

## USGS WELL DATA FOR ORANGE COUNTY

The attached computer printout table lists ground-water data collection sites within Orange County that are included in the USGS Ground-Water Site Inventory (GWSI) database. Each site has a unique identification number (USGS SITE-ID). Each site also has a simple sequentially numbered *Groundwater Inventory Map ID*. It is ID that is printed on the Ground-water Inventory Map ("GIM") for point identification. The table format is two pages wide. Data for wells US-12 through US-76 are presented on page 1, and 2; data for wells US-77 through US 151 are presented on pages 3, and 4; and so on. Descriptions of the data fields follow.

### USGS SITE ID

For ground-water sites, there is a 15-digit identification number assigned to the site. It is used primarily as an internal control number within the computer files. Although the site identification number is formed initially from the latitude and longitude of a point believed to represent the location of the site, the number is an *Identifier* and not a *Locator*.

It cannot be too strongly emphasized that the site identification number, once assigned, is a pure number and HAS NO LOCATIONAL SIGNIFICANCE.

The first six digits of the identification number are the value of latitude, the seventh through thirteenth digits are the value of longitude, and the fourteenth and fifteenth digits are a sequence number used to distinguish between sites at the same location.

#### Latitude

This is the best available value for the latitude of the site in degrees, minutes, and seconds.

#### Northing

This is the best available value of the northing component of the state plain coordinate for the well location.

#### Longitude

This is the best available value for the longitude of the site, in degrees, minutes, and seconds.

The values of latitude and longitude entered in these fields are Locators. They represent the best available information about the location of the site.

#### Easting

This is the best available value of the easting component of the state plain coordinate for the well location.

#### Lat-Long Accuracy

This is a code on the schedule to indicate the accuracy of the latitude-longitude values. The codes and their meanings are:

- S the measurement is accurate to + 1 second
- F the measurement is accurate to + 5 seconds
- T the measurement is accurate to + 10 seconds
- M the measurement is accurate to + 1 minute

No value (blank field) indicates that the accuracy is unknown and is, therefore, assumed to be greater than one minute.

#### Land Surface Elevation

For ground-water sites, this is the altitude of the land surface at the site, in feet NGVD.

#### Topographic Setting

This is the code that best describes the topographic setting in which the site is located. Topographic setting refers to the geomorphic features in the vicinity of the site. Allowable codes are:

- A alluvial fan
- B playa
- C stream channel
- D local depression
- E dunes
- F flat surface
- G flood plain
- H hilltop
- K sinkhole
- L lake, swamp, or marsh
- M mangrove swamp
- O offshore (estuary)
- P pediment
- S hillside (slope)
- T alluvial or marina terrace

- U undulating
- V valley flat (valleys of all sizes)
- W upland draw

(A) Alluvial fan refers to a low, outspread, relatively flat to gently sloping, mass of loose rock material, shaped like an open fan or a segment of a cone, deposited by a stream at a place where it issues from a narrow mountain valley upon 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, and representing the bottom part of a shallow, completely closed 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. It is the trench or depression washed or cut into the surface of the earth by the moving water that it periodically or continuously contains. This term includes washes, arroyos, and coulees.

(D) A local depression is an area that has no external surface drainage. Some depressions, such as those in the High Plains, are only a few acres in extent, but others may cover a square mile.

(E) Dunes refers to mounds and ridges of wind-blown, 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) A flat surface may be part of a larger feature, such as an upland flat, mesa or plateau, coastal plain, lake plain, or pediment terrace and valley flat, which are special varieties of flat surfaces, and are classified separately.

(G) Flood plain refers to the surface or strip of relatively smooth land adjacent to a river channel, constructed by the present river in its existing regimen and covered with water when the river overflows its banks at times of high water.

(H) A hilltop is the upper part of a hill or ridge above a well-defined break in slope. A site on the crest of an escarpment or top of a cuesta slope (diagram) should be in this category. Use this category for hills of significant height (such as drumlins) above a gener-

ally flat area, but not for small "swells" a few feet high on an undulating surface such as a till plain or valley flat.

