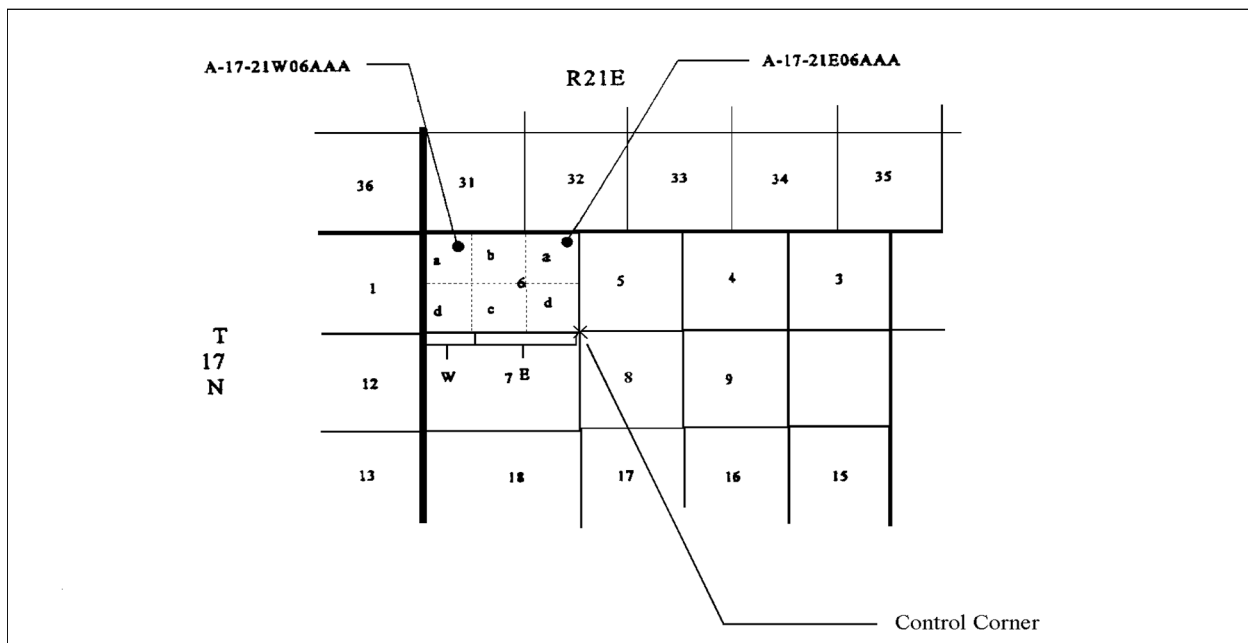


Figure 2: Cadastral locations of a section over-sized in one direction

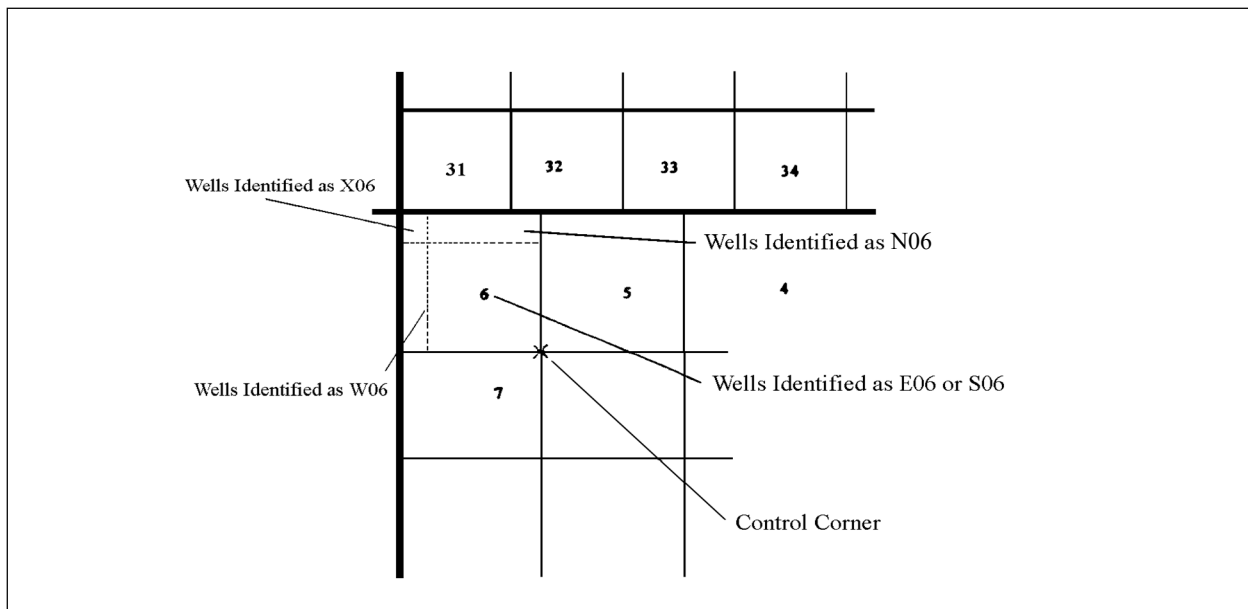


Figure 3: Cadastral locations of a section over-sized in two directions

Some areas of the state have half-townships and half-ranges. Half-townships and half-ranges are designated by the letter H following the township or range number, respectively. In some areas of the state, survey lines have not been established. Sites in these areas have the suffix UNSURV in the last six spaces of the SITE_LOCAL_ID field to indicate that the location is in an unsurveyed area. The cadastral location of a site in an unsurveyed area may not be as accurate as in a surveyed area and may only be identified to the 160- or 40-acre location. Listed below are examples of some typical cadastral designations for the conditions described thus far:

A-09-12 19ADD2
D-05-04N27CDD

A-10H05 06ACD
B-24-12 13BA UNSURV

A different numbering system is used to locate GWSI sites on the Navajo and Hopi Indian Reservations. The Navajo Indian Reservation is divided into 17 administrative districts, numbered 1 to 5 and 7 to 18.

The Hopi Indian Reservation comprises District 6. The Reservation is further divided into 15-minute quadrangles numbered from 1 to 151, starting in the northeast corner of the area and numbering consecutively in a row from east to west. Within the 15-minute quadrangle, a site is located in miles south and west from the northeast corner of the quadrangle. The first two numbers in the well number represent the district, the next three numbers are the quadrangle, the decimal numbers are miles west by (X) miles south of the northeast corner of the quadrangle. For example, a site identified as 02 021-05.28X10.68 indicates that the well is in district 2, quadrangle 21, and is 5.28 miles west by 10.68 miles south of the northeast corner of the map.

GWSI sites located in California, New Mexico, Nevada, and Utah use different baselines and meridians. Cadastral identifications for non-Arizona GWSI sites are presented in Appendix G. The complete list of land net meridians is listed below. Some Arizona land falls within the California Survey because changes in the Colorado River have left parts of California on the Arizona side of the river.

SITE_LATIT_DEGREE; SITE_LATIT_MIN; SITE_LATIT_SEC

The three latitude fields contain the best available value for the latitude of the site in degrees, minutes, and seconds. The position of the site is measured in the field by global positioning system (GPS) equipment, if available. If a GPS measurement is not possible, the site is located on an orthophoto and/or best available map in the field. The latitude is then determined from the orthophoto or map by the field person in the office. Each value for the degrees, minutes, and seconds should be entered into the appropriate field.

SITE_LONGIT_DEGREE; SITE_LONGIT_MIN; SITE_LONGIT_SEC

The three longitude fields contain the best available value for the longitude of the site in degrees, minutes, and seconds. Each value for the degrees, minutes and seconds should be entered into the appropriate field. See SITE_LATIT_DEGREE above for additional information.

SITE_ALTMETH_CODE_ENTRY

Code table: GWSI_ALTITUDE_METHODS

This field records the method used to determine the altitude of land surface at the site.

A	Altimeter	M	Interpolated from topographic map
D	Differential GPS	N	Interpolated from digital elevation model (DEM)
E	Reported	O	Other
G	Hand-held GPS unit	P	Photo
H	Reported by source agency	R	Real-time kinematic GPS
I	Interferometric synthetic aperture radar (IFSAR)	S	Transit, theodolite, or other surveying method
J	Light detection and ranging (LiDAR)	U	Unknown
K	Post-Processed static survey GPS	V	Instrument surveying method
L	Level or other surveying method	X	Interpolated from USGS 7.5' map

SITE_ADWBAS_CODE_ENTRY

Code table: GWSI_ADWR_BASINS

The three-letter code of the ADWR-designated sub-basin in which the site is located. Many of the ADWR groundwater basins and AMAs are subdivided into smaller sub-basins based on hydrologic conditions. For sites that are in basins or AMAs that are not subdivided, the three-letter basin or AMA code is entered into this field. Sites located within Irrigation Non-Expansion Areas (INAs) have the three letter INA code entered into this field. See Appendix A for the list of applicable ADWR basin and sub-basin codes.

SITE_SISRC_CODE

Code table: GWSI_SITE_SOURCES

This field contains the code for the agency that made the original field check and initial data entry, usually ADWR or USGS.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_SITTYP_CODE_ENTRY

Code table: GWSI_SITE_TYPES

This field is used to describe what is at the location of the site. Generally, ADWR is interested only in wells and springs, but several different types of sites have been entered in the past. The site codes and their descriptions are listed below.

C	Collector or Ranney type well
D	Drain dug to intercept the water table or potentiometric surface to either lower the water table or serve as a water supply.
E	Excavation
G	Gravity data
M	Multiple Wells. Used for well fields consisting of a group of wells that are pumped through a single header and for which little or no data are available.
S	Spring
T	Tunnel or Shaft. Tunnel, shaft, or mine from which groundwater is obtained.
W	Well. For single wells other than wells of the collector or Ranney type.
X	GPS data
Y	Stream flow

SITE_USE_1; SITE_USE_2; SITE_USE_3

Code table: GWSI_SITE_USE_CODES

The three SITE_USE_ fields contain the appropriate letter codes for the use of the site. SITE_USE_1 is the principal use of the site at the time of the last field visit. If the site is used for more than one purpose, then the second and third SITE_USE_ fields can be populated with the appropriate letter codes.

*	Undetermined
A	Anode. An anode is a hole used as an electrical anode. Included in this category are wells used solely for cathodic protection of pipelines or electronic relays and other installations.
C	Standby, Emergency Supply. This refers to a water supply source that is used only when the principal source of water is unavailable.
D	Drain. Refers to the drainage of surface water underground.
E	Geothermal. A geothermal well is a hole drilled for geothermal energy development. Use this category for dry geothermal wells or wells into which water is injected for heating. For a wet geothermal well from which water is withdrawn, use W (withdrawal of water) for the site use, and E (power generation) as the primary use of water.
G	Seismic. A seismic hole is one drilled for seismic exploration. A seismic hole converted for other uses should be coded based on its current use.
H	Heat Reservoir. Refers to a well in which a fluid is circulated in a closed system. Water is neither injected nor withdrawn from the well.
M	Mine. A mine includes any tunnel, shaft, or other excavation constructed for minerals extraction.
N	Non-exempt well in AMA/INA

SITE_USE codes continued

- O Observation, Water Level. An observation well is a well that is used for water level observations. Do not use this category for oil test holes or water-supply wells used only occasionally as observation wells. ADWR state-wide water level monitoring (index) wells are identified by convention with the code O only in the SITE_USE_2 or SITE_USE_3 fields.
- P Oil or Gas. Refers to any well or hole drilled in search of, or for production of, petroleum or gas. This category includes any oil or gas production well, dry hole, core-hole, or injection well drilled for secondary recovery of oil and/or gas. An oil-test hole converted to a water supply hole should be coded as W (withdrawal).
- Q Water Quality Monitoring. An observation well that is used for water-quality observations. Do not use this category for oil test-holes or water supply wells used only occasionally as observation wells. ADWR state-wide water quality monitoring wells are identified by convention by the code Q only in the SITE_USE_2, or SITE_USE_3 fields
- R Recharge. A recharge site is a site constructed for, or converted for, use in replenishing the aquifer. Use this category for wells that are used only to place water into an aquifer.
- S Re-pressurization. Refers to sites used for pumping water into an aquifer in order to increase the pressure in the aquifer. This is done for specific purposes, such as water flood purposes in an oil field.
- T Test. Refers to either an uncased or temporarily cased hole that was drilled for water, geologic, or hydrogeologic testing. The hole may be temporarily equipped with a pump to conduct a pump test. If the well is developed after testing, it is still considered a test hole. A core-hole that is part of mining or quarrying exploration work are included in this class.
- U Unused. Refers to an abandoned site or one for which no use is discernable. At an abandoned farmstead, a domestic or stock well equipped with a pump may be classed as unused. An irrigation well that is not equipped with a pump and not used for other reasons also may be classified unused.
- W Withdrawal. Refers to a site that withdraws water for one of the purposes listed in GWSI_WATER_USE_CODES. It includes a dewatering well if the dewatering is accomplished by pumping groundwater.
- X Waste. Refers to a site used to convey industrial waste, domestic sewage, oil-field brine, mine drainage, radioactive waste, or other waste fluid into an underground zone. An oil-test or deep-water well converted to waste disposal should be in this category.
- Z Well Destroyed. Refers to a site that is has been destroyed and is no longer in existence.

SITE_TOPOSET_CODE_ENTRY

Code table: GWSI_TOPO_SETTINGS

The SITE_TOPOSET_CODE_ENTRY field contains codes that best describe the topographic setting of the area in which the site is located. See Figure 4 for an illustrated example of the settings described below.

- * Undetermined
- A Alluvial Fan. Refers to a sloping mass of material that is shaped like an open fan or cone and has been deposited by a stream or wash at a place where it issues from a narrow mountain valley onto a plain or broad valley.
- B Playa. Refers to a dried-up, vegetation-free, flat-floored area composed of thin, evenly stratified sheets of fine clay, silt, or sand. This setting represents the bottom of a shallow, enclosed, or undrained desert lake basin in which water accumulates and is quickly evaporated, usually leaving deposits of soluble salts.
- C Stream Channel. Refers to the bed in which a natural stream of water runs. The stream may be perennial, intermittent, or ephemeral. The term includes washes, arroyos, and coulees.

SITE_TOPOSET_CODE_ENTRY codes continued

- D Local Depression. Refers to an area that has no external surface drainage. Depressions can range from a few acres to several square miles across and should be considered local features. Do not use for regional features such as the large, closed basins found in the Basin and Range province, or on the undulating surface of glacial drift.
- E Dunes. Refers to mounds or ridges of windblown, or eolian, sand. This term should not be used for an isolated mound unless it has a rather extensive area and is of hydrologic significance to the site.
- F Flat Surface. Refers to a flat surface that may be part of a larger feature, such as an upland flat, mesa or plateau, coastal plain, lake plain, or pediment. Terraces and valley flats, which are special varieties of flat surfaces, are classified separately.
- G Floodplain. Refers to the surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river in its existing flow regime and covered with water when the river overflows its banks at flood stage.
- H Hilltop. A hilltop is the upper part of a hill or ridge above a well-defined break in slope.
- K Sinkhole. A sinkhole is a special type of depression that results from the dissolving of soluble rock (salt, gypsum, limestone) and the subsequent collapse of the earth into the dissolution cavity.
- L Lake, Swamp, or Marsh. This code stands for any inland body of water where the ground may be saturated, or water may stand above the land surface for a period of time. Mangrove swamps are classified separately.
- M Mangrove Swamp. Refers to a tropical or subtropical marine swamp containing abundant mangrove trees.
- P Pediment. Refers to a plain of combined erosional material that forms at the foot of a mountain range.
- S Hillside. Refers to the sloping side of a hill. The area between a hilltop and valley flat.
- T Terrace. Refers to an alluvial or marine terrace that is generally a flat surface, usually parallel to but elevated above a stream valley or coastline. Due to the effects of erosion, the terrace surface may not be as smooth as a valley flat, and within the general terrace area there may be undulating areas.
- U Undulating. Refers to topography characteristic of areas which have many small depressions and low mounds. An undulating surface is primarily a depositional feature, not an erosional one. The term should not be used for areas that have a slightly irregular shape due to erosion.
- V Valley Flat. Refers to a low, flat area between valley walls that borders a stream channel. It includes the stream floodplain and is usually the flattest area in the valley. A valley flat may have a slight slope towards the main drainage, towards the valley walls, or may be cut by smaller streams. Generally, the valley flat is separated from alluvial terraces or the upland by a pronounced break in slope.
- W Upland Draw. Refers to a small, usually dry, natural drainage or depression on a hillside or upland area.

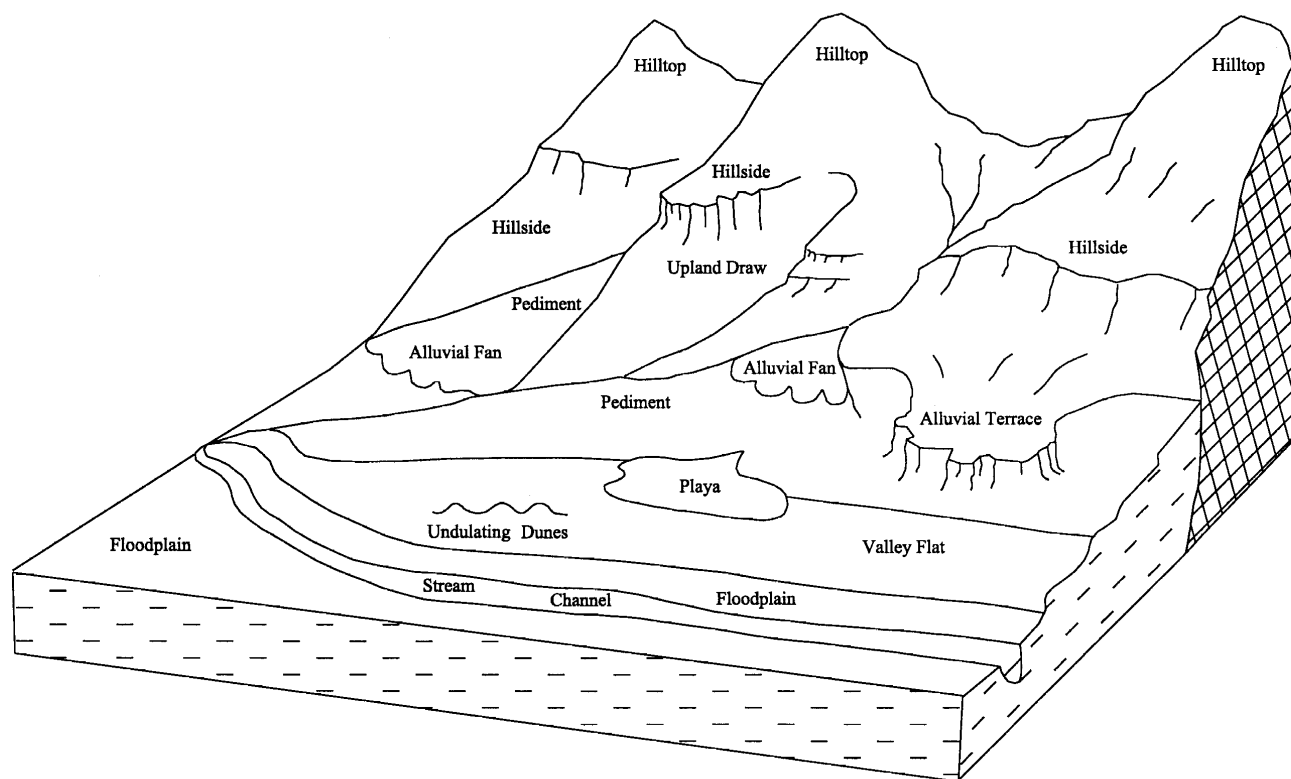


Figure 4: Diagrammatic sketch of topographic settings

SITE_USBASN_CODE_ENTRY

Code table: GWSI_USGS_BASINS

This field contains the appropriate three letter code for the U.S. Geological Survey (USGS) designated groundwater area in which the site is located. See Appendix B for a list of the USGS basin codes.

SITE_LLACCR_CODE_ENTRY

Code table: GWSI_LON_LAT_ACCURACIES

This field records the accuracy of the latitude and longitude data for the site. In general, a site can be located to within five seconds on a map, two seconds on an orthophoto with a templet, one second if it is digitized, and 0.5 second on a handheld GPS unit. If the site cannot be spotted on an orthophoto within 2 seconds, then the field person will indicate the appropriate accuracy. The appropriate codes are listed below. These values note variations in both directions, + and -.

1	0.1 second	O	0.001 second
2	2 seconds	Q	0.4 second
5	0.5 second	R	3 seconds
B	0.2 second	S	1 second
F	5 seconds	T	10 seconds
H	0.01 second	U	Undetermined
M	1 minute	V	0.005 second

SITE_RELY_CODE_ENTRY

Code table: GWSI_RELIABILITIES

This field is used to describe the reliability of the data available for the site.

C	Field Checked. The data have been field checked by the reporting agency.
L	Location Not Accurate. Location of the latitude and/or longitude is not accurate.
M	Minimal Data. Used when modifying an existing record when the investigator is unsure if the site has been field checked.
U	Unchecked. The data have not been field checked by the reporting agency, but the reporting agency considers the data reliable.

SITE_STATE_CODE_ENTRY

Code table: GWSI_STATES

This field contains the appropriate letter code for the state in which the site is located.

AZ	Arizona	NV	Nevada
CA	California	SO	Sonora
CO	Colorado	UT	Utah
NM	New Mexico		

SITE_WATER_USE_1; SITE_WATER_USE_2; SITE_WATER_USE_3

Code table: GWSI_WATER_USE_CODES

The three SITE_WATER_USE_ fields are used to indicate to what purpose any water withdrawn from the site is used. Use SITE_WATER_USE_1 to indicate the principal use of the water from the site. Other uses are entered in the remaining two fields. Relevant codes are listed on the following page.

SITE_WATER_USE_ continued

- * Undetermined
- A Air Conditioning. Refers to water supplied for the heating or cooling of a building. Water used to cool industrial machinery should be coded as N (industrial).
- B Bottling. Refers to the storage of water in bottles and use of the water for potable purposes.
- C Commercial. Refers to use by a business that does not fabricate or produce a product. Filling stations and motels are examples of commercial establishments. If some product is manufactured, assembled, remodeled, or otherwise fabricated, use of water at the plant should be coded as N (industrial), even though the water is not used directly in the production and/or manufacture of the product.
- D Dewatering. Refers to water pumped for dewatering a construction or mining site, or to lower the water table for agricultural purposes. If the main purpose for which the water is withdrawn is to provide drainage, D (dewatering) should be indicated even though the water may be discharged into an irrigation ditch and subsequently used to irrigate land.
- E Power. Refers to water withdrawn for the use of generating any type of power.
- F Fire. Refers to water withdrawn to be used in fire control, though the water may be used at times for other purposes.
- H Domestic. Refers to water used to supply household needs, principally for drinking, cooking, washing, and sanitary purposes, but includes other household demands such as watering a lawn and caring for pets. Most domestic wells will be in suburban or farm homes, but wells supplying small quantities of water for domestic purposes to one-room schools, turnpike gates, and similar installations, should also be included in the category.
- I Irrigation. Refers to water used to irrigate cultivated crops. Most irrigation sites will supply water for farm crops. This category also includes wells used to water the grounds of schools, industrial plants, or cemeteries if more than a small amount is used or that is the sole use of the water.
- J Industrial Cooling. Refers to a well that supplies water used solely for industrial cooling. This is in contrast to N (industrial), which may use the water multiple ways in the manufacturing process.
- K Mining. Refers to a well that supplies water used solely for mining purposes.
- M Medicinal. Refers to water believed to have therapeutic value. Water may be used for bathing and/or drinking. If water is used mainly because of its claimed therapeutic value, use this category even if the water is bottled.
- N Industrial. Refers to water used within a plant that manufactures or fabricates a product. The water may or may not be incorporated into the product being manufactured. Industrial water may be used to cool machinery, to provide sanitary facilities, to air condition the plant, or to irrigate the grounds at the plant.
- O Observation. Refers to water that is used for water quality sampling.
- P Public Supply. Refers to water that is pumped and distributed through a network that supplies several homes. Such supplies may be owned by a municipality, a community, a water district, or a private water company. If the system supplies five or more homes it should be considered public supply. For four or fewer homes, classify use as H (domestic). Wells that supply motels and hotels should be classified as C (commercial). Many public supply wells also supply water for a variety of uses, such as industrial, institutional, and commercial.
- Q Aquaculture. Refers to water used solely for aquaculture, such as fish farms.
- R Recreation. Refers to water discharged into pools or channels that are dammed to form pools that are used for swimming, boating, fishing, ice rinks, or other recreational uses. Also used for wells that irrigate golf courses and parks.
- S Stock. Refers to a well pumped to supply water to livestock.
- T Institution. Refers to water used in the maintenance and operation of institutions such as large schools, universities, hospitals, rest homes, or similar institutions. Owners of the institutions may be individuals, corporations, churches, or government bodies.
- U Unused. Means that water is not being removed from the site. A test hole, oil or gas well, recharge, drainage, observation, or waste-disposal well will be in the category. Do not use this classification for a stock, irrigation, domestic, or other well during off season or other temporary periods of nonuse.