(K) A sinkhole is a special type of depression that results from the dissolving of soluble rocks (salt, gypsum, limestone) and the subsequent collapse of the earth into the solution cavity. As such, it has special significance to the understanding of the hydrology in the vicinity of the site.

(L) Lake refers to a body of inland water. However, this code also may be used for swampy or marshy areas where the ground may be saturated, or water may stand above the land surface for a significant period of time.

(M) Mangrove swamp is a tropical or subtropical marine swamp characterized by abundant mangrove trees.

(O) Offshore refers to a site along a coast or estuary that is continuously submerged.

(P) Pediment refers to a plain of combined erosion and deposition that forms at the foot of a mountain range.

(S) A hillside is the sloping side of a hill -- that is, the area between a hilltop and valley flat. The important factor is the general aspect of the site. The steepness of the slope or height of the hill are not significant.

(T) An alluvial or marine terrace is generally a flat surface usually parallel to, but elevated above, a stream valley or coast line. Characteristically, steep slopes or escarpments separate the terrace from an adjacent upland on one side, and a lowland (coast or valley) on the other. 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 of dune sand or hill slopes.

(U) Undulating topography is 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 misused for areas that have slightly irregular surfaces resulting from erosion.

(V) A valley flat is a low flat area between valley walls and bordering a stream channel. It includes the flood plain and, generally, is the flattest area in the valley. The surface may have a slight slope toward the main stream, toward the valley walls, or may be marked by valleys or smaller streams. Generally, the valley flat is separated from alluvial terraces, or from the upland, by a pronounced break in slope. Sometimes, however, the erosion of adjacent upland and the deposition of colluvium may make the outer edge of the alluvial flat.

(W) An upland is a small natural drainageway or depression, usually dry, on a hillside or upland.

#### Depth of Well

This is the depth of the finished well, in feet below land surface datum. The depth of the well is the greatest depth to which the well can be sounded if measurement was not practicable.

#### Principal Use of Water

This is the code indicating the principal use of water from the site. The codes and their meanings are:

- A air conditioning
- B bottling
- C commercial
- D dewater
- E power
- F fire
- H domestic
- I irrigation
- J industrial (cooling)
- K mining
- M medicinal
- N industrial
- P public supply
- Q aquaculture
- R recreation
- S stock
- T institution
- U unused
- Y desalination
- Z other (explain in remarks)

(A) Air conditioning refers to water supply used solely or principally for heating or cooling a building. Water used to cool industrial machinery belongs in the

industrial category, not in the air conditioning category.

(B) Bottling refers to the storage of water in bottles and use of the water for potable purposes (see medicinal).

(C) Commercial use refers to use by a business establishment 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 for that plant should be considered industrial, even though the water is not used directly in the product or in the manufacturing of the product.

(D) Dewatering means the water is pumped for dewatering a construction or mining site, or to lower the water table for agricultural purposes. In this respect, it differs from a drainage well that is used to drain surface water underground. If the main purpose for which the water is withdrawn is to provide drainage, dewatering should be indicated even though the water may be discharged into an irrigation ditch and subsequently used to irrigate land.

(E) Power generation refers to use of water for generation of any type of power.

(F) Fire protection refers to the principal use of the water and should be indicated if the site was constructed principally for this purpose even though the water may be used at times to supplement an industrial or defense supply, to irrigate a golf course, fill a swimming pool, or for other use.

(H) Domestic use is water used to supply household needs, principally for drinking, cooking, washing, and sanitary purposes, but including watering a lawn and caring for a few pets. Most domestic wells will be at suburban or farm homes, but wells supplying small quantities of water for domestic purposes for one-classroom schools, turnpike gates, and similar installations, should be in the domestic category.