Groundwater Site Inventory (GWSI) Database Handbook

SITE_WATER_USE_ continued

Z Other. Water is withdrawn from the well for a reason other than those listed here.

SITE_ADWRS_CODE

Code table: GWSI_ADWR_SOURCES

This field contains the source of the reported borehole and casing depth of a well.

- * Undetermined
- A AZ Department of Water Resources
- B U.S. Bureau of Reclamation
- C Consultant
- D Driller. Depth taken from a driller's log or report
- E New Mexico Office of the State Engineer
- F AZ Geological Survey
- G Geologist
- L Logs. Depth recorded in logs other than drillers' logs
- M Memory. Depth is reported from owner, driller, or well operator but is not listed in logs
- O Owner. Depth reported by well owner
- R Other Reported. Depth reported by someone other than the owner, driller, or another governmental agency
- S Reporting Agency. Depth reported by a reporting agency
- U U.S. Geological Survey
- Z Other. Depth reported by another source. The source is explained in the GWSI_REMARKS table

SITE_CNTY_CODE

Code table: GWSI_COUNTYS

This field contains the appropriate numeric code for the county in which the site is located.

<u>Arizona</u>		<u>Colorado</u>	
01	Apache	83	Montezuma
03	Cochise		
05	Coconino		<u>Nevada</u>
07	Gila	03	Clark
09	Graham		
11	Greenlee		<u>New Mexico</u>
12	LaPaz	03	Carton
13	Maricopa	17	Grant
15	Mohave	23	Hidalgo
17	Navajo	31	McKinley
19	Pima	45	San Juan
21	Pinal	61	Valencia
23	Santa Cruz		
25	Yavapai		<u>Utah</u>
27	Yuma	25	Kane
		37	San Juan
		53	Washington
<u>California</u>			
25	Imperial		
65	Riverside		
71	San Bernadino		

SITE_HOLE_DEPTH

This field records the total depth to which the borehole was drilled in feet below the land surface. For wells that have been backfilled during completion, this should be the original depth the well was drilled to, if known. For collector or Ranney-type wells, the depth of the central shaft is entered. For multiple-well fields, ponds, tunnels, springs, or drains, the field should be blank. If the hole depth is given, all other depths associated with the site are compared with it for validity.

SITE_WELL_DEPTH

This field contains the depth of the finished, or cased, portion of the well in feet below land surface. The depth of the well is usually taken from the completed well drillers report.

SITE_WELL_REG_ID

This field contains the State Well Registration (55-) number of the well if the site can be positively matched to a registered well. The 55-number is matched with a GWSI well only when the field investigator is absolutely positive that the wells are the same. If there is any doubt about the match, the 55-number is not entered until those doubts are resolved.

SITE_MERIDIAN

Code table: None

This field records the land net meridian that is used to establish the local ID or cadastral location of the site. In general, all sites located in Arizona, except those on the Navajo and Hopi Indian Reservations, use the Gila and Salt River Meridian and Baseline. There are six meridian codes in GWSI. They are:

B	San Bernardino Meridian and Baseline	N	Navajo Meridian and Baseline
D	Mount Diablo Meridian and Baseline	P	New Mexico Principal Meridian and Baseline
G	Gila and Salt River Meridian and Baseline	S	Salt Lake Meridian and Baseline

SITE_QUAD_NO

This field contains the Arizona Land Resource Information System (ALRIS) number of the topographic quadrangle that the site is located on. ALRIS is supported by the Arizona State Land Department and is based on a grid of all 7.5-minute quadrangle maps that cover the state. The first two numbers represent the column a map is in and the second two numbers are the row the map occupies. Oracle assigns the ALRIS quadrangle number based on the name that is entered into the SITE_TQNAM_QUAD_NAME field.

SITE_GEO_UNIT

This field contains an 8-character code that identifies the lithologic unit in which the well is finished. See Appendix C for a list of the codes.

SITE_ALTIT_ACCURACY

This field contains the level of accuracy, in feet, of the site's altitude. Site altitudes taken from a topographic map are generally accurate to one-half the map's contour interval. Sites that are leveled in from a benchmark are considered accurate to within 1 foot.

SITE_MAP_SCALE

This field records the scale of the topographic quadrangle map on which the site is located. Only the second part of the ratio is recorded, excluding commas. For example, a 1:24,000 scale map is documented as “24000”.

SITE_CREATE_DATE

This field is filled by Oracle with the date when the GWSI_SITES entry was originally created.

SITE_UPDATE_DATE

This field is filled by Oracle with the date and time that information in any of the data tables related to the GWSI site was last modified.

SITE_LATITUDE_DECIMAL

This field contains the latitude of the site in decimal degrees format. This field is calculated by Oracle.

SITE_LONGIT_DECIMAL

This field contains the longitude of the site in decimal degrees format. This field is calculated by Oracle.

SITE_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_SITES data table was last modified.

SITE_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_SITES data table.

SITE_AMA_CODE_ENTRY

Code table: GWSI_AMA_CODES

This field contains the letter code for the primary ADWR groundwater basin or Active Management Area (AMA) in which the site is located. For sites that are in either subdivided or non-subdivided basins, the appropriate primary basin code is entered into this field. For sites that are in Active Management Areas (AMAs), the appropriate AMA code is entered. Sites that are located in Irrigation Non-Expansion Areas (INAs) have the three-letter code of the groundwater basin within which the INA occurs entered in this field, and the three letter INA code entered into the SITE_ADWBAS_CODE_ENTRY field. See Appendix A for the relevant codes.

SITE_TQNAM_QUAD_NAME

This field contains the name of the U.S. Geological Survey Topographic Quadrangle map on which the site is located.

SITE_CDATE_VALID; SITE_UPDATE_VALID

These two fields contain flags that indicate the accuracy of the dates in the SITE_CREATE_DATE or SITE_UPDATE_DATE fields. The letter code ‘M’ indicates that the month value has been assigned and the date is only accurate to the year. The letter code ‘D’ indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SITE_LATLONG_METH_CODE

Code table: GWSI_LATLONG_METHOD_CODES

This field records the method used to determine the altitude of the site. The codes are as follows:

C	Calculated from Land Net	N	Interpolated from Digital Map
D	Differential GPS (DGPS)	O	Other
E	Reported	P	Photo
F	Calculated from Cadastral	R	Real-Time Kinematic GPS Position
G	Globe Positioning System (GPS)	T	Survey-grade GPS
H	Reported by Source Agency	U	Unknown Source
K	Post-Processed Static Survey System	V	Instrument Survey Method
L	Long-Range Navigation System	X	Interpolated from USGS 7.5’ Map
M	Interpolated from Map	Y	Calculated Using GIS TRS Cover

SITE_WSHD_CODE

Code table: None

This field contains the code that corresponds to the Arizona watershed that the site falls in. Watershed codes are listed below.

01	Virgin River	09	Santa Cruz River
02	Colorado River	10	San Simon River
03	Little Colorado River	11	San Pedro River
04	Bill Williams River	12	Willcox Playa
05	Verde River	13	White Water Draw
06	Agua Fria River	14	Rio Yaqui
07	Salt River	15	La Paz
08	Upper Gila River		

SYNCH_ID

This is a legacy field and is not currently used.

SITE_IDX_BOOK; SITE_IDX_BOOK_2

If the site is an active index well, the number of the index book it belongs to is entered in this field. If a site belongs to multiple books, the secondary book is recorded in SITE_IDX_BOOK_2. Wells that have been removed from the index line are noted with “BK00”. Index lines are a good place to start when looking for long-term water level records. A well that has been removed from the index line may still contain a useful water level history.

SITE_LAST_VISIT_DATE

This field contains the date on which a site was last visited by ADWR field staff. The date is entered manually and has been inconsistently updated in the past.

SITE_COMPLETED_FLAG

This flag is used to indicate if all the planned work for a site visit has been completed. The field has been inconsistently used.

SITE_QUASI_IDX_WELL

This field documents whether an index well meets the criteria to monitor a specific aquifer category, such as an aquifer or hydrogeologic unit. Current index wells that do not meet all the criteria, in their entirety, to monitor a specific aquifer category and/or are used to monitor specified conditions in the area will be designated as quasi-index wells. Though a quasi-index well does not meet the objectives for aquifer category monitoring, there may be other purposes for monitoring such as measuring the effects of artificial recharge or pumpage, regulatory or statute driven monitoring requirements, etc. See Appendix D for a full list of index well criteria.

SITE_LATLONG_DATUM_CODE

Code table: GWSI_DATUM_CODES

This field records the datum used to determine the latitude and longitude of the site. GWSI uses NAD27 (North American Datum of 1927). The only datums that can be converted on output are NAD27 and NAD83 (North American Datum of 1983). GWSI uses the North American Datum Conversions the National Geodetic Survey to convert from NAD27 to NAD83 or vice-versa. The datum codes are as follows:

C	WGS 84	F	NAD 83 HARN
D	NAD 27	O	Other
E	NAD 83	Z	Unknown

SITE_LATLONG_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

This field indicates the agency that took the latitude and longitude measurement.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_LATLONG_MEASURE_DATE

This field documents the date on which the latitude and longitude measurements were collected.

SITE_ALTITUDE_DATUM_CODE

Code table: GWSI_DATUM_CODES

This field records the datum used to determine the altitude of the site. GWSI uses the National Geodetic Vertical Datum of 1929 (NGVD 29). GWSI uses the North American Datum Conversions of the National Geodetic Survey to convert from NGVD 29 to NAVD 88 (North American Vertical Datum of 1988) or vice-versa. The relevant codes are as follows:

SITE_ALTITUDE_DATUM_CODE continued

A	NGVD 29	O	Other
B	NAVD 88	Z	Unknown

SITE_ALT_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

This field indicates the agency that took the altitude measurement.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_ALT_MEASURE_DATE

This is the date that the altitude was determined for the site.

SITE_LOCAL_ID_SOURCE_CODE

Code table: GWSI_SITE_SOURCES

This is the agency that determined the site's local ID.

ADWR	AZ Department of Water Resources	USBR	U.S. Bureau of Reclamation
DRILR	Driller	USGS	U.S. Geological Survey

SITE_LOCAL_ID_MEASURE_DATE

This field records the date on which the local ID was determined.

SITE_TRANSDUCER_ACTIVE

This field indicates if a site is a currently active ADWR transducer site. Sites with code Y are active transducer sites and N are inactive former transducer sites. If this field is null, the site has never been equipped with an ADWR transducer.

SITE_GOES_ENABLED

Indicates if an ADWR automated site is telemetry-enabled. If yes, the field contains a "Y". If not, it contains an "N". Sites that are not automated do not have values in this field.

GWSI_SPRING_NAMES

The GWSI_SPRING_NAMES data table is used to record the name of flowing springs that have been inventoried. Additional data such as spring type, flow variability, spring name, and any site improvements may also be entered into the record.

SPNA_ID

This is the table entry's record number. It is assigned by Oracle.

SPNA_FLOW_VARIABILITY

This field documents the flow variability of the spring. It is recorded as a percent of the average discharge as defined in the USGS GWSI Handbook. The formula used is:

$$\text{Variability} = 100 * [(\text{Max discharge} - \text{Min discharge}) / \text{Avg discharge}]$$

SPNA_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_SPRING_NAMES data table was last modified.

SPNA_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_SPRING_NAMES data table.

SPNA_SPRING_NAME

This field is used to record the name, if any is given, that has been assigned to the spring. There is a sixty (60) character limit.

SPNA_SPTYPE_CODE_ENTRY

Code table: GWSI_SPRING_TYPES

This field is used to describe the type of spring found at the site.

* Undetermined	F Fracture	P Perched
A Artesian	H Perched or Tubular	R Perched Seepage
B Perched or Contact	J Artesian and Depression	S Seepage of Filtration
C Contact	K Artesian and Seepage	T Tubular Cave
D Depression	L Fracture and Depression	Z Other
E Perched or Depression	O Perched and Fracture	

SPNA_SPIMPRV_CODE_ENTRY

Code table: GWSI_SPRING_IMPROVEMENTS

This field contains the record of any improvements that have been made to the site to improve, impound, or redirect the spring flow.

* Undetermined	H Spring House	R Pipe
B Boxed Basin	L Lined	T Trough
C Concrete Gallery	N None	Z Other
G Gallery	P Pond	

SPNA_SPPERM_CODE_ENTRY

Code table: GWSI_SPRING_PERMANENCES

This field is used to describe the dependability of the spring flow at the site if it is known.

*	Undetermined	P	Perennial
E	Periodic - Ebb and Flow	R	Response to Precipitation
G	Geyser	S	Seasonal
I	Intermittent	Z	Other

GWSI_TEL_TRANSDUCER_LEVELS

The TEL_TRANSDUCER_LEVELS table contains raw, unverified data that has been input from automated sites equipped with telemetry. Note that this data is collected by the automated equipment; manual measurements at automated sites are entered to the GWSI_WW_LEVELS data table.

ID

Each water level entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

MEASUREMENT_DATE

This field records the date and time that the water level was recorded for the site.

DEPTH_TO_WATER

This field records the depth to water in feet below land surface. Depth to water can include up to two decimal places. If the water level is above land surface, the water level is preceded by a minus (-) sign. If the head at a flowing site is unknown, if the water level cannot be measured, the site is dry, or the well is destroyed, this field is left blank and the appropriate code is placed in the REMARK_CODE field.

WATER_LEVEL_ELEVATION

This field contains the elevation of the water table above vertical datum. This field is calculated by subtracting the depth to water from the well altitude as entered in the GWSI_SITES data table. Except for flowing wells, water level elevations are blank for records that have no depth to water measurements.

LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the TEL_TRANSDUCER_LEVELS data table is modified.

LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the TEL_TRANSDUCER_LEVELS data table.

Groundwater Site Inventory (GWSI) Database Handbook

SOURCE_CODE

Code table: GWSI_DATE_SOURCES

This field contains letter codes for the source of the water level measurement.

<ul style="list-style-type: none"> * Undetermined 3 Third Party A AZ Department of Water Resources B US Bureau of Reclamation C Consultant D Driller E New Mexico Office of the State Engineer F Arizona Public Service G University of Arizona J Military 	<ul style="list-style-type: none"> L AZ State Land Department M Bureau of Land Management O Owner R Other Reported S Salt River Project T City of Tucson U U.S. Geological Survey W Wellton-Mohawk Irrigation & Drainage District Z Other
--	--

METHOD_CODE

Code table: GWSI_MM_CODES

This field contains the code for the method used to measure the depth to water.

<ul style="list-style-type: none"> A Airline B Analog or Graphic Recorder C Calibrated Airline D Differential GPS H Calibrated Pressure Gage L Geophysical Logs M Manometer N Non-Recording Gauge O Observed P Acoustic Pulse R Reported 	<ul style="list-style-type: none"> DC Downhole Camera E Estimated F Automated Device G Pressure Gauge S Steel Tape T Electric Tape (Uncalibrated) U Undetermined V ADWR Calibrated Electric Sounder or Non-Electric Tape VT ADWR Calibrated Electric Tape Z Other
---	---

REMARK_CODE

Code table: GWSI_MR_CODES

This field contains letter codes that describe the status of the site at the time of the water level measurement. If the water level measured represents a static level, this field is blank.

<ul style="list-style-type: none"> A Atmospheric Pressure C Ice D Dry. The site was dry, and no water level was recorded E Recently Flowing. The site had recently been flowing F Flowing. The site was flowing, but no head could be measured (no water level is recorded) G Nearby Flowing. A nearby site was flowing at the time of measurement H Nearby Recently Flowing. A nearby site had recently flowed I Injecting. The well was being used to inject water into the aquifer at the time of the measurement attempt J Nearby Injecting K Cascading Water. Water was cascading down the well casing from some point above the water table L Brackish Saline M Well Plugged. Well has visible cement, debris, dirt, or other material blocking access to the water table and is not in hydraulic contact with the formation. A well casing is still visible N Measurements discontinued at the site

REMARK_CODE continued

O	Obstructed. An obstruction in the well casing prevented a measurement (no water level is recorded)
P	Pumping. The site was being pumped at the time of measurement
R	Recently Pumped. The site had been pumped recently
S	Nearby Pumping. A site nearby was being pumped at the time of measurement
T	Nearby Recently Pumped. A nearby site had recently been pumped
U	Undetermined
V	Foreign Material (Oil). A foreign material, usually oil, was encountered on the surface of the water table
W	Well Destroyed. The well has been destroyed and no water level is recorded
X	Surface Water Effects. The water level may be affected by a nearby surface water site
Z	Other. Other conditions may affect the measured water level. Explanation is in the GWSI_REMARKS data table

TEMPERATURE

The measurement recorded in this field varies by the type of equipment installed at the site. For sites equipped with transducers, this field records the water temperature in degrees Celsius at the time the discrete water level was recorded. Automated sites equipped with bubblers record the atmospheric temperature. Sites with shaft encoders record “0” in this field.

PARAMETER_ID

This is a record number that corresponds to an entry in the TEL_TRANSDUCER_PARAMETERS table.

BATTERY_VOLTAGE

This field records the battery voltage of the digital recorder at the time the discrete water level was recorded for the site.

STATUS

This field indicates if the record is displayed on a site’s hydrograph. Records that have no data in this field are shown with the caveat that the data is provisional and has not yet been reviewed. Where this field contains “B”, the record is not shown. Once data is reviewed and added to the TRANSDUCER_LEVELS table, it is assigned a B within this table. An additional reason for data to not be displayed is known or suspected malfunctions of the equipment.

PSI

This field records the water pressure in pounds per square inch at the time the discrete water level was recorded for the site. Sites equipped with shaft encoders record “0” in this field.

GWSI_TEL_TRANSDUCER_PARAMETERS

The TEL_TRANSDUCER_PARAMETERS table contains information relating to the extraction of data from telemetry-equipped sites.

ID

This is a unique identifier for each record in the TEL_TRANSDUCER_PARAMETERS table.

EXTRACT_DATE

This is the date on which the data was extracted from the automated device.

LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the TEL_TRANSDUCER_PARAMETERS table is modified.

LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the TEL_TRANSDUCER_PARAMETERS table.

HEADER

The header from downloaded data files. The format varies based on the equipment, but it is most commonly in the format *file name*measuring point height*user*.

GWSI_TRANSDUCER_LEVELS

The TRANSDUCER_LEVELS data table contains depth to water measurements collected by automated devices. Data is quality checked by department personnel before being entered to this table.

ID

Each water level entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

MEASUREMENT_DATE

This field records the date and time that the water level was recorded for the site.

DEPTH_TO_WATER

This field records the depth to water in feet below land surface. Depth to water can include up to two decimal places. If the water level is above land surface, the water level is preceded by a minus (-) sign. If the head at a flowing site is unknown, if the water level cannot be measured, the site is dry, or the well is destroyed, this field is left blank and the appropriate code is placed in the REMARK_CODE field.

WATER_LEVEL_ELEVATION

This field contains the elevation of the water table above vertical datum. This field is calculated by subtracting the depth to water from the well altitude as entered in the GWSI_SITES data table. Except for flowing wells, water level elevations are blank for records that have no depth to water measurements.

LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the TRANSDUCER_LEVELS data table is modified.

LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the TRANSDUCER_LEVELS data table.

SOURCE_CODE

Code table: GWSI_DATA_SOURCES

This field contains letter codes for the source of the water level measurement.

*	Undetermined	L	AZ State Land Department
3	Third Party	M	Bureau of Land Management
A	AZ Department of Water Resources	O	Owner
B	US Bureau of Reclamation	R	Other Reported
C	Consultant	S	Salt River Project
D	Driller	T	City of Tucson
E	New Mexico Office of the State Engineer	U	U.S. Geological Survey
F	Arizona Public Service	W	Wellton-Mohawk Irrigation & Drainage District
G	University of Arizona	Z	Other
J	Military		

METHOD_CODE

Code table: GWSI_MM_CODES

This field contains the code for the method used to measure the depth to water.

A	Airline	N	Non-Recording Gauge
B	Analog or Graphic Recorder	O	Observed
C	Calibrated Airline	P	Acoustic Pulse
D	Differential GPS	R	Reported
DC	Downhole Camera	S	Steel Tape
E	Estimated	T	Electric Tape (Uncalibrated)
F	Automated Device	U	Undetermined
G	Pressure Gauge	V	ADWR Calibrated Electric Sounder or Non-Electric Tape
H	Calibrated Pressure Gauge	VT	ADWR Calibrated Electric Tape
L	Geophysical Logs	Z	Other
M	Manometer		

REMARK_CODE

Code table: GWSI_MR_CODES

This field contains letter codes that describe the status of the site at the time of the water level measurement. If the water level measured represents a static level, this field is blank.

A	Atmospheric Pressure
C	Ice
D	Dry. The site was dry, and no water level was recorded
E	Recently Flowing. The site had recently been flowing
F	Flowing. The site was flowing, but no head could be measured (no water level is recorded)
G	Nearby Flowing. A nearby site was flowing at the time of measurement
H	Nearby Recently Flowing. A nearby site had recently flowed
I	Injecting. The well was being used to inject water into the aquifer at the time of the measurement attempt

REMARK_CODE continued

- J Nearby Injecting
- K Cascading Water. Water was cascading down the well casing from some point above the water table
- L Brackish Saline
- M Well Plugged. Well has visible cement, debris, dirt, or other material blocking access to the water table and is not in hydraulic contact with the formation. A well casing is still visible
- N Measurements discontinued at the site
- O Obstructed. An obstruction in the well casing prevented a measurement (no water level is recorded)
- P Pumping. The site was being pumped at the time of measurement
- R Recently Pumped. The site had been pumped recently
- S Nearby Pumping. A site nearby was being pumped at the time of measurement
- T Nearby Recently Pumped. A nearby site had recently been pumped
- U Undetermined
- V Foreign Material (Oil). A foreign material, usually oil, was encountered on the surface of the water table
- W Well Destroyed. The well has been destroyed and no water level is recorded
- X Surface Water Effects. The water level may be affected by a nearby surface water site
- Z Other. Other conditions may affect the measured water level. Explanation is in the GWSI_REMARKS data table

TEMPERATURE

The measurement recorded in this field varies by the type of equipment installed at the site. For sites equipped with transducers, this field records the water temperature in degrees Celsius at the time the discrete water level was recorded. Automated sites equipped with bubblers record the atmospheric temperature. Sites with shaft encoders record "0" in this field.

BATTERY_VOLTAGE

This field records the battery voltage of the digital recorder at the time the discrete water level was recorded for the site.

PARAMETER_ID

This is a record number that corresponds to an entry in the TRANSDUCER_PARAMETERS table.

COMMENTS

The comments section field can be used to help clarify an entered depth to water measurement, method, measurement remark, UTM remark, or other information related to the entry.

PSI

This field records the water pressure in pounds per square inch at the time the discrete water level was recorded for the site. Sites equipped with shaft encoders record "0" in this field.

GWSI_TRANSDUCER_PARAMETERS

The TRANSDUCER_PARAMETERS table contains information relating to the extraction of data from automated sites.

ID

This is a unique identifier for each record in the TRANSDUCER_PARAMETERS table.

EXTRACT_DATE

This is the date on which the data was extracted from the automated device.

LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the TRANSDUCER_PARAMETERS table is modified.

LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the TRANSDUCER_PARAMETERS table.

HEADER

The header from downloaded data files. The format varies based on the equipment, but it is most commonly in the format *file name*measuring point height*user*.

GWSI_WELL_COMPLETIONS

The WELL_COMPLETIONS data table is used to record detailed information about the construction of a well site. The information includes the drillers' names, completion dates, drilling methods, casing finishes, and sources of the data.

WLCO_ID

A unique identifying control number is assigned by Oracle for each construction data entry. The number need not be sequential but needs to be unique for the site. Construction data can be entered more than once for a given site, such as when a well is deepened or some other major work is done. The unique construction number is also assigned to any related construction information that is entered into the GWSI_BORE_COMPLETIONS, GWSI_CASING_COMPLETIONS, and GWSI_PERFORATION_COMPLETIONS data tables.

WLCO_WLCASE_CODE_ENTRY

Code table: GWSI_WELL_FINISHES

This data field is used to describe the method of finish or the nature of the openings that allow water to enter the well. The allowable codes are listed below.

- * Undetermined
- C Porous Concrete. This is a concrete casing that is pervious enough to allow groundwater to seep into the well
- F Gravel Pack with Perforations. Refers to a well that has a gravel envelope opposite a casing section with perforations which allows water to enter the well
- G Gravel Pack with Screen. Refers to a well that has a gravel envelope opposite a commercially available casing section with screening material which allows water to enter the well

WLCO_WLCASE_CODE_ENTRY continued

- H Horizontal Gallery. This type of finish is a horizontal-type well in which the screen, slotted pipe, or gravel-filled trench is horizontal. All horizontal wells should be in this class, including Ranney collectors and infiltration galleries
- O Open Ended. Refers to a well that is cased to the bottom of the hole so that water can enter the well only through the bottom of the hole
- P Perforated or Slotted. Refers to casing that has had holes punched or slots cut into it to allow water to enter. This category does *not* include wells that have gravel pack
- S Screened. Refers to commercially available well screens manufactured for the purpose of allowing water to enter the well casing. Common types of screen are wire mesh, wrapped trapezoidal wire, or shutter screen. This category does *not* include wells that have gravel pack
- T Sand Point. Refers to the screen part of a drive point and usually is part of a driven well
- W Walled or Shored. Refers to a dug well that has walls that have been shored up with open-jointed fieldstone, brick, tile, concrete blocks, wood cribbing, gravel, or other material. A dug well that is mostly open hole but has even a few feet of cribbing, corrugated pipe, or other shoring to prevent caving should be in this category.
- X Open Hole. Refers to a well that has a finished open hole in the aquifer. A well belongs in this classification even if the casing does not actually extend to the geologic unit or zone from which the water is obtained
- Z Other. Any other finish that may be used. The type may be described in the GWSI_REMARKS table

WLCO_DRILMTH_CODE_ENTRY

Code table: GWSI_DRILL_METHODS

This field describes the method by which the site was constructed. Allowable entries are:

- * Undetermined
- A Air Rotary. This method uses a stream of air to cool the bit and bring the rock cuttings to the surface
- B Bored or Augured. This method uses an auger to cut and remove the earth material. The auger may be powered by hand or by machinery
- C Cable Tool. Refers to a well drilled by the percussion or churn-drill method whereby a heavy drilling tool is raised and lowered with enough force to pulverize the rock. The rock debris is commonly removed from the hole with a bailer
- D Dug. Hand dug holes are excavated by hand tools or power-driven digging equipment. Caissons, Ranney-type collectors, and galleries belong in this classification including if they may have laterals that are driven or jetted
- H Hydraulic Rotary. With this method, a well is constructed by rotating a length of pipe (drill stem) equipped with a drill bit that cuts or grinds the rocks. Water or drilling mud is pumped down the drilling stem. Cuttings are carried to the surface in the annular space between the drilling stem and the wall of the hole. Note that separate categories are provided for air rotary and reverse rotary
- J Jetted. Jetted wells are excavated by using high velocity streams of water that are pumped through a pipe having a restricted opening or jetting nozzle. For some types of earth material, a cutting bit is attached to the end of the jetting nozzle. The material cut or washed from the hole is carried to the surface in the annular space outside the pipe as in the hydraulic rotary method
- P Air Percussion. This method uses a cutting tool powered by compressed air. A rapid percussion effect, coupled with rotary action, is used to drill through the earth material. Compressed air is also used to blow cuttings from the drill hole. Air percussion drills are generally used in conjunction with air rotary drilling rigs
- R Reverse Rotary. This method is similar to the hydraulic rotary method except that the water or drilling mud flows down the annular space between the drilling stem and the walls of the hole and the cuttings are pumped out through the drill stem

WLCO_DRILMTH_CODE_ENTRY continued

- T Trenching. Refers to the construction of a sump or open pit from which groundwater may be pumped. Trenching may be done by hand but is more commonly done using power equipment, such as a bulldozer, power shovel, or back-hoe. Ponds and drains belong in this category
- V Driven. A well constructed by driving a length of pipe, usually of a small diameter and generally equipped with a sand point, to a desired depth. These wells may be driven by hand, with an air hammer, or with other power equipment. An essential feature of a driven well is that no earth material is removed as the well is constructed
- W Drive and Wash. These wells are constructed by driving a small diameter open-ended casing a few feet into the earth and then washing the material inside the casing out with a jet of water. The process is repeated until the well is at the desired depth
- X Dual Rotary. This drilling method is characterized by two rotary drives on the drill rig that operate independently of each other to advance the drill bit and casing. It is well-suited for use in unconsolidated formations
- Z Other. Any other drilling method that may be used. The method may be described in the GWSI_REMARKS table.

WLCO_ADWRS_CODE

Code table: GWSI_ADWR_SOURCES

This field contains the source of the construction data. Codes are as follows:

- * Undetermined
- A AZ Department of Water Resources
- B U.S. Bureau of Reclamation
- C Consultant
- D Driller. Depth taken from a driller's log or report
- E New Mexico Office of the State Engineer
- F AZ Geological Survey
- G Geologist
- L Logs. Depth recorded in logs other than drillers' logs
- M Memory. Depth is reported from owner, driller, or well operator but is not listed in logs
- O Owner. Depth reported by well owner
- R Other Reported. Depth reported by someone other than the owner, driller, or another governmental agency
- S Reporting Agency. Depth reported by a reporting agency
- U U.S. Geological Survey
- Z Other. Depth reported by another source. The source is explained in the GWSI_REMARKS table

WLCO_COMPLETION_DATE

This entry is the date that the drilling was completed. If the day or month are not known, "01" is entered for the unknown field(s), and the appropriate code is entered into the WLCO_VALID_DATE field.

WLCO_DRILLER_NAME

This field contains the name of the driller or drilling company that constructed the well. For very long company names use meaningful abbreviations as needed to fit the name into the space provided. There is a sixty (60) character limit.

WLCO_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WELL_COMPLETIONS data table was last modified.

WLCO_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WELL_COMPLETIONS data table.

WLCO_VALID_DATE

This field contains a flag that indicates the accuracy of the WLCO_COMPLETION_DATE field. The letter code 'M' in the indicates that the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_WELL_LIFTS

The GWSI_WELL_LIFTS data table contains information about the pump that is used to bring water to the surface at the site.

WLLI_ID

Each lift entry for a site is assigned a unique identifying number by Oracle that is a variation of the well construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

WLLI_TYPE_CODE

Code table: GWSI_LIFT_TYPES

This field contains the code for the type of pump or lift that brings water to the surface.

- * Undetermined
- A Air lift. An air lift is a jet of air pumped below the water table that causes a stream of mixed air and water to flow from the well
- B Bucket. This type of lift includes a rope and bucket, chain and bucket lifts, and a small bailer lifted by a rope or chain and pulley
- C Centrifugal. Centrifugal pumps have rotating impellers in a closed chamber that draw the water into the pump. The water is then discharged from the pump, under pressure, by centrifugal force. Centrifugal pumps have a maximum lift of about 25 feet
- J Jet. Jet pumps have two pipes extending from the pump into the well. One pipe forces air down the well bore under pressure, while the other pipe discharges water that has been forced to the surface by the jet
- N None. The well has no pump
- P Piston. Piston pumps include the familiar lift and pitcher pumps, reciprocating pumps, and deep-wells with "walking-beam jacks" pumps. Windmills are also typically piston pumps

WLLI_TYPE_CODE continued

- R Rotary. Rotary pumps operate on the principle that direct pressure is created by squeezing water between specially designed runners. A high vacuum is created on the intake side so that a suction lifts the water to the surface. Rotary pumps have a maximum lift of about 25 feet
- S Submersible. A submersible pump is a special type of turbine pump that is designed to be submerged in water. An electric motor is connected directly to impellers and then submerged in water
- T Turbine. There are several types of turbine pumps that are designed for either deep or shallow wells. In a turbine pump a series of impellers are placed below the surface of the water and rotated by a vertical shaft connected to a power source at the land surface. The impellers pick up the water and force it to the surface through the pump column. Turbine pumps are capable of lifting large amounts of water at high pressure. Most high capacity public supply, industrial, and irrigation wells use turbine pumps
- U Unknown. If the pump type is unknown or cannot be identified
- V Not Assigned
- Z Other. Any lifting device that is not listed above

WLLI_METHOD_CODE

Code table: GWSI_LIFT_MEASURE_METHODS

This field contains the method of the measurement that determined the power divider, or pump rating.

- * Undetermined
- A Dedicated power meter, instantaneous discharge with ADWR equipment/method, with static pressure <10 psi
- B Dedicated power meter, instantaneous discharge with approved device with static pressure <10 psi
- D Non-Dedicated power meter, instantaneous discharge with ADWR equipment/method, with static pressure <10 psi
- E Non-Dedicated power meter, instantaneous discharge with approved device with static pressure <10 psi

WLLI_METHOD_CODE codes continued

- P Dedicated power meter, instantaneous discharge with ADWR equipment/method, with static pressure >= 10 psi
- Q Dedicated power meter, instantaneous discharge with approved device with static pressure >= 10 psi
- R Non-Dedicated power meter, instantaneous discharge with ADWR equipment/method, with static pressure >= 10 psi
- S Non-Dedicated power meter, instantaneous discharge with approved device, with static pressure >= 10 psi

WLLI_POWER_COMPANY

Code table: GWSI_POWER_COMPANIES

This field contains a three-letter code for the name of the company that provides electrical, natural gas, or other power for the pump. The companies' codes are as follows:

* Undetermined	MWE Morenci Water and Electric
APS Arizona Public Service	NAE Navapache Electric Co-Op
CAL Calapco	NAV Navajo Tribal Utility Authority
CIT Citizens Utility	NEV Nevada Power Company
COM City of Mesa	PHS Public Health Service
DIX Dixileta (Utah)	PTU Papago Tribal Utility

WLLI_POWER_COMPANY continued

DVE	Duncan Valley Electric Co-Op	RD1	Electrical District RD1 (Roosevelt District)
ED1	Electrical District 1	REA	Rural Electrification Administration
ED2	Electrical District 2	SCP	San Carlos Project
ED3	Electrical District 3	SOU	Southern Union Gas
ED4	Electrical District 4	SRP	Salt River Project
ED5	Electrical District 5	SSV	Sulphur Springs Valley Electric Co-Op
ED7	Electrical District 7	SWG	Southwest Gas
ED8	Electrical District 8	TEP	Tucson Electric and Power
GAR	Garkane Power Association	TGE	Tucson Gas and Electric
GCE	Graham County Electric Co-Op	TPE	Tucson Electric and Power - Use TEP
IID	Imperial Irrigation District	TRI	Trico Electric Co-Op
INT	Interstate Utility	USB	U.S. Bureau of Reclamation
MAG	Magma Gas Company	WD1	Electrical District WD1 (Maricopa Water District)
MEC	Mohave Electric Co-Op	WEM	Wellton Mohawk Irrigation and Power

WLLI_POWER_TYPE

Code table: GWSI_POWER_TYPES

This field contains the code for the type of power used to operate the pump.

*	Undetermined	L	Liquefied Petroleum Gas
D	Diesel	N	Natural Gas
E	Electric	W	Windmill
G	Gasoline	Z	Other
H	Hand		

WLLI_SOURCE_CODE

Code table: GWSI_DATA_SOURCES

This field contains the source of the lift information.

*	Undetermined	L	AZ State Land Department
3	Third Party	M	Bureau of Land Management
A	AZ Department of Water Resources	O	Owner
B	US Bureau of Reclamation	R	Other Reported
C	Consultant	S	Salt River Project
D	Driller	T	City of Tucson
E	New Mexico Office of the State Engineer	U	U.S. Geological Survey
F	Arizona Public Service	W	Wellton-Mohawk Irrigation & Drainage District
G	University of Arizona	Z	Other
J	Military		

WLLI_ENTRY_DATE

This entry is the date on which the well lift was observed. The associated *WLLI_VALID_DATE* field indicates if the date has been modified to be accepted by Oracle.

WLLI_HORSEPOWER

This field contains the power rating, in horsepower, of the well's primary power source. Two decimal places are provided for small motors.

WLLI_METER_NUM

This field can contain the meter number of the gas or electric meter which records the power consumption of the pump. The information in this field can be used as a cross reference to help identify a well.

WLLI_LAST_ACT_DATE

This field is filled by Oracle with the date that any field in the GWSI_WELL_LIFTS table is modified.

WLLI_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WELL_LIFTS table.

WLLI_DIVIDER

This field contains the pump rating as the unit of power consumed per volume of water lifted. The value should be expressed as kilowatt-hours per acre-foot of electricity or therms per acre-feet of water depending on the type of power used by the pump.

WLLI_ACCOUNT_NUM

This field contains the account number under which the power company stores power consumption rates for the site.

WLLI_VALID_DATE

This field contains a flag that indicates the accuracy of the WLLI_ENTRY_DATE field. The letter code 'M' in the indicates that the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_WELL_LOGS

The GWSI_WELL_LOGS data table contains information about the types of geophysical and/or other log data available for the site. A site may have multiple types of logs available and therefore may have multiple entries in this table.

WLLI_LOGTYP_CODE_ENTRY

Code table: GWSI_LOG_TYPES

This field contains letter codes for the types of logs that are available for a site. Applicable codes are listed on the following page.

WLLO_LOGTYP_CODE_ENTRY continued

* Undetermined	I Induction	Q Radioactive
A Time	J Gamma Ray	S Sonic
B Collar	K Dipmeter	T Temperature
C Caliper	L Lathering	U Gamma-Gamma
D Driller	M Microlog	V Field Velocity
E Electric	N Neutron	X Core
F Fluid Conductivity	O U Later	Z Other
G Geologist	P Photo	

WLLO_LOG_START

This field contains the depth to the top of the logged interval in feet below land surface.

WLLO_LOG_END

This field contains the depth to the bottom of the logged interval in feet below land surface.

WLLO_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WELL_LOGS table was last modified.

WLLO_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify or change any field in the GWSI_WELL_LOGS data table.

WLLO_ADWRS_CODE

Code table: GWSI_ADWR_SOURCES

This fields contains information that indicates who provided the log information.

* Undetermined
A AZ Department of Water Resources
B U.S. Bureau of Reclamation
C Consultant
D Driller. Depth taken from a driller's log or report
E New Mexico Office of the State Engineer
F AZ Geological Survey
G Geologist
L Logs. Depth recorded in logs other than drillers' logs
M Memory. Depth is reported from owner, driller, or well operator but is not listed in logs
O Owner. Depth reported by well owner
R Other Reported. Depth reported by someone other than the owner, driller, or another governmental agency
S Reporting Agency. Depth reported by a reporting agency
U U.S. Geological Survey
Z Other. Depth reported by another source. The source is explained in the GWSI_REMARKS table

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_WELL_OWNERS

The GWSI_WELL_OWNERS data table contains the name of the site owner and the date of their known ownership of the site. It should be emphasized that the last entry in this data table may not be the current owner of the site but is the owner at the time indicated in the WLOW_ENTRY_DATE field.

WLOW_ID

Each ownership entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

WLOW_ENTRY_DATE

This entry is the date that the owner acquired ownership of the site, or the earliest date on which the owner was known to own the site.

WLOW_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WELL_OWNERS table was last modified.

WLOW_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WELL_OWNERS data table.

WLOW_LAST_NAME

This field is used for recording the last name, second line of a business name, or the type of business (LLC, INC, CORP, etc.) of the well owner.

WLOW_FIRST_NAME

This field is used for recording the first name or the first line of a business name of the well owner.

WLOW_MIDDLE_INITIAL

This field contains one (1) space for recording the middle initial of the well owner.

WLOW_VALID_DATE

This field contains a flag that indicates the accuracy of the WLOW_ENTRY_DATE field. The letter code 'M' in the SITI_DATE_VALID field indicates the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_WM_POINTS

The GWSI_WM_POINTS data table contains a description of the point used to measure the depth to water in a well.

WELM_ID

Each water level measuring point entry for a site has a unique identifying number that is used only once at a site.

WELM_DATE_MEASURED

This field records the date that the water level measuring point was established for the site.

WELM_MEASURE_POINT_HEIGHT

This entry is the height above the land surface from which the depth to water measurement was made. If the measurement point is below land surface, the measurement height is preceded by a minus sign (-). See Figure 5 for an illustrated example of the measurement point height.

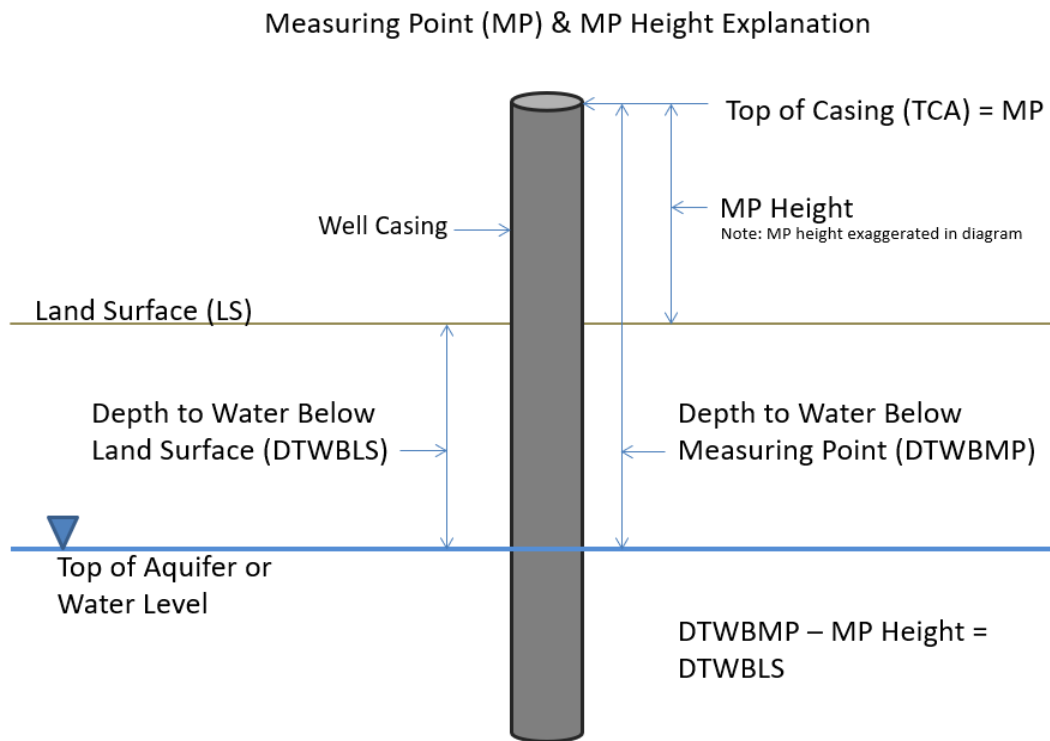


Figure 5: Measuring point and depth to water explanation

WELM_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WM_POINTS table was last modified.

WELM_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WM_POINTS table.

WELM_MP_DESCRIPTION

This field contains a description of the point used to measure the depth to water. Listed below and illustrated in Figure 6 are some common measuring point descriptions.

HTCA, W	Hole in Top of Casing, West Side
HSCA, N	Hole in Side of Casing, North Side
TCA, SE	Top of Casing, Southeast Side
HBOP, S	Hole in Pump Base, South Side
BOP, N	Access under Base of Pump, North Side
ACTB, S	Measuring (Access) Tube, South Side
AIRL, S	Airline, South Side
HIISP, NE	Hole in Submersible Plate, Northeast Side

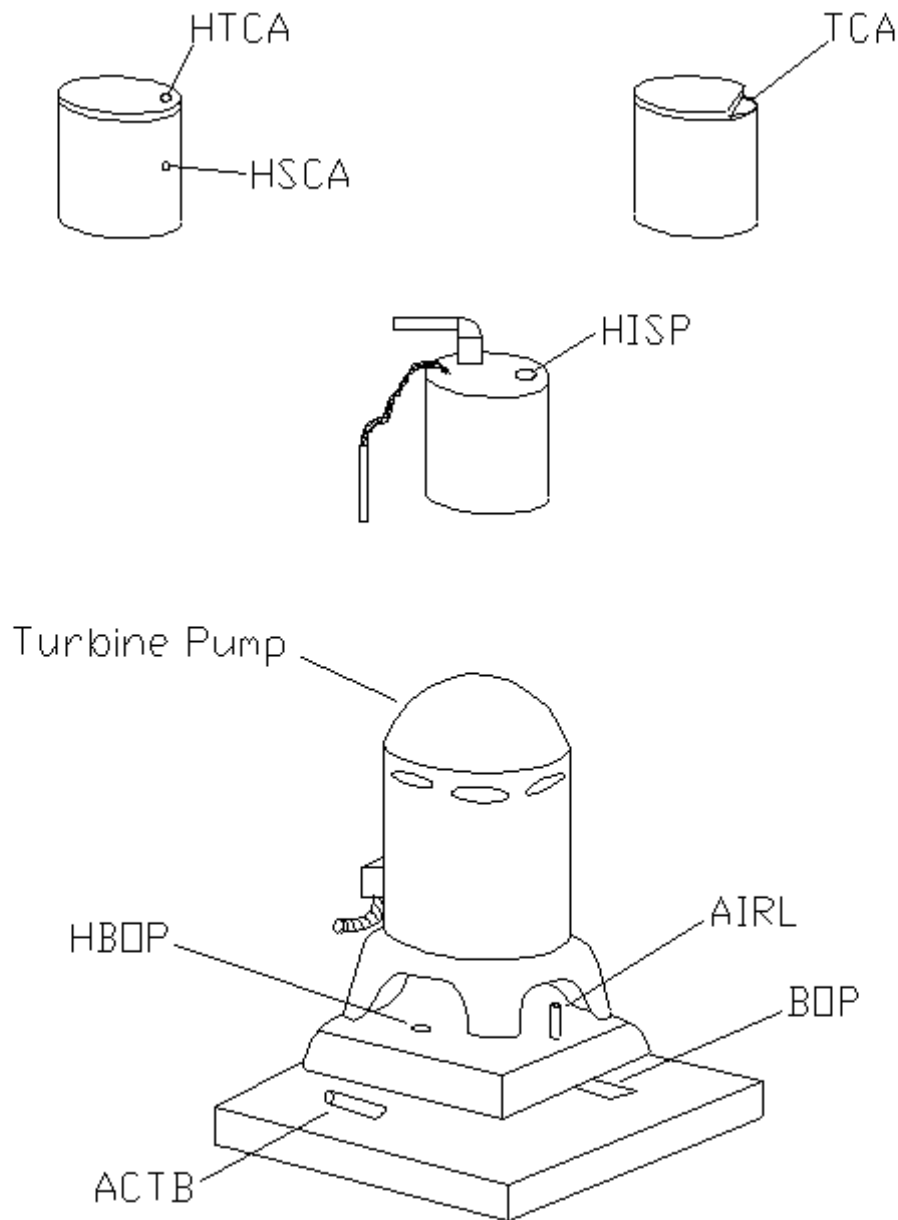


Figure 6: Illustrated examples of common measurement point descriptions.