(I) Irrigation refers to the use of water to irrigate cultivated plants. Most irrigation sites will supply water for farm crops, but the category should include wells used to water the grounds of schools, industrial plants, or cemeteries, if more than a small amount of water is pumped and that is the sole use of the water.

(J) Industrial (cooling) refers to a water supply used solely for industrial cooling.

(K) Mining refers to a water supply used solely for mining purposes.

(M) Medicinal refers to water purported to have therapeutic value. Water may be used for bathing and/or drinking. If use of water is mainly because of its claimed therapeutic value, use this category even though the water is bottled.

(N) Industrial use is 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 for employees, to air condition the plant, and to irrigate the ground at the plant.

(P) Public supply use is water that is pumped and distributed to several homes. Such supplies may be owned by a municipality or community, a water district, or a private concern. In most states, public supplies are regulated by departments of health which enforce minimum safety and sanitary requirements. If the system supplies five or more homes, it should be considered a public supply, as four or less classify use as domestic. Water supplies for trailer or summer camps with five or more living units should be in this category, but motels and hotels are classified as commercial. Most public supply systems also furnish water for a variety of other uses, such as industrial, institutional, and commercial. Most public supply systems also furnish water for a variety of other uses, such as industrial, institutional, and commercial.

(Q) Aquaculture refers to a water supply used solely for aquaculture, such as fish farms.

(R) Recreation refers to water discharged into pools, or channels which are dammed downstream to form pools, for swimming, boating, fishing, ice rinks, and other recreational uses.

(S) Stock supply refers to the watering of live-stock.

(T) Institutional refers to water used in the maintenance and operation of institutions such as large schools, universities, hospitals, rest homes, or similar

installations. Owners of institutions may be individuals, corporations, churches, or governmental units.

(U) Unused means water is not being removed from the site for one of the purposes described above. A test hole, oil or gas well, recharge, drainage, observation, or waste-disposal well will be in this category.

Do not use this classification for an irrigation, domestic, stock, or other well during "off season" or temporary periods of nonuse. The use of water from a newly constructed site would be considered as the use for which it is intended even though it may not yet be in use when inventoried.

(Y) Desalination refers to water used in a desalting process whereby dissolved solids are removed to make water potable or suitable for other uses.

(Z) Other refers to miscellaneous uses not included in the listed categories.

#### Type of Water Quality Analysis

This is the code that indicates the type of water quality data generally collected at the site. The codes and their meanings are:

- A physical properties
- B common ions
- C trace elements
- D pesticides
- E nutrients
- F sanitary analysis (organisms)
- G pesticides and common ions
- H nutrients and common ions
- I common ions/trace elements
- J sanitary analysis and common ions
- K pesticides and nutrients
- L trace elements, pesticides, and nutrients
- M all or most of the above
- N common ions, trace elements and radioactive
- P common, trace, and physical
- Z other (explain in remarks)

#### Water Level

This is the water level at the ground-water site, in feet below land surface. If the water level was above land surface, the water level in feet above land surface

is preceded by a minus sign (-). If the site flowed but the head was not known, the site was dry, the level could not be measured, measurement has been discontinued, or the well was destroyed, this space was left blank.

Date of Water Level

This is the date on which the water level was measured.

Type of Log

This is the code that best describes the log type. The codes are:

A	drilling time
B	casing collar
C	caliper
D	drillers
E	electric
F	fluid-conductivity
G	geologists or sample
H	magnetic
I	induction
J	gamma ray
K	dipmeter survey
L	lateral log
M	microlog
N	neutron
O	microlateral log
P	photographic
Q	radioactive-tracer
S	sonic
T	temperature
U	gamma-gamma
V	fluid velocity
X	core
Z	other (explain in remarks)

Aquifer Code

This code identifies the lithologic unit.