WELM_DATE_VALID

This field contains a flag that indicates the accuracy of the WELM_DATE_MEASURED field. The letter code 'M' in the indicates that the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

CREATEBY

This field is populated by Oracle with the User ID of the person to create the record.

CREATEDT

This field is populated by Oracle with the data and time that the record was created.

WELM_SOURCE_CODE

This is the source of the measurement point data. Currently this field is either blank, indicating ADWR-sourced data, or “3” which indicates that the data was provided by a third party.

GWSI_WQ_REPORTS

The GWSI_WQ_REPORTS table contains six (6) basic water quality parameters that are gathered by Department personnel during field investigations. The six parameters are specific conductance, fluoride, temperature, pH, alkalinity, and dissolved oxygen. Not all parameters may have been tested for during a given site visit. Blank data in the water quality fields indicate that the parameter was not tested for at the time of sampling. This table consists largely of historic data; water quality has been rarely measured by ADWR field staff since September 2008.

WATQ_ID

Each water quality measurement entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

WATQ_DATE_MEASURED

This field records the date that the water quality sample was analyzed at the site.

WATQ_SPECIFIC_CONDUCTANCE

Specific conductance is a measure of the electrical conductance of a water sample, and as such, is an indicator of the amount of total dissolved solids (TDS) in a sample. The specific conductance value is reported as microsiemens per centimeter at 25 degrees Celsius (°C).

WATQ_FLUORIDE

Fluoride concentration is measured to one decimal place in milligrams per liter (mg/L).

WATQ_TEMPERATURE_CELCIUS

Temperature is the water temperature in degrees Celsius (°C) at the time of sampling. The temperature can be entered to one decimal place.

WATQ_PH

The pH is a measure of the hydrogen activity of the sample. The pH can be entered to one decimal point.

WATQ_ALKALINITY

Alkalinity is a measure of metallic ions, principally calcium and magnesium, in the water sample. It is reported as milligrams per liter (mg/L) of calcium carbonate (CaCO₃).

WATQ_DISSOLVED_OXYGEN

Dissolved oxygen is the measure of the amount of oxygen dissolved in a unit of water. It is measured in milligrams per liter (mg/L).

WATQ_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WQ_REPORTS table was last modified.

WATQ_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WQ_REPORTS table.

WATQ_DATE_VALID

This field contains a flag that indicates the accuracy of the WATQ_DATE_MEASURED field. The letter code 'M' in the indicates that the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

GWSI_WW_LEVELS

The GWSI_WW_LEVELS data table contains information related to the depth to water measurements. Data in this table includes depth to water, water table elevation, measurement date, method of measurement, measurement remarks, and source of the water level measurement.

WLWA_ID

Each water level entry for a site is assigned a unique identifying number by Oracle that is a sequential variation of the construction entry number (GWSI_WELL_COMPLETIONS.WLCO_ID).

WLWA_MEASUREMENT_DATE

This field records the date and time that the water level was recorded for the site. The time portion of this field uses the 24-hour time format. For example, a measurement at 3:05 pm on 7/23/2021 would be entered as 07/23/2021 15:05.

WLWA_DEPTH_TO_WATER

This field records the depth to water in feet below land surface. Depth to water can be carried out to two decimal places. If the water level is above land surface, enter the water level in feet above land surface preceded by a minus sign (-). If the head at a flowing site is unknown, the water level cannot be measured, the site is dry, or the well is destroyed, this field is left blank and the appropriate code must be placed in the associated WLWA_REMARKS field.

WLWA_WATER_LEVEL_ELEVATION

This field contains the elevation of the water table above vertical datum. This field is calculated by subtracting the depth to water from the well altitude as entered in the GWSI_SITES table. Except for flowing wells, water level elevations are blank for records that have no depth to water measurements. This field is automatically populated by Oracle when a depth to water measurement is entered.

WLWA_LAST_ACT_DATE

This field is filled by Oracle with the date and time that any field in the GWSI_WW_LEVELS data table was last modified.

WLWA_LAST_ACT_OPER

This field is filled by Oracle with the User ID of the last person to modify any field in the GWSI_WW_LEVELS data table.

WLWA_SOURCE_CODE

Code table: GWSI_DATA_SOURCES

This field contains letter codes for the source of the water level measurement.

*	Undetermined	L	AZ State Land Department
3	Third Party	M	Bureau of Land Management
A	AZ Department of Water Resources	O	Owner
B	US Bureau of Reclamation	R	Other Reported
C	Consultant	S	Salt River Project
D	Driller	T	City of Tucson
E	New Mexico Office of the State Engineer	U	U.S. Geological Survey
F	Arizona Public Service	W	Wellton-Mohawk Irrigation & Drainage District
G	University of Arizona	Z	Other
J	Military		

WLWA_METHOD_CODE

Code table: GWSI_MM_CODES

This field contains the code for the method used to measure the depth to water.

A	Airline	N	Non-Recording Gauge
B	Analog or Graphic Recorder	O	Observed
C	Calibrated Airline	P	Acoustic Pulse
D	Differential GPS	R	Reported
DC	Downhole Camera	S	Steel Tape
E	Estimated	T	Electric Tape (Uncalibrated)
F	Automated Device	U	Undetermined
G	Pressure Gauge	V	ADWR Calibrated Electric Sounder or Non-Electric Tape
H	Calibrated Pressure Gage	VT	ADWR Calibrated Electric Tape
L	Geophysical Logs	Z	Other
M	Manometer		

WLWA_REMARK_CODE

Code table: GWSI_MR_CODES

This field contains letter codes that describe the status of the site at the time of the water level measurement. If the water level measured represents a static level, this field is blank.

- A Atmospheric Pressure
- C Ice
- D Dry. The site was dry, and no water level was recorded
- E Recently Flowing. The site had recently been flowing
- F Flowing. The site was flowing, but no head could be measured (no water level is recorded)
- G Nearby Flowing. A nearby site was flowing at the time of measurement
- H Nearby Recently Flowing. A nearby site had recently flowed
- I Injecting. The well was being used to inject water into the aquifer at the time of the measurement attempt
- J Nearby Injecting
- K Cascading Water. Water was cascading down the well casing from some point above the water table
- L Brackish Saline
- M Well Plugged. Well has visible cement, debris, dirt, or other material blocking access to the water table and is not in hydraulic contact with the formation. A well casing is still visible
- N Measurements discontinued at the site
- O Obstructed. An obstruction in the well casing prevented a measurement (no water level is recorded)
- P Pumping. The site was being pumped at the time of measurement
- R Recently Pumped. The site had been pumped recently
- S Nearby Pumping. A site nearby was being pumped at the time of measurement
- T Nearby Recently Pumped. A nearby site had recently been pumped
- U Undetermined
- V Foreign Material (Oil). A foreign material, usually oil, was encountered on the surface of the water table
- W Well Destroyed. The well has been destroyed and no water level is recorded
- X Surface Water Effects. The water level may be affected by a nearby surface water site
- Z Other. Other conditions may affect the measured water level. Explanation is in the GWSI_REMARKS data table

WLWA_VALID_DATE

This field contains a flag that indicates the accuracy of the WLWA_MEASUREMENT_DATE field. The letter code 'M' in the indicates that the month value has been assigned and the date is only accurate to the year. The letter code 'D' indicates that the day value has been added and the date is accurate only to the month. A blank entry indicates that the full date is accurate. For further explanation of this field, see FLWD_DATE_VALID on page 6.

SYNCH_ID

This is a legacy field and is not currently used.

WLWA_COMMENT

The comments section field can be used to help clarify a depth to water measurement, method, measurement remark, UTM remark, or other information related to the entry. Note that this field is only for comments directly related to the water level or UTM. Comments or useful information about the site are in the GWSI_REMARKS table.

CREATEBY

This field is populated by Oracle with the User ID of the person to create the record.

CREATEDT

This field is populated by Oracle with the data and time that the record was created.

WLWA_WLOPER

This is the User ID of the person that conducted the depth to water measurement.

WLWA_UTM_CODE

Code table: GWSI_UTM_CODES

This field contains letter codes that describe the reason why depth to water at a site was unable to be measured. This field is only used when a water level is not obtained.

- BE Bees. There were bees near the site or in the well that pose a risk to the safety of field personnel.
- D Dry. The site was dry, and no water level could be obtained.
- K Cascading Water. Water was cascading down the well from some point above the water table that prevented an accurate measurement.
- LG Locked Gate. A locked gate prevented access to a site.
- LS Locked Well Site. A measurement could not be obtained due to a locked building, structure, well cap, or measuring point.
- M Well Plugged. Well has visible cement, debris, dirt, or other material blocking access to the water table and is not in hydraulic contact with formation. However, a well casing is still visible.
- MP No Measuring Point Access. A water level cannot be obtained because there is no opening in the case or pump to gain access to the water table.
- N Measurements Discontinued. Measurements are discontinued at the site.
- NA No Site Access. Something prevents access to the site that cannot be defined by any other UTM remark.
- NC No Contact. A water level was not obtained due to the necessity to contact the owner, business, or property before a water level is to be obtained.
- NP No Permission. An owner or responsible party has denied and/or refused access to the site or water table.
- O Obstruction. A blockage in the well prevents a water level from being obtained.
- P Pumping. The site is being pumped at time of measurement.
- RC Road Condition. All roads or drivable paths to a site are unsafe for equipment or personnel.
- SH Site Hazard. The environment at or around the site pose a risk to personnel and cannot be defined by any other UTM remark.
- UL Unable to Locate. The site location cannot be verified, and/or there is no site at the best-known location.
- V Oil. Oil located on the surface of the water table has prevented an accurate water level measurement.
- W Well Destroyed. The well hole and casing has been destroyed and any future water levels would be impossible. There is no casing at the well site.
- Z Other. The measurement could not be taken for a reason not listed above.

WLWA_INSTRUMENT_NUMBER

This is the number assigned to the equipment used to take the measurement. It uses the format [Method Code]#[Number]. For example, sounder #15 would be entered as V#15, steel tape #03 would be S#03, etc. There are restrictions on the field such that there must be 1 or 2 numbers after the #, the alphabetical

character(s) must match the method code, and there cannot be an instrument number for OBSERVED, UNDETERMINED, or REPORTED measurements.

Appendices

Appendix A: ADWR Groundwater Basin Codes

Listed below are the letter codes used to identify the ADWR Groundwater Basins, Sub-Basins and Active Management Areas (AMAs).

ADWR Non-Subdivided Groundwater Basins

<u>Basin Name</u>	<u>Code</u>	<u>Basin Name</u>	<u>Code</u>
Agua Fria	AGF	Morenci	MOR
Aravaipa Canyon	ARA	Paria	PAR
Big Sandy	BIS	Parker	PKB
Bill Williams	BWM	Peach Springs	PSC
Bonita Creek	BON	Phoenix AMA	PHX
Butler Valley	BUT	Pinal AMA	PIN
Cienega Creek	CCK	Prescott AMA	PRE
Coconino Plateau	COP	Ranegras Plain	RAN
Detrital Valley	DET	Sacramento Valley	SAC
Donnelly Wash	DON	Safford	SAF
Douglas	DOU	Salt River	SRB
Dripping Springs Wash	DSW	San Bernardino Valley	SBV
Duncan Valley	DUN	San Rafael	SRF
New Mexico Section of Duncan Valley Basin	DNM	San Simon Valley	SSI
Gila Bend	GIL	San Simon Wash	SSW
Grand Wash	GWA	Santa Cruz AMA	SCA
Harquahala	HAR	Shivwits Plateau	SHV
Hualapai Valley	HUA	Tiger Wash	TIG
Kanab Plateau	KAN	Tonto Creek	TON
Lake Havasu	LKH	Tucson AMA	TUC
Lake Mohave	MHV	Upper Hassayampa	UHA
Little Colorado River Plateau	LCR	Upper San Pedro	USP
Lower Gila	LGB	Verde River	VRB
Lower San Pedro	LSP	Virgin River	VRG
McMullen Valley	MMU	Western Mexican Drainage	WMD
Meadview	MEA	Willcox	WIL
		Yuma	YUM

ADWR Subdivided Groundwater Basins

<u>Basin</u>	<u>Sub-basin</u>	<u>Code</u>	<u>Basin</u>	<u>Sub-basin</u>	<u>Code</u>
Big Sandy		BIS	Safford		SAF
	Fort Rock	FTR		San Carlos Valley	GSK
	Wikieup	WIK		San Simon Valley	SSI
				Gila Valley	SAF
Bill Williams		BWM	Salt River		SRB
	Alamo Reservoir	ALR		Black River	BRB
	Burro Creek	BUR		White River	WRB
	Clara Peak	CLA		Salt River Canyon	USR
	Santa Maria	SMR		Salt River Lakes	SRL
	Skull Valley	SKU			
Lower Gila		LGB	Upper San Pedro		USP
	Childs Valley	CHV		Allen Flat	ALF
	Dendora Valley	DEN		Sierra Vista	SEV
	Wellton-Mohawk	WEM			
Lower San Pedro		LSP	Verde River		VRB
	Camp Grant Wash	CGW		Big Chino	BIC
	Mammoth	MAM		Verde Canyon	LVR
				Verde Valley	VER
Parker		PKB			
	Colorado River Indian Res.	CRI			
	Cibola Valley	CIB			
	La Posa Plains	LPC			

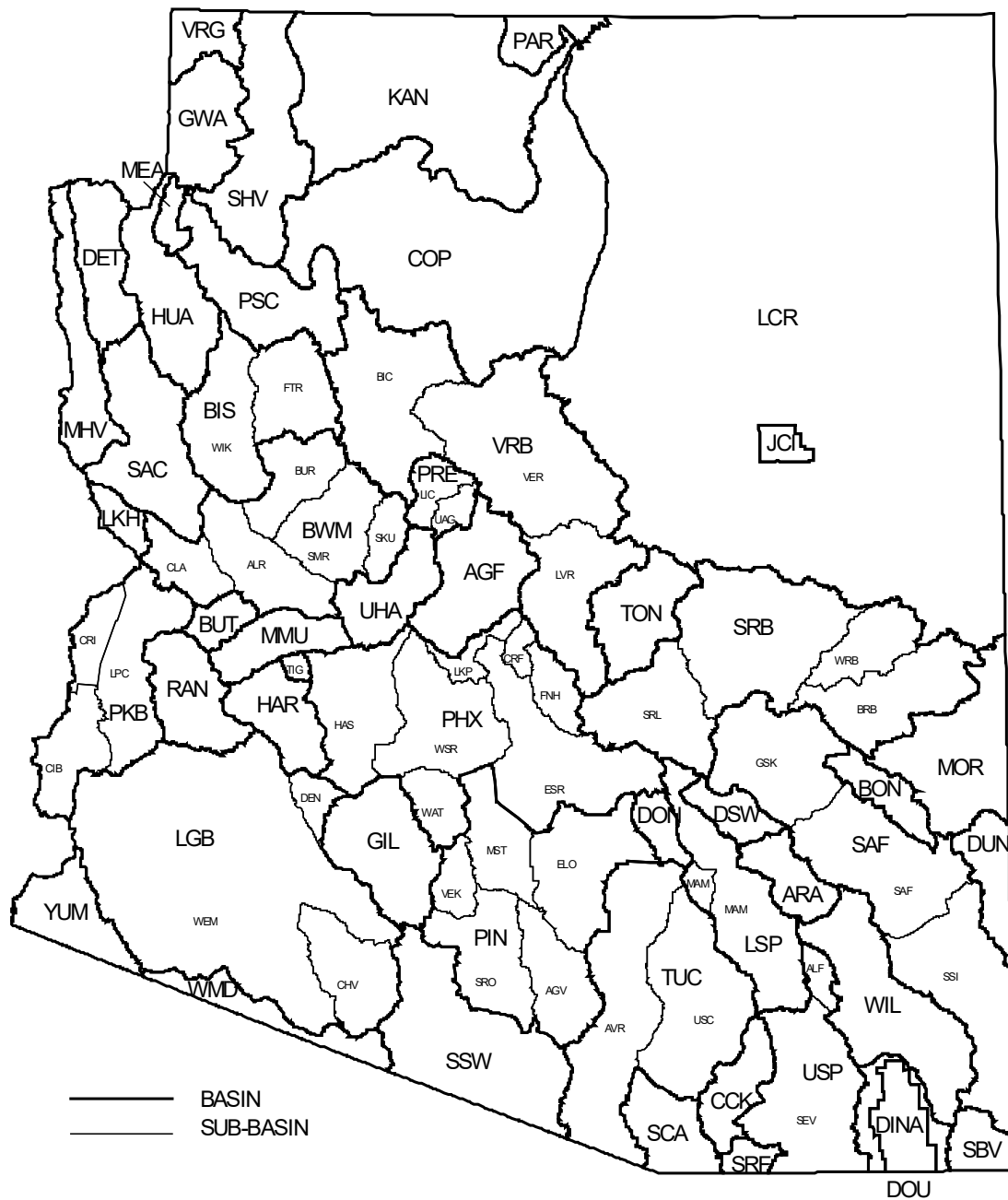


Figure 7: Map of ADWR Groundwater Basins and Subbasins

ADWR Active Management Areas (AMA)

<u>AMA Name</u>	<u>Sub-basin</u>	<u>Code</u>	<u>AMA Name</u>	<u>Sub-basin</u>	<u>Code</u>
Phoenix AMA		PHX	Prescott AMA		PRE
West Salt River Valley		WSR	Upper Agua Fria		UAG
East Salt River Valley		ESR	Little Chino Valley		LIC
Carefree		CRF			
Lake Pleasant		LKP	Santa Cruz AMA		SCA
Fountain Hills		FNH			
Hassayampa		HAS	Tucson AMA		TUC
Rainbow Valley		WAT	Avra Valley		AVR
			Upper Santa Cruz		USC
Pinal AMA		PIN			
Aguirre Valley		AGV			
Eloy		ELO			
Maricopa-Stanfield		MST			
Santa Rosa Valley		SRO			
Vekol Valley		VEK			

ADWR Irrigation Non-Expansion Areas (INA)

<u>INA Name</u>	<u>Code</u>
Douglas INA	DIN
Harquahala INA	HAR
Joseph City INA	JCI

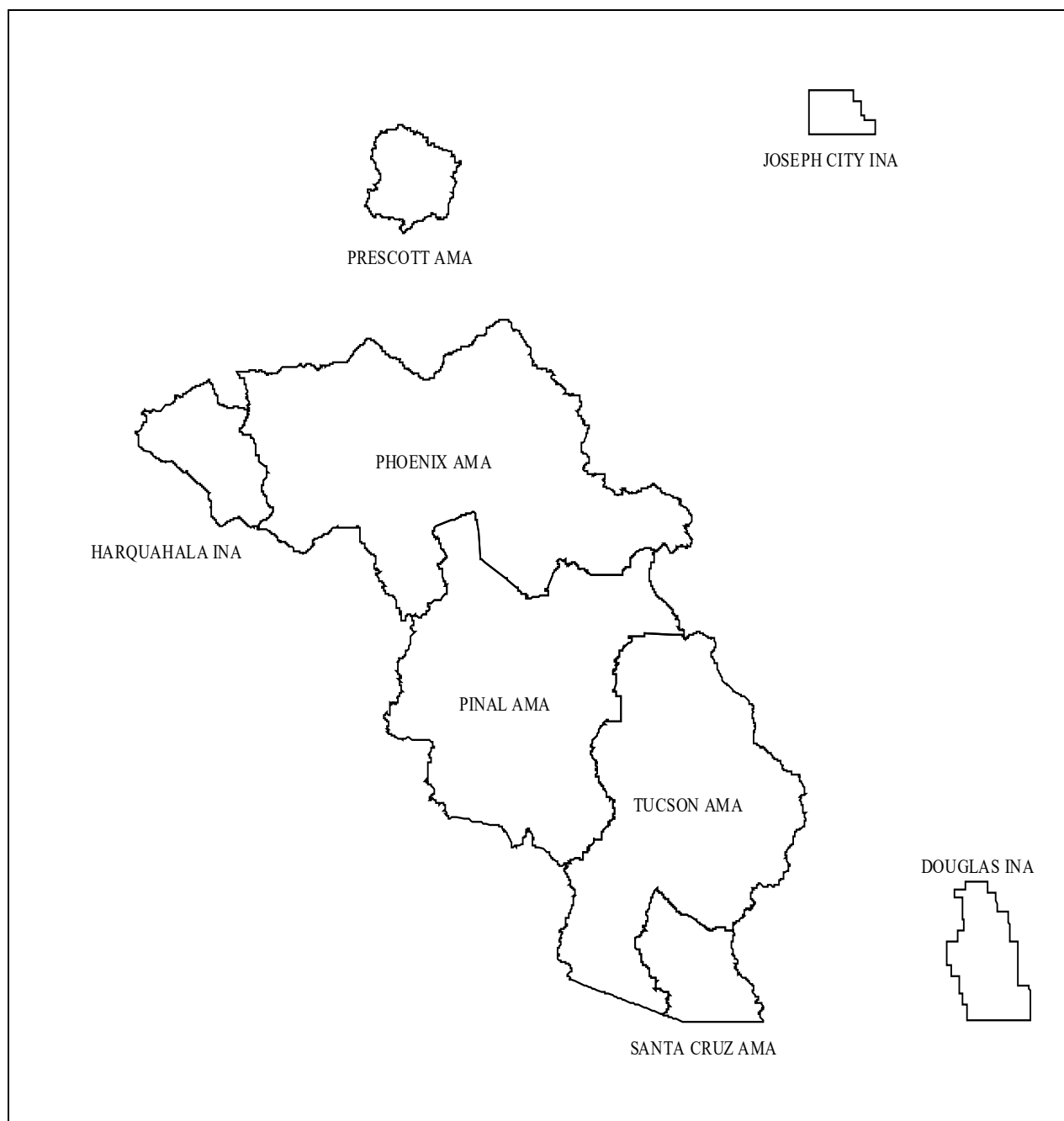


Figure 8: Map of ADWR Active Management Areas and Irrigation Non-expansion Areas

Groundwater Site Inventory (GWSI) Database Handbook

Appendix B: U.S. Geological Survey Groundwater Area Codes

Listed below are the letter codes used to identify the U.S. Geological Groundwater Areas

<u>Basin Name</u>	<u>Code</u>	<u>Basin Name</u>	<u>Code</u>
Agua Fria Basin	AGF	Lower Verde River	LVR
Altar Valley	ALT	McMullen Valley	MMU
Aravaipa Valley	ARA	Monument Valley	MNV
Avra Valley	AVR	New River-Cave Creek	N-C
Big Chino Valley	BIC	Peach Springs Canyon	PSC
Big Sandy Valley	BIS	Puerco-Zuni	PRZ
Bill Williams	BWM	Ranegras Plain	RAN
Black Mesa	BLM	Sacramento Valley	SAC
Black River Basin	BRB	Safford Basin	SAF
Bodaway Mesa	BOD	Saint Johns	STJ
Butler Valley	BUT	Salt River Valley	SRV
Canyon Diablo	CDI	San Bernardino Valley	SBV
Chevelon	CHV	San Francisco Peaks	SFP
Chinle	CHN	San Francisco River Basin	SFR
Coconino Plateau	COP	San Simon Basin	SSI
Colorado River, Hoover Dam to Imperial Dam	CHI	San Simon Wash	SSW
Concho	CON	Shivwits	SHV
Douglas Basin	DOU	Snowflake	SNO
Duncan Basin	DUN	Tonto Basin	TON
Gila Bend Basin	GIL	Tuba City	TUB
Gila River, Painted Rock Dam to Texas Hill	GRD	Upper Salt River Basin	USR
Gila River, San Carlos Reservoir to Kelvin	GSK	Upper San Pedro Basin	USP
Gila River, Texas Hill to Dome	GTD	Upper Santa Cruz Basin	USC
Grand Wash	GWA	Upper Verde River	VER
Harquahala Plains	HAR	Virgin River	VRG
Hassayampa Basin	HAS	Waterman Wash	WAT
Holbrook	HOL	Western Mexican Drainage	WMD
Hopi	HOP	White Mountains	WHM
House Rock	HOU	White River Basin	WRB
Hualapai Valley	HUA	Willcox Basin	WIL
Kaibito	KAI	Williamson Valley	WMN
Kanab	KAN	Yuma	YUM
Little Chino Valley	LIC		
Lower Hassayampa	LHA		
Lower San Pedro	LSP		
Lower Santa Cruz	LSC		

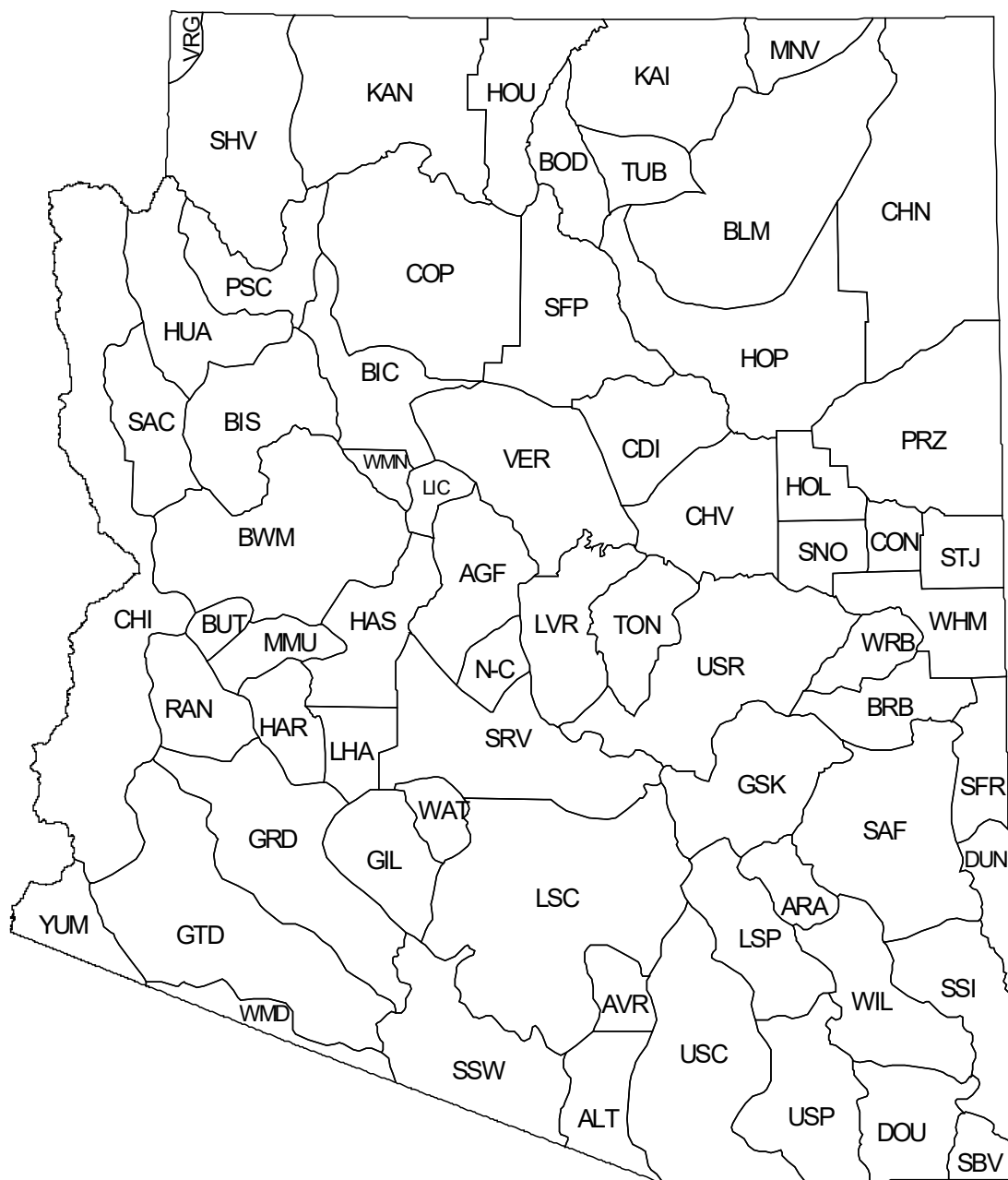


Figure 9: U. S. Geological Survey Groundwater Basin

Appendix C: Geological Unit CodesCenozoic*Quaternary*Holocene

Alluvium (Flood-Plain and Stream Channel)	111ALVM
---	---------

Pleistocene

Basaltic Flows	112BLCF
Basin Fill - Upper, Lower, Undifferentiated	112BSFL
Basin Fill - Upper	112BSFLU
Sand and Gravel – Upper	112SDGVU
Terrace (and Surficial) Deposits	112TRRC

Tertiary

Consolidated Sedimentary Rocks, Tertiary and Mesozoic Undifferentiated	120CDSM
Datil Formation	120DTIL
Felsic Volcanic Rocks	120FCVC
Intrusive Rocks	120IRSV
Mafic Volcanic Rocks	120MFCV
Mafic and Felsic Volcanic Rocks	120MFFV
Sedimentary Rocks	120SDMR
Volcanic Rocks	120VLCC

Pliocene

Bidahochi Formation	121BDHC
Bidahochi Formation - Lower	121BDHCL
Bidahochi Formation - Middle	121BDHCM
Bidahochi Formation - Upper	121BDHCU
Basaltic Flows	121BLCF
Basin Fill - Lower	121BSFLL
Chuska Sandstone	121CHSK
Lower Basin Fill and Miocene Sedimentary Rocks - Undifferentiated	121LBFM

Miocene

Basalt-Andesite Flows	122BLAD
Sedimentary Rocks	122SDMR
Volcanic Breccias, Agglomerates, and Tuffs	122VBAT
Muddy Creek Formation	121MDCK
Verde Formation	121VERD

Geological Unit Codes (continued)Cenozoic (continued)*Tertiary (continued)*Oligocene

Felsic Flows or Welded Tuffs	123FFWT
Mafic Flows	123MFCF
Sedimentary Rocks	123KDMR
Volcanic Breccias, Agglomerates, or Tuffs	123VBAT
Volcanic Rocks	123VLCC

Eocene

Felsic Volcanic Rocks	124FCVC
Mafic Volcanic Rocks	124MFCV
Sedimentary Rocks	124SDMR

Paleocene

Nacimiento Formation	125NCMN
Ojo Alamo Formation	125OJAM

Mesozoic

Felsic Intrusive Rocks	200FCIV
Felsic Volcanic Rocks	200FCVC
Mafic Volcanic Rocks	200MFCV
Mafic Intrusive Rocks	200MFIV
Sedimentary Rocks	200SDMR
Volcanic Rocks	200VLCC

*Cretaceous*Upper Cretaceous

Allison Member of Menefee Formation of the Mesaverde Group	211ALSN
Bartlett Barren Member of Crevasse Canyon Formation of the Mesaverde Group	211BRLB
Cliff House Sandstone of the Mesaverde Group	211CLFH
Cleary Coal Member of Menefee Formation of the Mesaverde Group	211CLRY
Crevasse Canyon Formation of the Mesaverde Group	211CRVC
Dilco Coal Member of Crevasse Canyon Formation of the Mesaverde Group	211DLCO
Dalton Sandstone Member of Crevasse Canyon Formation of the Mesaverde Group	211DLTN
Dakota Sandstone	211DKOT
Fruitland Formation	211FRLD
Farmington Sandstone Member of Kirkland Shale	211FRMG
Gallup Sandstone	211GLLP
Hosta Tongue of Point Lookout Sandstone of the Mesaverde Group	211HOST
Juana Lopez Member of Mancos Shale	211JLPZ
Kirkland Shale - Upper	211KRLDU

Geological Unit Codes (continued)Mesozoic (continued)*Cretaceous (continued)*Upper Cretaceous (continued)

Lewis Shale	211LWIS
Menefee Formation	211MENF
Mulatto Tongue of Mancos Shale	211MLTT
Mancos Shale	211MNCS
Pictured Cliffs Sandstone	211PCCF
Point Lookout Sandstone	211PNLK
Pescado Tongue of Mancos Shale	211PSCD
Santan Tongue of Mancos Shale	211SATN
Sedimentary Rocks - Undifferentiated	211SDMR
Toreva Formation	211TORV
Wepo Formation	211WEPO
Yale Point Sandstone	211YLPN

Lower Cretaceous

Burro Canyon Formation	217BRCN
------------------------	---------

Jurassic

Navajo Sandstone	220NVJO
Glen Canyon Group	227GLNC

Upper Jurassic

Bluff Sandstone	221BLFF
Brushy Basin Shale Member of Morrison Formation	221BRSB
Carmel Formation	221CRML
Cow Springs Sandstone	221CSPG
Entrada Sandstone	221ENRD
Entrada Sandstone - Lower	221ENRDL
Entrada Sandstone - Middle	221ENRDM
Entrada Sandstone - Upper	221ENRDU
Morrison Formation	221MRSN
Recapture Shale Member of the Morrison Formation	221RCPR
Salt Wash Sandstone Member of the Morrison Formation	221SLWS
Summerville Formation	221SMVL
Todilto Limestone	221TDLT
Westwater Canyon Sandstone Member of the Morrison Formation	221WSRC

Triassic

Hoskinnini Member of the Moenkopi Formation	230HSKN
Moenkopi Formation	230MNKP

Geological Unit Codes (continued)**Mesozoic (continued)***Triassic (continued)*Upper Triassic

Church Rock Member of Chinle Formation	231CCRK
Chinle Formation	231CHNL
Correo Sandstone Bed of Petrified Forest Member of Chinle Formation	231CORR
Dinosaur Canyon Sandstone Member of Moenave Formation	231DSRC
Kayenta Formation	231KYNT
Lukachukai Member of Wingate Sandstone	231LKCK
Monitor Butte Member of Chinle Formation	231MNRB
Moenave Formation	231MONV
Mesa Redondo Member of Chinle Formation	231MRDD
Owl Rock Member of Chinle Formation	231ORCK
Petrified Forest Member - Lower - of Chinle Formation	231PFDFL
Petrified Forest Member - Upper - of Chinle Formation	231PFDFU
Rock Point Member of Wingate Sandstone	231RCKP
Sonsela Sandstone Bed of Petrified Forest Member of Chinle Formation	231SNSL
Springdale Sandstone Member of Moenave Formation	231SPGD
Shinarump Member of Chinle Formation	231SRMP
Wingate Sandstone	231WNGT

Middle Triassic

Holbrook Sandstone Member of Moenkopi Formation	234HLBK
---	---------

Lower Triassic

Moqui Member of Moenkopi Formation	237MOQU
Wapatki Member of Moenkopi Formation	237WPTK

Paleozoic

Limestone	300LMSN
Quartzite	300QRTZ
Sandstone	300SNDS

Permian

Abo Formation	310ABO
Coconino Formation	310CCNN
Cedar Mesa Sandstone Member of Cutler Formation	310CDRM
Cutler Formation	310CTLR
De Chelly Sandstone	310DCLL
Glorieta Sandstone	310GLRT
Halgaito Tongue of Cutler Formation	310HLGT
Hermit Shale	310HRMT
Kaibab Limestone	310KIBB
Meseta Blanca Sandstone Member of Yeso Formation	310MBLC
Naco Formation	310NACO

Geological Unit Codes (continued)**Paleozoic (continued)***Permian (continued)*

Organ Rock Tongue of Culter Formation	310OGRK
Rico Formation	310RICO
Supai Formation	310SUPI
Supai Formation - Lower	310SUPIL
Supai Formation - Middle	310SUPIM
Supai Formation - Upper	310SUPIU
San Ysidro Member of Yeso Formation	310SYDR
Toroweap Formation	310TRWP
Yeso Formation	310YESO

Guadalupian

San Andres Limestone	313SADR
----------------------	---------

Pennsylvanian

Hermosa Formation	320HRMS
Molas Formation	320MOLS

Mississippian

Redwall Limestone	330RDLL
-------------------	---------

*Devonian**Upper Devonian*

Martin Limestone	341MRTN
------------------	---------

*Cambrian**Middle Cambrian*

Bright Angle Shale	374BGAG
Muav Limestone	374MUAV
Tapeats Sandstone	374TPTS

Precambrian

Granitic Gneiss	400GRCG
Granite	400GRNT
Schist	400SCST
Sedimentary Rocks	400SDMR

Appendix D: GWSI Index Well Siting Criteria

In general, ADWR Index wells historically have been selected to provide good spatial distribution or coverage within a groundwater basin and to assess vertical gradients if possible. ADWR GWSI Index Wells are selected based on guidelines developed by the USGS Office of Ground Water for the Collection of Basic Records (CBR) Program: <https://groundwaterwatch.usgs.gov/net/ogwnetwork.asp?ncd=crn>

Specific criteria for Index Well selection can include at a minimum the following:

- Open to a single, known hydrogeologic unit
- Known well construction that allows accurate, repeatable depth-to-water measurements
- Located in unconfined aquifers or near-surface confined aquifers that respond to climatic fluctuations
- Minimally affected by pumpage and likely to remain so
- Essentially unaffected by irrigation, canals, and other potential sources of artificial recharge
- Long-term accessibility
- Well has never gone dry (not susceptible to going dry)

Additional desired characteristics:

- Representative of broad area (e.g., a regional aquifer)
- Complete characterization of the site is available
- A long record of depth-to-water measurements exists
- Lithologic and geophysical logs available

Please note that selection criteria may vary for GWSI Index Wells depending on area-specific monitoring objectives. For example, wells may be selected that are located in confined conditions versus unconfined for specific regional data needs.

Appendix E: Minimum Data Set Requirements for Submittal of Well Site Details to ADWR Groundwater Site Inventory (GWSI)

Purpose

To collect groundwater level data from sources other than ADWR or from entities for which the collection methods are unknown or otherwise not fully comparable by GWSI standards. This may include data collection and reporting techniques of many water providers, power plant operators, RGR reporters, community water systems, and other sources of groundwater data in varying forms of data validation. Data supplied by verified groundwater data cooperators will be input into the Department's Oracle GWSI database.

Process

The first step in processing groundwater level data received from a non-ADWR source is to ensure the accuracy and correctness of the specific well site for which data is intended to be submitted to the Department. Wells that have a registry number, 55-XXXXXX, may or may not have a GWSI Site ID number. Each well site in GWSI is assigned a unique 15-character identification number by the Department, the Site ID, which is the common field (primary key) in all the GWSI data tables.

The Department will assign a Site ID to wells that do not currently have one assigned to them through submittal of basic well information from the outside entity. A site inventory will subsequently be conducted by the Department (unless USGS or BOR have already created one) after submitted data is verified online. An online data portal is used by cooperators to input the basic well information required. The Department will then review the basic well information submitted with existing GWSI sites and confirm validation of matching GWSI & registry IDs. Once a well has received confirmation of validation of existing IDs, water level data can then be submitted online with a validation code received in a confirmation email from the Department.

Summary of process:

- 1) Cooperator submittal of basic well info
- 2) Validation of GWSI Site ID, if existing
- 3) ADWR site inventory utilizing cooperator-submitted basic well info if GWSI Site ID does not exist
- 4) ADWR will create a Site ID when an inventory is complete
- 5) ADWR will send confirmation email to potential cooperators with validated Site ID
- 6) Cooperators can submit data online using validated Site ID.

The data portal provides two different mechanisms for submittal: 1) batch format for large numbers of well sites and 2) a data entry screen for individual well entries.

Data supplied by verified groundwater data cooperators will be input into the Department's Oracle GWSI database. The following descriptions provide explanation of the mandatory and optional data elements (fields and formats) needed to complete a record.

GWSI_SITES

The GWSI_SITES data table is used for recording general information about the site, including location information, general well construction, and well use information. The GWSI_SITES data table is the main table in the GWSI system. All other GWSI tables are linked to it by the SITE_ID field.

SITE_WELL_SITE_ID (MANDATORY)

Each well site in GWSI is assigned a unique 15-character identification number by the Department, the Site ID, which is a common field in all the GWSI data tables. Although the Site ID is initially derived from the latitude and longitude of the site, the number is a unique identifier and *not* a locator.

The Site ID number is assigned by using the method that will provide the most precise location for a point representing the site, such as using a map, Global Positioning System (GPS), Geographic Information System (GIS), etc. The latitude and longitude of the point are determined 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. Leading zeros are used when the minute or second fields are less than 10, or the sequence number is less than 10.

SITE_LOCAL_ID (MANDATORY)

This is a 20-character-long site location based on the U. S. Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River Baseline and Meridian, which divides the state into four quadrants. These quadrants are designated A, B, C, and D in a counterclockwise direction starting in the upper right-hand corner of the state. All land with north Townships and east Ranges are in the A quadrant, north Townships and west Ranges in the B quadrant, south Townships and west Ranges in the C quadrant, and south Townships and east Ranges in the D quadrant. The first number in the cadastral location is the Township, the second is the Range, and the third is the Section in which the site is located. The letters following the section number indicate the well location within the section. The first letter following the section number indicates the 160-acre quarter section, the second letter the 40-acre quarter-quarter section, and the third letter the 10-acre quarter-quarter-quarter section. More explanation can be found beginning on page 19 of this handbook.

SITE_MERIDIAN (MANDATORY)

This field records the land net meridian that is used to establish the cadastral location of the site. In general, sites located in Arizona use the Gila and Salt River Meridian and Baseline, with the exception of those on the Navajo and Hopi Indian Reservations. The relevant GWSI codes can be found on page 30 of this handbook.

SITE_LATIT_DEGREE; SITE_LATIT_MIN; SITE_LATIT_SEC (MANDATORY)

SITE_LONGIT_DEGREE; SITE_LONGIT_MIN; SITE_LONGIT_SEC (MANDATORY)

The three latitude fields and the three longitude fields contain the best available value for the latitude and longitude of the site in degrees, minutes, and seconds. Seconds may be entered to 100ths of a second. Use leading zeros for values under 10 or under 100 for longitude degrees. The position of the site is encouraged to be measured in the field by global positioning system (GPS) equipment. Each value for the degrees, minutes, and seconds should be entered into the appropriate field. The location should be entered as precisely as it is known, and the accuracy of the location should be indicated by a suitable entry in the latitude/longitude accuracy field (SITE_LLACCR_CODE).

SITE_LLACCR_CODE (MANDATORY)

This field records the accuracy of the latitude and longitude data for the site. In general, a site can be located to within five seconds on a map, two seconds on an orthophoto with a template, and 0.5 second if taken with a handheld GPS unit. The relevant GWSI codes can be found on page 27 of this handbook.

SITE_LATLONG_DATUM_CODE (MANDATORY)

Enter the horizontal datum code for the latitude and longitude coordinates. GWSI uses NAD27 (North American Datum of 1927). The only datums that can be converted on output are NAD27 and NAD83 (North American Datum of 1983). GWSI uses the North American Datum Conversion of the National Geodetic Survey to convert from NAD27 to NAD83 or vice-versa.

SITE_WELL_REG_ID (CONDITIONALLY MANDATORY)

This field contains the State Well Registration (55) number of the well if the site can be positively matched to a registered well. The 55-number is matched with a GWSI well only when the field investigator is absolutely positive that the wells are the same. If there is any doubt about the match, the 55-number is not entered until those doubts are resolved. If a site's 55-number is known, it must be entered to this field.

SITE_WELL_ALTITUDE (MANDATORY)

This field contains the altitude of land surface at the site in feet above vertical datum. It can be recorded to two decimal places. The altitude of land surface is the elevation of a fixed reference point at the well near land surface that can be used to measure the height of the measuring point and can be surveyed if desired. Examples of the land surface reference point description include a brass marker installed in the concrete pad or an etched mark at the base of the surface casing. Altitudes below the specified vertical datum should be preceded by a minus sign (-).

SITE_ALTMETH_CODE_ENTRY (MANDATORY)

This field records the method used to determine the altitude of the site. The relevant GWSI codes can be found on page 22 of this handbook.

SITE_ALTIT_ACCURACY (MANDATORY)

This field contains the level of accuracy, in feet, of the site altitude. Site altitudes taken from a map are generally accurate to one half the map's contour interval. Sites that are leveled in from a benchmark are considered accurate to within 1.0 foot.

SITE_ALTITUDE_DATUM_CODE (MANDATORY)

Enter the datum used to determine altitude. GWSI uses NGVD29 (National Geodetic Vertical Datum of 1929). The only vertical datums that can be converted on output are NGVD29 and NAVD88 (North American Vertical Datum of 1988). GWSI uses the North American Vertical Datum Conversions of the National Geodetic Survey to convert from NGVD29 to NAVD88 or vice-versa. The relevant GWSI codes can be found beginning on page 33 of this handbook.

SITE_HOLE_DEPTH (CONDITIONALLY MANDATORY)

This field records the total depth to which the hole was initially drilled, in feet below the land surface, even though it may have been backfilled after drilling. For collector or Ranney-type wells, the depth of the central shaft should be entered. For multiple-well fields, ponds, tunnels, springs, or drains, the field should be blank. If the hole depth is given, all other depths associated with the site will be compared with it for validity. If the site is a single well and borehole depth is known, this field is required.

SITE_WELL_DEPTH (CONDITIONALLY MANDATORY)

This field contains the depth of the finished, or cased, portion of the well in feet below land surface. The depth of the well is usually taken from the completed well driller's report. If this information is known, it is required.

SITE_ADWRS_CODE (CONDITIONALLY MANDATORY)

This field contains the source of the reported depth of a well. The relevant GWSI codes can be found on page 29 of this handbook. If well depth is known, this field is required.

Appendix F: Mandatory Data Elements for Water-Level Measurements for Submittal to ADWR
Groundwater Site Inventory

Data supplied by verified groundwater data cooperators will be input into the Department's Oracle Groundwater Site Inventory (GWSI) database. The following descriptions provide explanation of the mandatory data elements (fields and formats) needed to complete a record.

GWSI_WW_LEVELS

The GWSI_WW_LEVELS data table contains information related to the depth to water at the site. Data that is contained includes depth to water, water table elevation, measurement date, method of measurement, measurement remarks, and source of the water level measurement.

WLWA_MEASUREMENT_DATE

This field records the date that the water level was recorded for the site.

WLWA_DEPTH_TO_WATER

This field records the depth to water in feet below land surface. Depth to water can be carried out to two decimal places. If the water level is above land surface, enter the water level in feet above land surface preceded by a minus (-) sign. If the head at a flowing site is unknown, if the water level cannot be measured, the site is dry, or the well destroyed then this field is left blank and the appropriate code must be placed in the associated WLWA_REMARK_CODE field.

WLWA_WATER_LEVEL_ELEVATION

This field contains the elevation of the water table above vertical datum. This field is calculated by subtracting the depth to water from the well altitude as entered in the GWSI_SITES table. Except for flowing wells, water level elevations are blank for records that have no depth to water measurements.

A well site must be inventoried by ADWR, BOR, or the USGS. During the inventory, such basic data such as well elevation is collected to create the well Site ID and thus the original well record in the database. If a well already has a Site ID in GWSI, then the water level elevation is not needed for submittal. Discrepancies observed between the well site elevation that the cooperator provides and what is contained in the GWSI_SITES table should be brought to the attention of the ADWR submittal contact.

WLWA_METHOD_CODE

This field contains the code for the method used to measure the depth to water. Relevant codes can be found on page 55 of this handbook.

WLWA_REMARK_CODE

This field contains letter codes that describe the status of the site at the time of the water level measurement. Relevant codes can be found on page 56 of this handbook.

WLWA_SOURCE_CODE

This field contains the letter codes for the source of the water level measurement. Relevant codes can be found on page 55 of this handbook.

GWSI_WM_POINTS

The GWSI_WM_POINTS data table contains a description of the point used to measure the depth to water in a well.

WELM_DATE_MEASURED

This field records the date that the water level measuring point was established for the site.

WELM_MEASURE_POINT_HEIGHT

This entry is the height, in feet above the land surface, from which the depth to water measurement was made. If the measurement point is below land surface, the measurement height is preceded by a minus sign (-).

WELM_MP_DESCRIPTION

This field contains a description of the point use to measure the depth to water. Listed below are some of the common measuring point descriptions. An illustration of these examples can be found on page 52 of this handbook.

HTCA, W - Hole in Top of Casing, West Side
BOP, N - Access under Base of Pump, North Side
HSCA, N - Hole in Side of Casing, North Side
ACTB, S - Measuring (Access) Tube, South Side
TCA, SE - Top of Casing, Southeast Side
AIRL, S - Airline, South Side
HBOP, S - Hole in Pump Base, South Side
HISP, NE - Hole in Submersible Plate, Northeast Side

Water level data collection protocols and methods used by ADWR and USGS are described in publications including:

Ground-Water-Level Monitoring and the Importance of Long-Term Water-Level Data (U.S. Geological Survey Circular 1217) <http://pubs.usgs.gov/circ/circ1217/html/contents.html>

Ground-Water Data-Collection Protocols and Procedures for the National Water-Quality Assessment Program: Selection, Installation, and Documentation of Wells, and Collection of Related Data (U.S. Geological Survey Open-File Report 95-398) <http://pubs.usgs.gov/of/1995/ofr-95-398/>

For additional industry standards, see:

U.S. Geological Survey, 1980, Ground Water, Chapter 2 of National Handbook of Recommended Methods for Water-Data Acquisition: Office of Water Data Coordination, 149 p.

U.S. Bureau of Reclamation, 1977, Ground Water Manual: U.S. Department of Interior, Bureau of Reclamation, United States Government Printing Office, Denver, CO., 480 p.

U.S. Geological Survey, (L. J. Mann), 1982. Operational Guidelines for Measuring Ground-water Levels—Arizona District, 10 p.

Appendix G: Non-Arizona Well Identification SystemsWell Numbering System

The local well identification, or cadastral, system for GWSI sites located in California, Colorado, Nevada, New Mexico, and Utah is based on the system of land subdivision used by the Bureau of Land Management. This system uses a surveyed base line and principal meridian from which townships and ranges are located. Townships are located north or south of the base line and ranges are located east or west of the principal meridian. Sections are designated 1 through 36 and are numbered in rows following a serpentine pattern beginning in the northeast corner of a township and ending in the southeast corner of the township. The method of locating sites within a section varies with each state and is described in detail below.

California Well Numbering System

The California well numbering system is based in the San Bernardino Baseline and Meridian. A GWSI site located in California in the NW quarter of the NE quarter of the NE quarter of Section 35, Township 15 South, Range 23 East, would be identified as 15S/23E-35Jb. The number preceding the slash (/) is the township and the letter after the township (N or S) indicates its position north or south of the San Bernardino Baseline. The number after the slash is the range and the letter following the range (E or W) indicates its position east or west of the San Bernardino Meridian. The number following hyphen (-) is the section and the two letters following the section number identify the 40-acre and 10-acre subdivisions. The 40-acre subdivisions are identified using the same serpentine pattern used to identify section numbers in a township (Figure 10). Each 40-acre subdivision is assigned a capital letter A through R, omitting I and O. The 10-acre tracts are assigned the lowercase letters a, b, c, or d in a counter-clockwise direction in the same manner as the 10-acre subdivisions in the Arizona. In some cases, a second lowercase letter is added if the 2 ½ acre location is known.

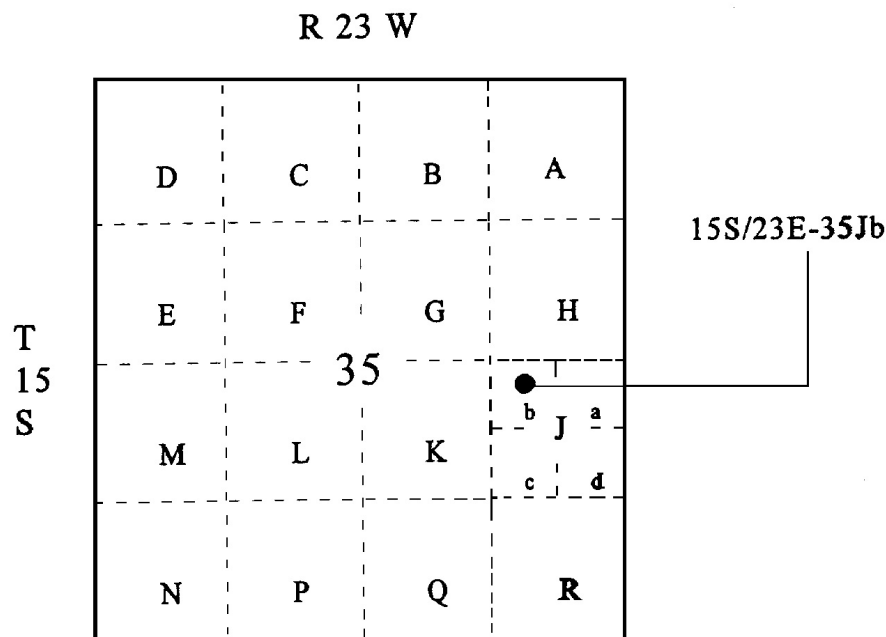
**California Well Identification System**

Figure 10: California well numbering system

Colorado Well Numbering System

The southwestern corner of Colorado, the part closest to Arizona, is part of the New Mexico Baseline and Meridian. The New Mexico Well Numbering System is used as described below.

New Mexico Well Numbering System

The New Mexico well numbering system is based on the New Mexico Principal Baseline and Meridian. The local identifications based on this well numbering system consists of four parts, each separated by spaces (Figure 11). The first three parts are the township number, the range number, and the section number, respectively. The township number is followed by the letters N or S to indicate if the township lies north or south of the New Mexico Base Line. The range number is followed by the letters E or W to indicate if the range lies east or west of the New Mexico Principal Meridian. The letters T and R, for Township and Range, are omitted from the GWSI local identification. Hence, a site located in Township 29 South, Range 22 West, Section 25 would be identified as 29S 22W 25.

The fourth part of the well identification consists of three numbers that identify the 10-acre tract within the section in which the site is located. The method of numbering the tracts within the section is different that used in Arizona and is shown in Figure 11. The section is divided into four 160-acre quarters, numbered 1, 2, 3, and 4, using a normal reading order from left to right, for the northwest, northeast, southwest and southeast quarters, respectively. Each 160-acre quarter section is subdivided in the same manner to produce the second number, which defines a 40-acre quarter-quarter section. The 40-acre tract is divided in the same manner to produce the third number, which identifies the 10-acre quarter-quarter-quarter section tract. Thus, a site in the NE quarter of the SE quarter of the NE quarter of Section 25, Township 29 South, Range 22 West, would be identified as 29S 22W 25 242. If multiple sites are located within a 10-acre tract, consecutive letters starting with the letter a are added as a suffix, with a being the oldest known site.

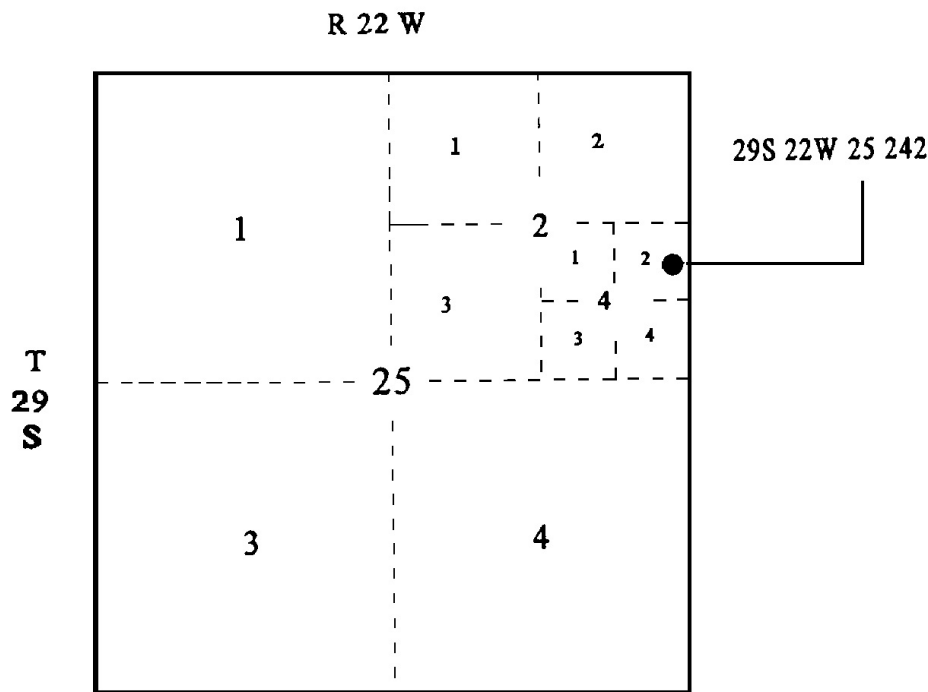
**New Mexico Well Identification System**

Figure 11: New Mexico well numbering system

Nevada Well Numbering System

GWSI local identifications in Nevada are determined using the Mount Diablo Base Line and Principal Meridian. The subdivision of sections is the same as in Arizona, except that Nevada sections are divided four times to specify the site location to within a 2 ½ acre tract. A numerical suffix to denote multiple wells within a section is used just as in Arizona. Letters denoting the township or range location relative to the base line and meridian, N or S for the township, E or W for the range, precede the township and range numbers. A prefix of three numbers, 222, is added to identify GWSI wells in Nevada. For example, a site located in the SW quarter of the NW quarter of the SE quarter of the SE quarter of Section 28, Township 13 South, Range 71 East, would be identified as 222 S13 E71 28DDBC.

Utah Well Numbering System

In Utah, GWSI site locations are based on the Salt Lake Base Line and Meridian. The method of land subdivision is the same as is used in Arizona. The base line and meridian are used to divide the state into four quadrants, A, B, C, and D, starting in the upper right corner (northeast) and moving counter-clockwise to the southeast quadrant. Sections are divided down to quarter-quarter-quarter sections in the same manner as in Arizona. For example, a site located in the NW quarter of the NW quarter of the NW quarter of Section 25, Township 43 South, Range 19 West, would be identified as C-43-19 25BBB.

The well-numbering system used in Utah is based on the Bureau of Land Management's system of land subdivision. The well numbering system is familiar to most water users in Utah, and the well number shows the location of the well by quadrant, township, range, section, and position within the section. Well number for most of the state are derived from the Salt Lake Base Line and the Salt Lake Meridian. Well numbers for wells located inside the area of the Utah Base Line and Meridian are designated in the same manner as those based on the Salt Lake Base Line and Meridian, with the addition of the "U" preceding the parentheses. The numbering system is illustrated below in Figure 12.

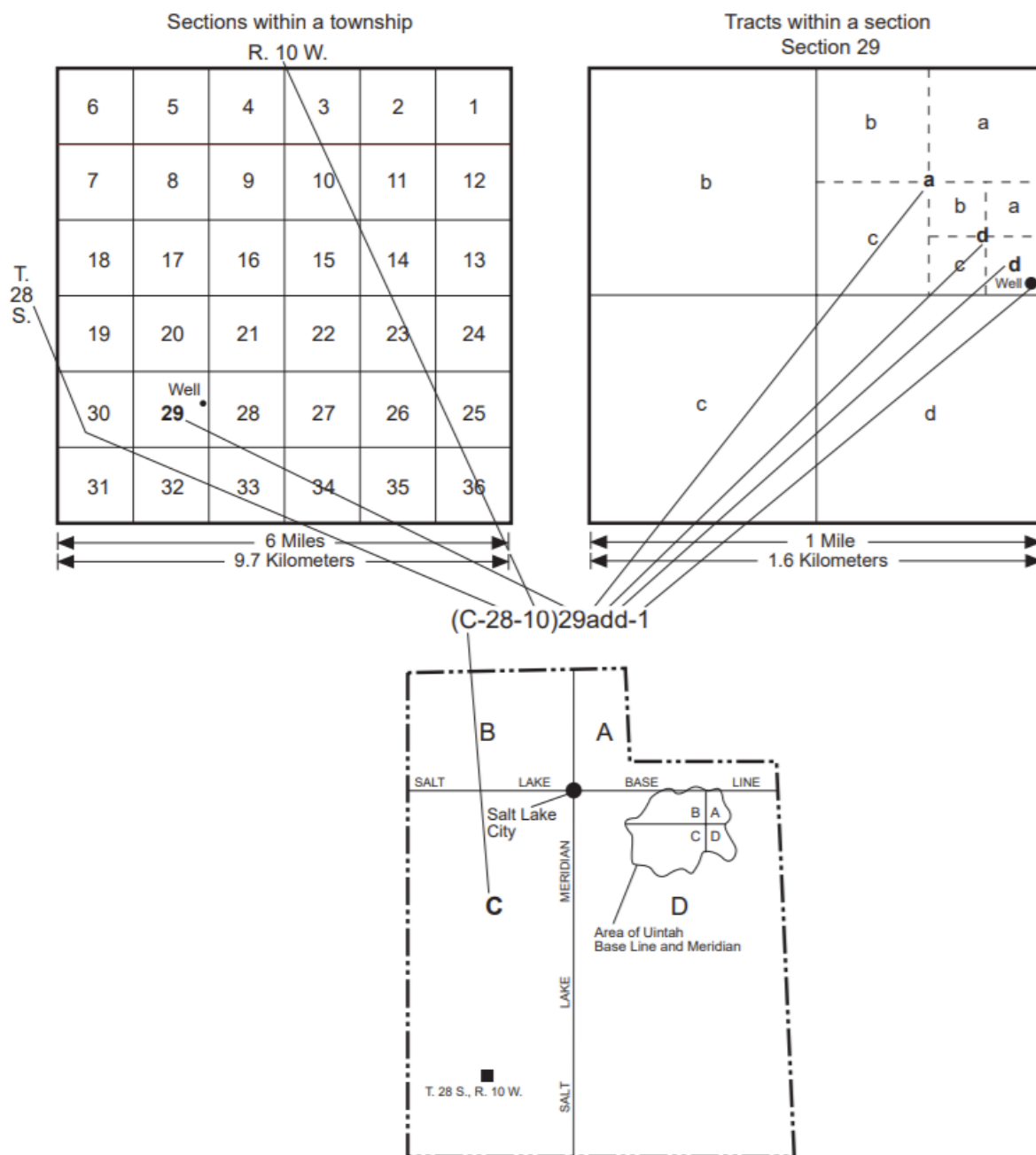


Figure 12: Utah well numbering system

Appendix H: Full GWSI Oracle Database Map

Table Name	Field Name	Field Description	Code Table
GWSI_ACCOUNT_USERS	ID	Record identification number	
GWSI_ACCOUNT_USERS	ACCOUNTID	ID number of the group the user belongs to	GWSI_ACCOUNTS
GWSI_ACCOUNT_USERS	USERID	Unique ID number for each user (OLE Object)	
GWSI_ACCOUNT_USERS	LAST_NAME	User's last name	
GWSI_ACCOUNT_USERS	FIRST_NAME	User's first name	
GWSI_ACCOUNT_USERS	PHONE	User's phone number	
GWSI_ACCOUNT_USERS	ACTIVE	Indicates if the user is an active contributor	
GWSI_ACCOUNT_USERS	USERNAME	User's username, assigned as the email they registered with	
GWSI_ACCOUNTS	ACCOUNTID	Unique ID number for each contributing agency	
GWSI_ACCOUNTS	APPLICATIONID	Application identification number (OLE Object)	
GWSI_ACCOUNTS	DESCRIPTION	Contributing agency's name	
GWSI_ACCOUNTS	ISAPPROVED	Denotes if the account has been approved to upload data	
GWSI_ACCOUNTS	CREATEDATE	Date and time that the agency's account was created	
GWSI_ASSESSOR_NAMES	SITE_WELL_ID	GWSI Site ID	
GWSI_ASSESSOR_NAMES	LOCAL_ID	Site's local ID or cadastral	
GWSI_ASSESSOR_NAMES	REG_ID	Site's registration or 55 number, if known	
GWSI_ASSESSOR_NAMES	WELL_TYPE	Indicates if the well is an index, transducer, or GWSI (non-index) well	
GWSI_ASSESSOR_NAMES	COUNTY	County that the assessor data was pulled from	
GWSI_ASSESSOR_NAMES	FULL_NAME	Well owner's full name	
GWSI_ASSESSOR_NAMES	ADDR1	Well owner's address, line 1	
GWSI_ASSESSOR_NAMES	ADDR2	Well owner's address, line 2	
GWSI_ASSESSOR_NAMES	CITY	Well owner's address, city	
GWSI_ASSESSOR_NAMES	STATE	Well owner's address, state	
GWSI_ASSESSOR_NAMES	ZIP1	Well owner's address, ZIP code	
GWSI_ASSESSOR_NAMES	ZIP2	Well owner's address, ZIP code extension	
GWSI_ASSESSOR_NAMES	YEAR	Year that the owner information was entered	
GWSI_BORE_COMPLETIONS	BORE_WLCOMP_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_BORE_COMPLETIONS	BORE_WLCOMP_ID	Borehole completion number	
GWSI_BORE_COMPLETIONS	BORE_HOLE_INTERVAL	Borehole interval number	
GWSI_BORE_COMPLETIONS	BORE_HOLE_TOP	Top of borehole interval in feet below land surface	
GWSI_BORE_COMPLETIONS	BORE_HOLE_BOTTOM	Bottom of borehole interval in feet below land surface	
GWSI_BORE_COMPLETIONS	BORE_HOLE_DIAMETER	Diameter of borehole in inches	
GWSI_BORE_COMPLETIONS	BORE_LAST_ACT_OPER	Last user to modify the record	
GWSI_BORE_COMPLETIONS	BORE_LAST_ACT_DATE	Date and time that the borehole interval was last modified	
GWSI_BORE_COMPLETIONS	SYNCH_ID	Legacy field from PenTab	
GWSI_CASING_COMPLETIONS	CASE_WLCOMP_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_CASING_COMPLETIONS	CASE_WLCOMP_ID	Casing completion number	
GWSI_CASING_COMPLETIONS	CASE_INTERVAL	Casing interval number	
GWSI_CASING_COMPLETIONS	CASE_TOP	Top of casing interval in feet below land surface	
GWSI_CASING_COMPLETIONS	CASE_BOTTOM	Bottom of casing interval in feet below land surface	
GWSI_CASING_COMPLETIONS	CASE_DIAMETER	Diameter of casing in inches	
GWSI_CASING_COMPLETIONS	CASE_LAST_ACT_OPER	Last user to modify the record	
GWSI_CASING_COMPLETIONS	CASE_LAST_ACT_DATE	Date and time that the casing interval was last modified	
GWSI_CASING_COMPLETIONS	CASE_FINISH_CODE	The material that the casing is made of	GWSI_CASING_FINISHES
GWSI_CASING_COMPLETIONS	SYNCH_ID	Legacy field from PenTab	
GWSI_CONTACTS	ID	Unique number assigned to each contact record	
GWSI_CONTACTS	CONTACT_TYPE	Indicates the contact person's relationship to the well, such as owner or neighbor	GWSI_CONTACT_TYPES
GWSI_CONTACTS	NAME	Contact's full name	
GWSI_CONTACTS	ADDRESS	Contact's mailing address, line 1	

Table Name	Field Name	Field Description	Code Table
GWSI_CONTACTS	ADDRESS2	Contact's mailing address, line 2	
GWSI_CONTACTS	CITY	Contact's mailing address city	
GWSI_CONTACTS	STATE	Contact's mailing address state	
GWSI_CONTACTS	ZIP	Contact's mailing address ZIP code	
GWSI_CONTACTS	ZIP4	Contact's mailing address ZIP code extension	
GWSI_CONTACTS	LAST_ACT_DATE	Date and time that the contact record was last modified	
GWSI_CONTACTS	LAST_ACT_OPER	Last user to modify the record	
GWSI_CONTACTS	AREA_CODE	Contact's 3-digit phone number area code	
GWSI_CONTACTS	PHONE1	Contact's primary phone number, excluding the area code	
GWSI_CONTACTS	PHONE2	Contact's alternate phone number	
GWSI_CONTACTS	EXT	Contact's phone number extension	
GWSI_CONTACTS	EMAIL	Contact's email address	
GWSI_DELETED_GWSI	DELG_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_DELETED_GWSI	DELG_ID	Record identification number	
GWSI_DELETED_GWSI	DELG_RECORD_TYPE	The type of record that was deleted	
GWSI_DELETED_GWSI	DELG_DELETE_OPERATOR	The user that deleted the record	
GWSI_DELETED_GWSI	DELG_DELETE_DATE	Date and time that the record was deleted	
GWSI_DELETED_GWSI	DELG_RECORD_DATE	Date that the record was originally created	
GWSI_DELETED_GWSI	DELG_SEQUENCE_ID	The deleted sequence number from the record	
GWSI_FLOWING_DISCHARGES	FLWD_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_FLOWING_DISCHARGES	FLWD_ID	Flow measurement number	
GWSI_FLOWING_DISCHARGES	FLWD_DISCHARGE_RATE	Measured discharge rate given in gallons per minute	
GWSI_FLOWING_DISCHARGES	FLWD_DSCHMETH_CODE_ENTRY	Method of discharge measurement	GWSI_DISCHARGE_METHODS
GWSI_FLOWING_DISCHARGES	FLWD_DATASRC_CODE_ENTRY	Source of the discharge measurement	GWSI_DATA_SOURCES
GWSI_FLOWING_DISCHARGES	FLWD_MEASURE_DATE	Date on which discharge was measured	
GWSI_FLOWING_DISCHARGES	FLWD_LAST_ACT_OPER	Last user to modify the record	
GWSI_FLOWING_DISCHARGES	FLWD_LAST_ACT_DATE	Date and time the record was last modified	
GWSI_FLOWING_DISCHARGES	FLWD_DATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_FLOWING_DISCHARGES	SYNCH_ID	Legacy field from PenTab	
GWSI_GWSI_MODIFIED	SITE_ID	GWSI Site ID	
GWSI_GWSI_MODIFIED	DATE_MODIFIED	Date on which the site was modified	
GWSI_GWSI_MODIFIED	ROW_MODIFIED	Not used - all values are "N"	
GWSI_GWSI_MODIFIED	LAST_ACT_OPER	Last user to modify the record	
GWSI_GWSI_MONITORING	MON_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_GWSI_MONITORING	MON_ID	Record identification number	
GWSI_GWSI_MONITORING	MON_START_DATE	Date that monitoring began	
GWSI_GWSI_MONITORING	MON_END_DATE	Date that monitoring ended	
GWSI_GWSI_MONITORING	MON_PROG_SUPPORTED	The program the site is monitored to support	GWSI_GWSI_MON_CODES
GWSI_GWSI_MONITORING	MON_STATUTE_REQ	If the site is monitored in support of a specific statue, the statue is recorded in this field	
GWSI_GWSI_MONITORING	MON_COMMENTS	Relative comments	
GWSI_GWSI_MONITORING	MON_CREATEDT	Date and time that the monitoring record was created	
GWSI_GWSI_MONITORING	MON_CREATEBY	User that created the monitoring record	
GWSI_GWSI_MONITORING	MON_LAST_ACT_DATE	Date that the monitoring record was last modified	
GWSI_GWSI_MONITORING	MON_LAST_ACT_OPER	Last user to modify the record	
GWSI_OWNER_SITE_NAMES	OWNS_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_OWNER_SITE_NAMES	OWNS_OTHER_ID	Alternate name for the site	
GWSI_OWNER_SITE_NAMES	OWNS_ASSIGNER	Entity that assigned the alternate name	
GWSI_OWNER_SITE_NAMES	OWNS_LAST_ACT_OPER	Last user to modify the record	
GWSI_OWNER_SITE_NAMES	OWNS_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_OWNER_SITE_NAMES	SYNCH_ID	Legacy field from PenTab	
GWSI_PERFORATION_COMPLETIONS	PERF_WLCOMP_SITE_WELL_SITE_ID	GWSI Site ID	

Groundwater Site Inventory (GWSI) Database Handbook			
Table Name	Field Name	Field Description	Code Table
GWSI_PERFORATION_COMPLETIONS	PERF_WLCOMP_ID	Perforation completion number	
GWSI_PERFORATION_COMPLETIONS	PERF_INTERVAL	Perforation interval number	
GWSI_PERFORATION_COMPLETIONS	PERF_TOP	Top of perforated interval in feet below land surface	
GWSI_PERFORATION_COMPLETIONS	PERF_BOTTOM	Bottom of perforated interval in feet below land surface	
GWSI_PERFORATION_COMPLETIONS	PERF_DIAMETER	Diameter of perforated interval in inches	
GWSI_PERFORATION_COMPLETIONS	PERF_WIDTH	Width of perforations in inches	
GWSI_PERFORATION_COMPLETIONS	PERF_LENGTH	Length of perforations in inches	
GWSI_PERFORATION_COMPLETIONS	PERF_LAST_ACT_OPER	Last user to modify the record	
GWSI_PERFORATION_COMPLETIONS	PERF_LAST_ACT_DATE	Date and time the record was last modified	
GWSI_PERFORATION_COMPLETIONS	PERF_MATERIAL_CODE	Material that ther perforated interval is made out of	GWSI_SCREEN_MATERIALS
GWSI_PERFORATION_COMPLETIONS	PERF_TYPE_CODE	Type of openings in the well casing that allow water to enter the well	GWSI_PERFORATION_TYPES
GWSI_PERFORATION_COMPLETIONS	SYNCH_ID	Legacy field from PenTab	
GWSI_PERMISSION_TRACKING_VIEW	REG_ID	Site's registration or 55 number, if known	
GWSI_PERMISSION_TRACKING_VIEW	SITE_ID	GWSI Site ID	
GWSI_PERMISSION_TRACKING_VIEW	STATE_LAND	Indicates whether the site is on state land or not	
GWSI_PERMISSION_TRACKING_VIEW	LOCAL_ID	Site's local ID or cadastral	
GWSI_PERMISSION_TRACKING_VIEW	STATUS	Indicates whether permission to measure was granted or denied	
GWSI_PUMPING_DISCHARGES	PMPD_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_PUMPING_DISCHARGES	PMPD_ID	Pumping discharge record number	
GWSI_PUMPING_DISCHARGES	PMPD_DISCHARGE_RATE	Pumping discharge rate given in gallons per minute	
GWSI_PUMPING_DISCHARGES	PMPD_STATMTH_CODE_ENTRY	Method used to measure static water level	GWSI_STATIC_METHODS
GWSI_PUMPING_DISCHARGES	PMPD_PMPDMTH_CODE_ENTRY	Method used to measure pumping discharge rate	GWSI_PUMP_DISCHARGE_METHODS
GWSI_PUMPING_DISCHARGES	PMPD_STATIC_SOURCE	Source of static water level data	GWSI_DATA_SOURCES
GWSI_PUMPING_DISCHARGES	PMPD_DATA_SOURCE	Source of pumping discharge rate data	GWSI_DATA_SOURCES
GWSI_PUMPING_DISCHARGES	PMPD_LAST_ACT_OPER	Last user to modify the record	
GWSI_PUMPING_DISCHARGES	PMPD_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_PUMPING_DISCHARGES	PMPD_MEASURE_DATE	Date that the pumping discharge measurement was collected	
GWSI_PUMPING_DISCHARGES	PMPD_PRODUCTION_WATER_LEVEL	Pumping water level given in feet below land surface	
GWSI_PUMPING_DISCHARGES	PMPD_STATIC_WATER_LEVEL	Static water level given in feet below land surface	
GWSI_PUMPING_DISCHARGES	PMPD_PUMPING_PERIOD	Duration of pumping given in hours	
GWSI_PUMPING_DISCHARGES	PMPD_SPECIFIC_CAPACITY	Specific capacity given in gallons per foot of drawdown	
GWSI_PUMPING_DISCHARGES	PMPD_WELL_DRAWDOWN	Drawdown within the well during pumping given in feet	
GWSI_PUMPING_DISCHARGES	PMPD_DATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_PUMPING_DISCHARGES	SYNCH_ID	Legacy field from PenTab	
GWSI_REMARKS	REM_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_REMARKS	REM_ID	Remark record number	
GWSI_REMARKS	REM_LAST_ACT_OPER	Last user to modify the record	
GWSI_REMARKS	REM_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_REMARKS	REM_REMARK_DATE	Date of the remark	
GWSI_REMARKS	REM_DATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_REMARKS	REM_REMARKS	Remark associated with the site	

Table Name	Field Name	Field Description	Code Table
GWSI_REMARKS	SYNCH_ID	Legacy field from PenTab	
GWSI_SITE	SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE	SITE_WELL_ALTITUDE	Altitude of the site given in feet above mean sea level	
GWSI_SITE	SITE_LOCAL_QUAD	Quadrant of the site's local ID	
GWSI_SITE	SITE_LOCAL_HYPHEN1	First hyphen of the site's local ID	
GWSI_SITE	SITE_LOCAL_TOWNSHIP	Township number of the site's local ID	
GWSI_SITE	SITE_LOCAL_TWN_HALF	Indicates a half township where applicable	
GWSI_SITE	SITE_LOCAL_RANGE	Range number of the site's local ID	
GWSI_SITE	SITE_LOCAL_RNG_HALF	Indicates a half range where applicable	
GWSI_SITE	SITE_LOCAL_SECTION	Section number of the site's local ID	
GWSI_SITE	SITE_LOCAL_QTR160	Alphabetic character corresponding to the quarter of the site's local ID	
GWSI_SITE	SITE_LOCAL_QTR40	Alphabetic character corresponding to the quarter-quarter of the site's local ID	
GWSI_SITE	SITE_LOCAL_QTR10	Alphabetic character corresponding to the quarter-quarter-quarter of the site's local ID	
GWSI_SITE	SITE_LOCAL_OVERSIZE	Indicates an oversized section	
GWSI_SITE	SITE_LOCAL_UNSURVEY	Indicates that survey lines have not been established in the area where applicable	
GWSI_SITE	SITE_LATIT_DEGREE	Degree value of the site's latitude coordinate location	
GWSI_SITE	SITE_LATIT_MIN	Minute value of the site's latitude coordinate location	
GWSI_SITE	SITE_LATIT_SEC	Second value of the site's latitude coordinate location	
GWSI_SITE	SITE_LONGIT_DEGREE	Degree value of the site's longitude coordinate location	
GWSI_SITE	SITE_LONGIT_MIN	Minute value of the site's longitude coordinate location	
GWSI_SITE	SITE_LONGIT_SEC	Second value of the site's longitude coordinate location	
GWSI_SITE	SITE_ALTMETH_CODE_ENTRY	Method by which the site's altitude was determined	GWSI_ALTITUDE_METHODS
GWSI_SITE	SITE_ADWBAS_CODE_ENTRY	ADWR groundwater basin that the site is located within	GWSI_ADWR_BASINS
GWSI_SITE	SITE_SISRC_CODE	Source of original site data	GWSI_SITE_SOURCES
GWSI_SITE	SITE_SITTYP_CODE_ENTRY	Site type	GWSI_SITE_TYPES
GWSI_SITE	SITE_USE_1	Primary site use	GWSI_SITE_USE_CODES
GWSI_SITE	SITE_TOPOSET_CODE_ENTRY	Topographic setting at the site	GWSI_TOPO_SETTINGS
GWSI_SITE	SITE_USBASN_CODE_ENTRY	USGS groundwater basin code	GWSI_USGS_BASINS
GWSI_SITE	SITE_LLACCR_CODE_ENTRY	Accuracy of the latitude and longitude data	GWSI_LON_LAT_ACCURACIES
GWSI_SITE	SITE_RELY_CODE_ENTRY	Reliability of the site data	GWSI_RELIABILITIES
GWSI_SITE	SITE_STATE_CODE_ENTRY	State in which the site is located	GWSI_STATES
GWSI_SITE	SITE_WATER_USE1	Primary water use	GWSI_WATER_USE_CODES
GWSI_SITE	SITE_ADWRS_CODE	Source of well depth data	GWSI_DATA_SOURCES
GWSI_SITE	SITE_CNTY_CODE	County in which the site Is located	GWSI_COUNTYS
GWSI_SITE	SITE_HOLE_DEPTH	Depth of the borehole in feet below land surface	
GWSI_SITE	SITE_WELL_DEPTH	Depth of cased well in feet below land surface	
GWSI_SITE	SITE_WELL_REG_ID	Site's registration or 55 number, if known	
GWSI_SITE	SITE_MERIDIAN	Meridian used to assign local ID	
GWSI_SITE	SITE_QUAD_NO	ALRIS topographic quadrangle number	GWSI_TOPO_QUAD_NAMES
GWSI_SITE	SITE_GEO_UNIT	Stratigraphic unit within which the well is finished	
GWSI_SITE	SITE_ALTIT_ACCURACY	Accuracy of the land surface altitude	
GWSI_SITE	SITE_MAP_SCALE	Scale of the topographic map on which the site is located	
GWSI_SITE	SITE_CREATE_DATE	Date that the site record was created	
GWSI_SITE	SITE_UPDATE_DATE	Date and time that any record with this site ID was last updated	
GWSI_SITE	SITE_LATITUDE_DECIMAL	Latitude in decimal degrees	
GWSI_SITE	SITE_LONGIT_DECIMAL	Longitude in decimal degrees	
GWSI_SITE	SITE_LAST_ACT_DATE	Date and time that the GWSI_SITE record was last updated	
GWSI_SITE	SITE_LAST_ACT_OPER	Last user to modify the GWSI_SITE record	

Table Name	Field Name	Field Description	Code Table
GWSI_SITE	SITE_AMA_CODE_ENTRY	ADWR groundwater basin or Active Management Area code	GWSI_AMA_CODES
GWSI_SITE	SITE_TQNAM_QUAD_NAME	Name of the topographic map on which the site is located	GWSI_TOPO_QUAD_NAMES
GWSI_SITE	SITE_UPDATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_SITE	SITE_CDATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_SITE	SITE_WATER_USE_2	Secondary water use	GWSI_WATER_USE_CODES
GWSI_SITE	SITE_WATER_USE_3	Tertiary water use	GWSI_WATER_USE_CODES
GWSI_SITE	SITE_USE_2	Secondary site use	GWSI_SITE_USE_CODES
GWSI_SITE	SITE_USE_3	Tertiary site use	GWSI_SITE_USE_CODES
GWSI_SITE_ALTITUDE_HISTORY	ID	Historic altitude record number	
GWSI_SITE_ALTITUDE_HISTORY	SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_ALTITUDE_HISTORY	SITE_WELL_ALTITUDE	Land surface elevation given in feet above mean sea level	
GWSI_SITE_ALTITUDE_HISTORY	SITE_ALTMETH_CODE	Method used to determine land surface altitude	GWSI_ALTITUDE_METHODS
GWSI_SITE_ALTITUDE_HISTORY	SITE_ACCURACY	Accuracy of land surface altitude value	
GWSI_SITE_ALTITUDE_HISTORY	SITE_DATUM_CODE	Vertical datum used to determine site altitude	GWSI_DATUM_CODES
GWSI_SITE_ALTITUDE_HISTORY	SITE_SOURCE_CODE	Source of site altitude data	GWSI_DATA_SOURCES
GWSI_SITE_ALTITUDE_HISTORY	SITE_ALT_MEASURE_DT	Date on which altitude was determined	
GWSI_SITE_ALTITUDE_HISTORY	CREATEBY	User that created the record	
GWSI_SITE_ALTITUDE_HISTORY	CREATEDT	Date and time that the record was created	
GWSI_SITE_CADAstral_HISTORY	ID	Historic cadastral record number	
GWSI_SITE_CADAstral_HISTORY	SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_CADAstral_HISTORY	SITE_LOCAL_ID	Site's local ID or cadastral	
GWSI_SITE_CADAstral_HISTORY	SITE_CADAstral_SOURCE_CODE	Source of cadastral	GWSI_SITE_SOURCES
GWSI_SITE_CADAstral_HISTORY	SITE_LOCAL_ID_MEASURE_DATE	Date on which the cadastral was determined	
GWSI_SITE_CADAstral_HISTORY	CREATEBY	User that created the record	
GWSI_SITE_CADAstral_HISTORY	CREATEDT	Date and time that the record was created	
GWSI_SITE_FIX_LAST_ACT_OPER	SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_FIX_LAST_ACT_OPER	SITE_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_SITE_FIX_LAST_ACT_OPER	SITE_LAST_ACT_OPER	Last user to modify the record	
GWSI_SITE_IMAGES	WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_IMAGES	IMAGE_ID	Image record number	
GWSI_SITE_IMAGES	IMAGE	Photograph of the site (OLE Object)	
GWSI_SITE_IMAGES	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_SITE_IMAGES	LAST_ACT_OPER	Last user to modify the record	
GWSI_SITE_IMAGES	SYNCH_ID	Legacy field from PenTab	
GWSI_SITE_IMAGES	IMAGE_DATE	Date that the image was taken	
GWSI_SITE_IMAGES	DIRECTIONS	Direction the image was taken towards	
GWSI_SITE_IMAGES	COMMENTS	Relevant comments about the image	
GWSI_SITE_INVENTORIES	SITI_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_INVENTORIES	SITI_ID	Site inventory record number	
GWSI_SITE_INVENTORIES	SITI_INVENTORY_DATE	Date of site inventory	
GWSI_SITE_INVENTORIES	SITI_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_SITE_INVENTORIES	SITI_LAST_ACT_OPER	Last user to modify the record	
GWSI_SITE_INVENTORIES	SITI_INVENTORIED_BY	Last name and first initials of the person who inventoried the site	

Table Name	Field Name	Field Description	Code Table
GWSI_SITE_INVENTORIES	SITI_VALID_DATE	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_SITE_INVENTORIES	SYNCH_ID	Legacy field from PenTab	
GWSI_SITE_LOCATION_HISTORY	ID	Historic location record number	
GWSI_SITE_LOCATION_HISTORY	SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SITE_LOCATION_HISTORY	SITE_LATIT_DEGREE	Latitude degree value	
GWSI_SITE_LOCATION_HISTORY	SITE_LATIT_MIN	Latitude minute value	
GWSI_SITE_LOCATION_HISTORY	SITE_LATIT_SEC	Latitude second value	
GWSI_SITE_LOCATION_HISTORY	SITE_LONGIT_DEGREE	Longitude degree value	
GWSI_SITE_LOCATION_HISTORY	SITE_LONGIT_MIN	Longitude minute value	
GWSI_SITE_LOCATION_HISTORY	SITE_LONGIT_SEC	Longitude second value	
GWSI_SITE_LOCATION_HISTORY	SITE_LATLONG_MEASURE_DATE	Date on which the latitude and longitude measurement was made	
GWSI_SITE_LOCATION_HISTORY	SITE_LATLONG_METH_CODE	Method used to determine latitude and longitude	GWSI_LATLONG_METHOD_CODES
GWSI_SITE_LOCATION_HISTORY	SITE_LAT_LONG_DATUM_CODE	Datum used to determine latitude and longitude	GWSI_DATUM_CODES
GWSI_SITE_LOCATION_HISTORY	SITE_LLACCR_CODE_ENTRY	Accuracy of latitude and longitude measurement	GWSI_LON_LAT_ACCURACIES
GWSI_SITE_LOCATION_HISTORY	SITE_LATLONG_SOURCE_CODE	Source of latitude and longitude measurement	GWSI_DATA_SOURCES
GWSI_SITE_LOCATION_HISTORY	CREATEBY	User that created the record	
GWSI_SITE_LOCATION_HISTORY	CREATEDT	Date and time that the record was created	
GWSI_SITES	SITE_WELL_SITE_ID	GWSI Site ID. Used to link all information about a site between tables.	
GWSI_SITES	SITE_WELL_ALTITUDE	Altitude of land surface at the site in feet above datum	
GWSI_SITES	SITE_LOCAL_ID	Site's local ID or cadastral. Typically assigned based on BLM's system, but may differ depending on the land net used in the area.	
GWSI_SITES	SITE_LATIT_DEGREE	Degree value of the site's latitude coordinate location	
GWSI_SITES	SITE_LATIT_MIN	Minute value of the site's latitude coordinate location	
GWSI_SITES	SITE_LATIT_SEC	Second value of the site's latitude coordinate location	
GWSI_SITES	SITE_LONGIT_DEGREE	Degree value of the site's longitude coordinate location	
GWSI_SITES	SITE_LONGIT_MIN	Minute value of the site's longitude coordinate location	
GWSI_SITES	SITE_LONGIT_SEC	Second value of the site's longitude coordinate location	
GWSI_SITES	SITE_ALTMETH_CODE_ENTRY	Method by which the site's altitude was determined	GWSI_ALTITUDE_METHODS
GWSI_SITES	SITE_ADWBAS_CODE_ENTRY	ADWR groundwater basin that the site is located within	GWSI_ADWR_BASINS
GWSI_SITES	SITE_SISRC_CODE	Source of original site data	GWSI_SITE_SOURCES
GWSI_SITES	SITE_SITTYP_CODE_ENTRY	Site type	GWSI_SITE_TYPES
GWSI_SITES	SITE_USE_1	Primary site use	GWSI_SITE_USE_CODES
GWSI_SITES	SITE_TOPOSET_CODE_ENTRY	Topographic setting at the site	GWSI_TOPO_SETTINGS
GWSI_SITES	SITE_USBASN_CODE_ENTRY	USGS groundwater basin code	GWSI_USGS_BASINS
GWSI_SITES	SITE_LLACCR_CODE_ENTRY	Accuracy of the latitude and longitude data	GWSI_LON_LAT_ACCURACIES
GWSI_SITES	SITE_RELY_CODE_ENTRY	Reliability of the site data	GWSI_RELIABILITIES
GWSI_SITES	SITE_STATE_CODE_ENTRY	State in which the site is located	GWSI_STATES
GWSI_SITES	SITE_WATER_USE1	Primary water use	GWSI_WATER_USE_CODES
GWSI_SITES	SITE_ADWRS_CODE	Source of well depth data	GWSI_DATA_SOURCES

Table Name	Field Name	Field Description	Code Table
GWSI_SITES	SITE_CNTY_CODE	County in which the site Is located	GWSI_COUNTYS
GWSI_SITES	SITE_HOLE_DEPTH	Depth of the borehole in feet below land surface	
GWSI_SITES	SITE_WELL_DEPTH	Depth of cased well in feet below land surface	
GWSI_SITES	SITE_WELL_REG_ID	Site's registration or 55 number, if known	
GWSI_SITES	SITE_MERIDIAN	Meridian used to assign local ID	
GWSI_SITES	SITE_QUAD_NO	ALRIS topographic quadrangle number	GWSI_TOPO_QUAD_NAMES
GWSI_SITES	SITE_GEO_UNIT	Stratigraphic unit within which the well is finished	
GWSI_SITES	SITE_ALTIT_ACCURACY	Accuracy of the land surface altitude	
GWSI_SITES	SITE_MAP_SCALE	Scale of the topographic map on which the site is located	
GWSI_SITES	SITE_CREATE_DATE	Date that the site record was created	
GWSI_SITES	SITE_UPDATE_DATE	Date and time that any record with this site ID was last updated	
GWSI_SITES	SITE_LATITUDE_DECIMAL	Latitude in decimal degrees	
GWSI_SITES	SITE_LONGIT_DECIMAL	Longitude in decimal degrees	
GWSI_SITES	SITE_LAST_ACT_DATE	Date and time that the GWSI_SITE record was last updated	
GWSI_SITES	SITE_LAST_ACT_OPER	Last user to modify the GWSI_SITE record	
GWSI_SITES	SITE_AMA_CODE_ENTRY	ADWR groundwater basin or Active Management Area code	GWSI_AMA_CODES
GWSI_SITES	SITE_TQNAM_QUAD_NAME	Name of the topographic map on which the site is located	GWSI_TOPO_QUAD_NAMES
GWSI_SITES	SITE_UDATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_SITES	SITE_CDATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_SITES	SITE_WATER_USE_2	Secondary water use	GWSI_WATER_USE_CODES
GWSI_SITES	SITE_WATER_USE_3	Tertiary water use	GWSI_WATER_USE_CODES
GWSI_SITES	SITE_USE_2	Secondary site use	GWSI_SITE_USE_CODES
GWSI_SITES	SITE_USE_3	Tertiary site use	GWSI_SITE_USE_CODES
GWSI_SITES	SITE_LATLONG_METH_CODE	Method used to determine altitude and longitude	GWSI_LATLONG_METHOD_CODES
GWSI_SITES	SITE_WSHD_CODE	ADWR watershed that the site is located within	
GWSI_SITES	SYNCH_ID	Legacy field from PenTab	
GWSI_SITES	SITE_IDX_BOOK	Primary index book that the site is part of, if applicable	GWSI_IDX_BK_CODES
GWSI_SITES	SITE_LAST_VISIT_DATE	Date that the site was last visited	
GWSI_SITES	SITE_COMPLETED_FLAG	Notes if the tasks planned for a site visit are complete. Field has been inconsistently used.	
GWSI_SITES	SITE_QUASI_IDX_WELL	Denotes if the site is a quasi-index well	
GWSI_SITES	SITE_LATLONG_DATUM_CODE	Datum used to determine latitude and longitude	GWSI_DATUM_CODES
GWSI_SITES	SITE_LATLONG_SOURCE_CODE	Source of latitude and longitude measurement	GWSI_DATA_SOURCES
GWSI_SITES	SITE_LATLONG_MEASURE_DATE	Date on which the latitude and longitude measurement was made	
GWSI_SITES	SITE_ALTITUDE_DATUM_CODE	Vertical datum used to determine site altitude	GWSI_DATUM_CODES
GWSI_SITES	SITE_ALT_SOURCE_CODE	Source of site altitude data	GWSI_DATA_SOURCES
GWSI_SITES	SITE_ALT_MEASURE_DATE	Date on which altitude was determined	
GWSI_SITES	SITE_LOCAL_ID_SOURCE_CODE	Source of cadastral	GWSI_SITE_SOURCES
GWSI_SITES	SITE_LOCAL_ID_MEASURE_DATE	Date on which the cadastral was determined	
GWSI_SITES	SITE_IDX_BOOK_2	Secondary index book that the site is part of, if applicable	GWSI_IDX_BK_CODES
GWSI_SPRING_NAMES	SPNA_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_SPRING_NAMES	SPNA_ID	Spring name record number	

Table Name	Field Name	Field Description	Code Table
GWSI_SPRING_NAMES	SPNA_FLOW_VARIABILITY	Variability of a spring, given in percent of average discharge, as defined in the USGS GWSI Handbook	
GWSI_SPRING_NAMES	SPNA_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_SPRING_NAMES	SPNA_LAST_ACT_OPER	Last user to modify the record	
GWSI_SPRING_NAMES	SPNA_SPRING_NAME	Name of the spring	
GWSI_SPRING_NAMES	SPNA_SPTYPE_CODE_ENTRY	Spring type	GWSI_SPRING_TYPES
GWSI_SPRING_NAMES	SPNA_SPIMPRV_CODE_ENTRY	The type of improvement made to the spring	GWSI_SPRING_IMPROVEMENTS
GWSI_SPRING_NAMES	SPNA_SPPERM_CODE_ENTRY	How often the spring flows	GWSI_SPRING_PERMANENCES
GWSI_SPRING_NAMES	SYNCH_ID	Legacy field from PenTab	
GWSI_STATE_LAND_NAMES	SITE_WELL_ID	GWSI Site ID	
GWSI_STATE_LAND_NAMES	FID_1	No description available	
GWSI_STATE_LAND_NAMES	LOCAL_ID	Site's local ID or cadastral	
GWSI_STATE_LAND_NAMES	SITE_USE_1	Primary site use	
GWSI_STATE_LAND_NAMES	SITE_HOLE	Total borehole depth	
GWSI_STATE_LAND_NAMES	SITE_WEL1	Total cased depth	
GWSI_STATE_LAND_NAMES	SITE_WEL2	No description available	
GWSI_STATE_LAND_NAMES	SITE_ADWRS	Source of well depth data	GWSI_DATA_SOURCES
GWSI_STATE_LAND_NAMES	SITE_AMA_C	ADWR groundwater basin or Active Management Area code	GWSI_AMA_CODES
GWSI_STATE_LAND_NAMES	SITE_ADWBA	ADWR groundwater basin that the site is located within	GWSI_ADWR_BASINS
GWSI_STATE_LAND_NAMES	SITE_IDX_B	Primary index book that the site is part of, if applicable	GWSI_IDX_BK_CODES
GWSI_STATE_LAND_NAMES	SITE_LAST	No description available	
GWSI_STATE_LAND_NAMES	LATITUDE	Site's latitude in decimal degrees	
GWSI_STATE_LAND_NAMES	LONGITUDE	Site's longitude in decimal degrees	
GWSI_STATE_LAND_NAMES	FID_2	No description available	
GWSI_STATE_LAND_NAMES	FULL_NAME	Contact's full name	
GWSI_STATE_LAND_NAMES	ADDR1	Contact's address, line 1	
GWSI_STATE_LAND_NAMES	ADDR2	Contact's address, line 2	
GWSI_STATE_LAND_NAMES	CITY	Contact's address, city	
GWSI_STATE_LAND_NAMES	STATE	Contact's address, state	
GWSI_STATE_LAND_NAMES	ZIP1	Contact's address, ZIP code	
GWSI_STATE_LAND_NAMES	ZIP2	Contact's address, ZIP code extension	
GWSI_STATE_LAND_NAMES	AREACODE	Contact's phone number, area code	
GWSI_STATE_LAND_NAMES	PHONE1	Contact's phone number, middle 3 digits	
GWSI_STATE_LAND_NAMES	PHONE2	Contact's phone number, last 4 digits	
GWSI_STATE_LAND_NAMES	DISTANCE_FT	Distance from the State Land boundary given in feet	
GWSI_TEL_TRANSDUCER_LEVELS	WELL_SITE_ID	GWSI Site ID	
GWSI_TEL_TRANSDUCER_LEVELS	ID	Record identification number	
GWSI_TEL_TRANSDUCER_LEVELS	MEASUREMENT_DATE	Date and time that the measurement was collected	
GWSI_TEL_TRANSDUCER_LEVELS	DEPTH_TO_WATER	Measured depth to water given in feet below land surface	
GWSI_TEL_TRANSDUCER_LEVELS	WATER_LEVEL_ELEVATION	Elevation of the water surface given in feet above mean sea level	
GWSI_TEL_TRANSDUCER_LEVELS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TEL_TRANSDUCER_LEVELS	LAST_ACT_OPER	Last user to modify the record	
GWSI_TEL_TRANSDUCER_LEVELS	SOURCE_CODE	Source of the depth to water measurement	GWSI_DATA_SOURCES
GWSI_TEL_TRANSDUCER_LEVELS	METHOD_CODE	Method used to measure depth to water	GWSI_MM_CODES
GWSI_TEL_TRANSDUCER_LEVELS	REMARK_CODE	Describes the status of the site at the time of the water level measurement	GWSI_MR_CODES
GWSI_TEL_TRANSDUCER_LEVELS	TEMPERATURE	Temperature at time of measurement, given in degrees Celsius. Transducers record water temperature, while bubblers record atmospheric temperature. Shaft encoders will always read 0.	

Table Name	Field Name	Field Description	Code Table
GWSI_TEL_TRANSDUCER_LEVELS	PARAMETER_ID	Record number corresponding to the related entry in the GWSI_TEL_TRANSDUCER_PARAMETERS table	GWSI_TEL_TRANSDUCER_PARAMETERS
GWSI_TEL_TRANSDUCER_LEVELS	BATTERY_VOLTAGE	Transducer's battery voltage at time of measurement	
GWSI_TEL_TRANSDUCER_LEVELS	STATUS	Indicates if a record is displayed in the site's hydrograph, where NULL is displayed and B is not	
GWSI_TEL_TRANSDUCER_LEVELS	PSI	Water pressure at time of measurement, given in pounds per square inch. Shaft encoders will always record 0.	
GWSI_TEL_TRANSDUCER_PARAMETERS	WELL_SITE_ID	GWSI Site ID	
GWSI_TEL_TRANSDUCER_PARAMETERS	ID	Record identification number	
GWSI_TEL_TRANSDUCER_PARAMETERS	EXTRACT_DATE	Date on which the data was extracted from the transducer	
GWSI_TEL_TRANSDUCER_PARAMETERS	LAST_ACT_OPER	Last user to modify the record	
GWSI_TEL_TRANSDUCER_PARAMETERS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TEL_TRANSDUCER_PARAMETERS	HEADER	Header from downloaded data files. The format varies depending on the equipment, but is most commonly in the format *file name*MP height*user*.	
GWSI_TRACKING_ACTIONS	ID	Record identification number	
GWSI_TRACKING_ACTIONS	TRACKING_CODE	Type of contact made	GWSI_TRACKING_CODES
GWSI_TRACKING_ACTIONS	TRACKING_DATE	Date that the record was originally created	
GWSI_TRACKING_ACTIONS	COMMENTS	Any relevant comments	
GWSI_TRACKING_ACTIONS	STATUS	Indicates if permission to measure was granted or denied	
GWSI_TRACKING_ACTIONS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TRACKING_ACTIONS	LAST_ACT_OPER	Last user to modify the record	
GWSI_TRACKING_ACTIONS	WC_ID	Record identification number used to relate to GWSI_WELL_CONTRACTS table	
GWSI_TRACKING_ACTIONS	CONTACT_REQUIRED	Indicates if contact is required prior to measurement	
GWSI_TRANSDUCER_LEVELS	WELL_SITE_ID	GWSI Site ID	
GWSI_TRANSDUCER_LEVELS	ID	Record identification number	
GWSI_TRANSDUCER_LEVELS	MEASUREMENT_DATE	Date and time that the measurement was collected	
GWSI_TRANSDUCER_LEVELS	DEPTH_TO_WATER	Depth to water given in feet below land surface	
GWSI_TRANSDUCER_LEVELS	WATER_LEVEL_ELEVATION	Elevation of the water surface given in feet above mean sea level	
GWSI_TRANSDUCER_LEVELS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TRANSDUCER_LEVELS	LAST_ACT_OPER	Last user to modify the record	
GWSI_TRANSDUCER_LEVELS	SOURCE_CODE	Source of the depth to water measurement	GWSI_DATA_SOURCES
GWSI_TRANSDUCER_LEVELS	METHOD_CODE	Method used to measure depth to water	GWSI_MM_CODES
GWSI_TRANSDUCER_LEVELS	REMARK_CODE	Measurement remark code	GWSI_MR_CODES
GWSI_TRANSDUCER_LEVELS	TEMPERATURE	Temperature at time of measurement, given in degrees Celsius. Transducers record water temperature, while bubblers record atmospheric temperature. Shaft encoders will always read 0.	
GWSI_TRANSDUCER_LEVELS	BATTERY_VOLTAGE	Transducer's battery voltage at time of measurement	
GWSI_TRANSDUCER_LEVELS	PARAMETER_ID	Record number corresponding to the related entry in the GWSI_TRANSDUCER_PARAMETERS table	GWSI_TRANSDUCER_PARAMETERS
GWSI_TRANSDUCER_LEVELS	COMMENTS	User's comments related to the measurement	
GWSI_TRANSDUCER_LEVELS	PSI	Water pressure at time of measurement, given in pounds per square inch. Shaft encoders will always record 0.	

Table Name	Field Name	Field Description	Code Table
GWSI_TRANSDUCER_LEVELS_VIEW	WELL_SITE_ID	GWSI Site ID	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_DATE	Date that the measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_YR	Year that the measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_MON	Month that measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_DAY	Day that the measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_HOUR	Hour that the measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	MEASUREMENT_MINUTE	Minute that the measurement was collected	
GWSI_TRANSDUCER_LEVELS_VIEW	DEPTH_TO_WATER	Depth to water given in feet below land surface	
GWSI_TRANSDUCER_LEVELS_VIEW	WATER_LEVEL_ELEVATION	Water surface elevation given in feet above mean sea level	
GWSI_TRANSDUCER_LEVELS_VIEW	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TRANSDUCER_LEVELS_VIEW	LAST_ACT_OPER	Last user to modify the record	
GWSI_TRANSDUCER_LEVELS_VIEW	SOURCE_CODE	Source of the depth to water measurement	GWSI_DATA_SOURCES
GWSI_TRANSDUCER_LEVELS_VIEW	METHOD_CODE	Method used to measure depth to water	GWSI_MM_CODES
GWSI_TRANSDUCER_LEVELS_VIEW	REMARK_CODE	Measurement remark code	GWSI_MR_CODES
GWSI_TRANSDUCER_LEVELS_VIEW	TEMPERATURE	Temperature at time of measurement, given in degrees Celsius. Transducers record water temperature, while bubblers record atmospheric temperature. Shaft encoders will always read 0.	
GWSI_TRANSDUCER_LEVELS_VIEW	BATTERY_VOLTAGE	Transducer's battery voltage at time of measurement	
GWSI_TRANSDUCER_PARAMETERS	WELL_SITE_ID	GWSI Site ID	
GWSI_TRANSDUCER_PARAMETERS	ID	Record identification number	
GWSI_TRANSDUCER_PARAMETERS	EXTRACT_DATE	Date on which the data was extracted from the transducer	
GWSI_TRANSDUCER_PARAMETERS	LAST_ACT_OPER	Last user to modify the record	
GWSI_TRANSDUCER_PARAMETERS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_TRANSDUCER_PARAMETERS	HEADER	Header from downloaded data files. The format varies depending on the equipment but is most commonly in the format *file name*MP height*user*.	
GWSI_TRS	TRS_WELL_SITE_ID	GWSI Site ID	
GWSI_TRS	TRS_QUAD	Quadrant of the site's local ID	
GWSI_TRS	TRS_HYPHEN1	First hyphen of the site's local ID	
GWSI_TRS	TRS_TOWNSHIP	Township number of the site's local ID	
GWSI_TRS	TRS_TWN_HALF	Indicates a half township where applicable	
GWSI_TRS	TRS_RANGE	Range number of the site's local ID	
GWSI_TRS	TRS_RNG_HALF	Indicates a half range where applicable	
GWSI_TRS	TRS_SECTION	Section number of the site's local ID	
GWSI_TRS	TRS_QTR160	Alphabetic character corresponding to the quarter of the site's local ID	
GWSI_TRS	TRS_QTR40	Alphabetic character corresponding to the quarter-quarter of the site's local ID	
GWSI_TRS	TRS_QTR10	Alphabetic character corresponding to the quarter-quarter-quarter of the site's local ID	
GWSI_TRS	TRS_OVERSIZE	Indicates an oversized section where applicable	
GWSI_TRS	TRS_UNSURVEY	Indicates that survey lines have not been established in the area where applicable	
GWSI_WELL_COMPLETIONS	WLCO_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WELL_COMPLETIONS	WLCO_ID	Record identification number	
GWSI_WELL_COMPLETIONS	WLCO_WLCASE_CODE_ENTRY	Casing material	GWSI_CASING_FINISHES

Table Name	Field Name	Field Description	Code Table
GWSI_WELL_COMPLETIONS	WLCO_DRILMTH_CODE_ENTRY	Method used to drill the well	GWSI_DRILL_METHODS
GWSI_WELL_COMPLETIONS	WLCO_ADWRS_CODE	Source of construction data	
GWSI_WELL_COMPLETIONS	WLCO_COMPLETION_DATE	Well completion date	
GWSI_WELL_COMPLETIONS	WLCO_DRILLER_NAME	Name of driller that constructed the well	
GWSI_WELL_COMPLETIONS	WLCO_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WELL_COMPLETIONS	WLCO_LAST_ACT_OPER	Last user to modify the record	
GWSI_WELL_COMPLETIONS	WLCO_VALID_DATE	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WELL_COMPLETIONS	SYNCH_ID	Legacy field from PenTab	
GWSI_WELL_CONTRACTS	ID	Record identification number	
GWSI_WELL_CONTRACTS	CONTRACT_CODE	Two-letter site code	
GWSI_WELL_CONTRACTS	TERM	Length of contract	
GWSI_WELL_CONTRACTS	START_DATE	Date that the contract takes effect	
GWSI_WELL_CONTRACTS	EXPIRATION_DATE	Date the contract expires	
GWSI_WELL_CONTRACTS	KEY	Key number or name used to access the site	
GWSI_WELL_CONTRACTS	COMBINATION	Lock combination used to access site	
GWSI_WELL_CONTRACTS	COMMENTS	Any relevant comments	
GWSI_WELL_CONTRACTS	CONTACT_REQUIRED	Indicates if contact is required prior to measurement	
GWSI_WELL_CONTRACTS	LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WELL_CONTRACTS	LAST_ACT_OPER	Last user to modify the record	
GWSI_WELL_CONTRACTS	CONTRACT_NUMBER	Contract's identification number	
GWSI_WELL_CONTRACTS	WC_ID	Record identification number used to relate to GWSI_TRACKING_ACTIONS table	
GWSI_WELL_LIFTS	WLLI_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WELL_LIFTS	WLLI_ID	Record identification number	
GWSI_WELL_LIFTS	WLLI_TYPE_CODE	Type of lift used to extract water at the site	GWSI_LIFT_TYPES
GWSI_WELL_LIFTS	WLLI_METHOD_CODE	Lift method code	GWSI_LIFT_MEASURE_METHODS
GWSI_WELL_LIFTS	WLLI_POWER_COMPANY	Company that provides power to the site	GWSI_POWER_COMPANIES
GWSI_WELL_LIFTS	WLLI_POWER_TYPE	Type of power used to lift water at the site	GWSI_POWER_TYPES
GWSI_WELL_LIFTS	WLLI_SOURCE_CODE	Source of lift information	GWSI_DATA_SOURCES
GWSI_WELL_LIFTS	WLLI_ENTRY_DATE	Date that lift record was entered	
GWSI_WELL_LIFTS	WLLI_HORSEPOWER	Lift's horsepower	
GWSI_WELL_LIFTS	WLLI_METER_NUM	Meter number	
GWSI_WELL_LIFTS	WLLI_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WELL_LIFTS	WLLI_LAST_ACT_OPER	Last user to modify the record	
GWSI_WELL_LIFTS	WLLI_DIVIDER	Lift power divider	
GWSI_WELL_LIFTS	WLLI_ACCOUNT_NUM	Power company account number	
GWSI_WELL_LIFTS	WLLI_VALID_DATE	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WELL_LIFTS	SYNCH_ID	Legacy field from PenTab	
GWSI_WELL_LOGS	WLLO_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WELL_LOGS	WLLO_LOGTYP_CODE_ENTRY	Type of log available for the site	GWSI_LOG_TYPES
GWSI_WELL_LOGS	WLLO_LOG_START	Top of the log given in feet below land surface	
GWSI_WELL_LOGS	WLLO_LOG_END	Bottom of log given in feet below land surface	
GWSI_WELL_LOGS	WLLO_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WELL_LOGS	WLLO_LAST_ACT_OPER	Last user to modify the record	
GWSI_WELL_LOGS	WLLO_ADWRS_CODE	Source of log data	GWSI_ADWR_SOURCES
GWSI_WELL_LOGS	SYNCH_ID	Legacy field from PenTab	
GWSI_WELL_OWNERS	WLOW_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WELL_OWNERS	WLOW_ID	Record identification number	
GWSI_WELL_OWNERS	WLOW_ENTRY_DATE	Date that the owner data was entered	

Table Name	Field Name	Field Description	Code Table
GWSI_WELL_OWNERS	WLOW_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WELL_OWNERS	WLOW_LAST_ACT_OPER	Last user to modify the record	
GWSI_WELL_OWNERS	WLOW_LAST_NAME	Well owner's last name	
GWSI_WELL_OWNERS	WLOW_FIRST_NAME	Well owner's first name	
GWSI_WELL_OWNERS	WLOW_MIDDLE_INITIAL	Well owner's middle initial	
GWSI_WELL_OWNERS	WLOW_VALID_DATE	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WELL_OWNERS	SYNCH_ID	Legacy field from PenTab	
GWSI_WELL_PERMISSION_VIEW	STATUS	Notes if permission to measure has been granted or denied	
GWSI_WELL_PERMISSION_VIEW	REG_ID	Site's registration or 55 number, if known	
GWSI_WELL_PERMISSION_VIEW	SITE_ID	GWSI Site ID	
GWSI_WELL_PERMISSION_VIEW	STATE_LAND	Denotes if the site is on state land	
GWSI_WELL_PERMISSION_VIEW	LOCAL_ID	Site's local ID or cadastral	
GWSI_WELL_PERMISSION_VIEW	GWSI_AMA	ADWR groundwater basin or Active Management Area code	GWSI_AMA_CODES
GWSI_WELL_PERMISSION_VIEW	INDEX_BOOK	Index book that the site is part of, if applicable	GWSI_IDX_BK_CODES
GWSI_WELL_PERMISSION_VIEW	WELLS55_AMA	The AMA that the site falls within according to Wells55	WELLS_CD_AMAINA (Wells 55 table)
GWSI_WELL_PERMISSION_VIEW	WELLS55_SBAS	The ADWR basin that the site falls within according to Wells55	WELLS_CD_BASIN (Wells55 table)
GWSI_WM_POINTS	WELM_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WM_POINTS	WELM_ID	Record identification number	
GWSI_WM_POINTS	WELM_DATE_MEASURED	Date on which the measurement point data was collected	
GWSI_WM_POINTS	WELM_MEASURE_POINT_HEIGHT	Height of the measurement point given in feet above land surface	
GWSI_WM_POINTS	WELM_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WM_POINTS	WELM_LAST_ACT_OPER	Last user to modify the record	
GWSI_WM_POINTS	WELM_MP_DESCRIPTION	Description of the measurement point using standardized abbreviations	
GWSI_WM_POINTS	WELM_DATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WM_POINTS	SYNCH_ID	Legacy field from PenTab	
GWSI_WM_POINTS	CREATEBY	User that created the record	
GWSI_WM_POINTS	CREATEDT	Date and time that the record was created	
GWSI_WM_POINTS	WELM_SOURCE_CODE	Source of the measuring point data	GWSI_DATA_SOURCES
GWSI_WQ_REPORTS	WATQ_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WQ_REPORTS	WATQ_ID	Record identification number	
GWSI_WQ_REPORTS	WATQ_DATE_MEASURED	Date on which water quality was measured	
GWSI_WQ_REPORTS	WATQ_SPECIFIC_CONDUCTANCE	Specific conductance given in microsiemens per centimeter at 25°C	
GWSI_WQ_REPORTS	WATQ_FLUORIDE	Fluoride concentration given in milligrams per liter	
GWSI_WQ_REPORTS	WATQ_TEMPERATURE_CELCIUS	Water temperature given in degrees Celsius	
GWSI_WQ_REPORTS	WATQ_PH	Water acidity given in pH units	
GWSI_WQ_REPORTS	WATQ_ALKALINITY	Alkalinity given in milligrams per liter	
GWSI_WQ_REPORTS	WATQ DISSOLVED_OXYGEN	Dissolved oxygen concentration given in milligrams per liter	
GWSI_WQ_REPORTS	WATQ DISSOLVED_SOLIDS	Total dissolved solids given in milligrams per liter	
GWSI_WQ_REPORTS	WATQ_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WQ_REPORTS	WATQ_LAST_ACT_OPER	Last user to modify the record	
GWSI_WQ_REPORTS	WATQ_DATE_VALID	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WQ_REPORTS	SYNCH_ID	Legacy field from PenTab	

Table Name	Field Name	Field Description	Code Table
GWSI_WW_LEVELS	WLWA_SITE_WELL_SITE_ID	GWSI Site ID	
GWSI_WW_LEVELS	WLWA_ID	Record identification number	
GWSI_WW_LEVELS	WLWA_MEASUREMENT_DATE	Date on which the depth to water measurement was collected	
GWSI_WW_LEVELS	WLWA_DEPTH_TO_WATER	Depth to water given in feet below land surface	
GWSI_WW_LEVELS	WLWA_WATER_LEVEL_ELEVATION	Elevation of the water surface given in feet above mean sea level	
GWSI_WW_LEVELS	WLWA_LAST_ACT_DATE	Date and time that the record was last modified	
GWSI_WW_LEVELS	WLWA_LAST_ACT_OPER	Last user to modify the record	
GWSI_WW_LEVELS	WLWA_SOURCE_CODE	Source of the depth to water measurement	
GWSI_WW_LEVELS	WLWA_METHOD_CODE	Method used to measure depth to water	GWSI_MM_CODES
GWSI_WW_LEVELS	WLWA_REMARK_CODE	Measurement remark code	GWSI_MR_CODES
GWSI_WW_LEVELS	WLWA_VALID_DATE	Indicates if a day (D) or month and day (M) has been added to the date value in order to be compatible with Oracle. This field has been inconsistently used.	
GWSI_WW_LEVELS	SYNCH_ID	Legacy field from PenTab	
GWSI_WW_LEVELS	WLWA_COMMENT	User's comments related to the measurement	
GWSI_WW_LEVELS	CREATEBY	User that created the record	
GWSI_WW_LEVELS	CREATEDT	Date and time that the record was created	
GWSI_WW_LEVELS	WLWA_WLOPER	User that collected the depth to water measurement	
GWSI_WW_LEVELS	WLWA_UTM_CODE	Reason that a measurement could not be completed during the site visit	GWSI_UTM_CODES

Appendix I: Well Matching Check List

- 1) Does WELLS55 have a GWSI ID matched to registry number REG ID?
 - Check WELLS55WEB,
 - Check GWSIWEB,
 - Check Access DB table named: WELLS.OTHER_NAMES_IDS
 - Check Access DB table named: GWSI_OWNER_SITE_NAMES
 - Check in GWSI App (for ADWR personnel only)
 - Check in WELLS55 Browser (for ADWR personnel only)
 - If “Yes” then **verify** match and **document verified match**
 - To document a match use table named: WELLS REVISED Tab; Well Names/IDs form
 - If “No” continue
- 2) If WELLS55 has no GWSI ID then search for wells near its cadastral for a possible match. Can a match be found by searching wells with a nearby Local ID?
 - Check WELLS55WEB,
 - Check GWSIWEB,
 - Check County Assessor Records
 - You can create an Arcmap project to assist you.
 - If “Yes” then **verify** match and **document verified match**
 - If “No” continue
- 3) If maps do not work then look at well construction. Can a match be found by searching wells with similar construction?
 - Check Access DB tables by filtering for unique well construction such as a date, hole depth, well depth or diameter. Look at scanned images of registry files, and if there is a potential 35 match then look at WELLS35 Driller’s Logs.
 - If “Yes” then **verify** match and **document verified match**
 - If “No” continue
- 4) If construction does not work then look at well owner. Can a match be found by searching wells with similar owners?
 - Check Access DB tables by filtering for owners. Again always look at scanned images of WELLS files and if a 35 match then WELLS35 Driller’s Logs.
 - Check County Assessor Records
 - Check WELLS55WEB,
 - Check GWSIWEB,
 - If “Yes” then **verify** match and **document verified match**
 - If “No”, a match may not exist.