110QRNR	Quaternary System
111FILL	Fill
112GRVL	Gravel
112LAKE	Lake Deposits
112OTSH	Outwash
112SAND	Sand
112SDGV	Sand and Gravel
112TILL	Till
300PLZC	Paleozoic Erathem

341CNNT	Conneaut Group
341DVNN	Devonian
344ESPS	Esopus Shale
344HMLN	Hamilton Group
344ONDG	Onondaga Limestone
400BCPX	Basement Complex
400PCMB	Precambrian Erathem
Bedrock	Unknown Rock Type

Lithology Code

This is the code indicating the principal lithology of this unit. The codes are:

<b>Rock Term</b>	<b>Abbreviation</b>
Clay	Clay
Conglomerate	CGLM
Gravel	GRVL
Gravel and Clay	GRCL
Limestone	LMSN
Metamorphis (undifferentiated)	MMPC
Rock	ROCK
Sand	SAND
Sand and Gravel	SDGL
Sand, gravel, and clay	SGVC
Sandstone	SNDS
Shale	SHLE
Silt	SILT
Silt and Clay	STCL
Slate	SLTE
Soil	SOIL
Till	TILL

Depth to Top of Unit

This is the depth to the top of this lithologic unit, in feet below land surface.

Method of Construction

This is the code that best indicates the method by which the site was constructed. Allowable codes are:

A	air-rotary
B	bored or augered
C	cable-tool
D	dug
H	hydraulic
J	jetted
P	air percussion
R	reverse rotary

- T trenching
- V driven
- W drive and wash
- Z other (explain in remarks)

(A) Air-rotary method is one in which a stream of air is used to cool the bit and bring the rock cuttings to the surface.

(B) A bored or augered hole is one in which the earth materials are cut and removed from the hole with an auger. The auger may be powered by hand or machinery.

(C) Cable-tool refers to a well drilled by the familiar "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. The California mud-scow method is a special variation of the cable-tool method.

(D) Dug holes are excavated by hand tools or power-driven digging equipment. Caissons, Ranney-type collectors, and galleries belong in this classification even though they may have laterals that are driven or jetted. Tunnels would also be in this category.

(H) The hydraulic-rotary well is constructed by rotating a length of pipe (drill stem) equipped with a 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 wells are excavated by using high velocity streams of water pumped through a pipe having a restricted opening or "jetting" nozzle. For some types of earth materials a cutting bit is attached to the end of the jetting pipe. The material cut or washed from the hole is carried to the surface in the annular space outside the pipe as by the hydraulic-rotary method. This method is most suitable for construction of small-diameter walls in unconsolidated material.

(P) An air-percussion drill is a cutting tool powered by compressed air. It uses a rapid percussion effect, coupled with rotary action, to drill hard rocks. Compressed air also is used to blow the cuttings from

the hole. Air-percussion drills are generally used in conjunction with air-rotary drilling rigs.

(R) Reverse rotary is similar to the hydraulic rotary except that the water or drilling mud flows down the annular space between the drilling stem and the wall of the hole and the cuttings are pumped out through the drill stem.

(T) Trenching refers to the construction of a sump or open pit from which ground-water may be pumped. Trenching may be done by hand but more commonly power equipment, such as a bulldozer, dragline power shovel, or a backhoe is used. Ponds and drains belong in this category of construction.

(V) Driven wells are constructed by driving a length of pipe, usually of small diameter and generally equipped with a sand point, to the desired depth. The wells may be driven by hand or with air hammer or 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 wells are constructed by driving a small diameter open-end casing a few feet into the earth, then washing out the material from inside the casing with a jet of water. The process is repeated until the well has penetrated a sufficient depth into the aquifer.

#### Type of Finish

This code indicates the method of finish or the nature of the openings that allow water to enter the well.

Allowable codes are:

- C porous concrete
- F gravel pack w/ perforations
- G gravel pack w/ screen
- H horizontal gallery
- O open end
- P perforated or slotted
- S screen
- T sand point
- W walled
- X open hole
- Z other (explain in remarks)

(C) Porous concrete is concrete casing that is pervious enough to allow ground-water to seep into the well.

(F & G) A gravel pack well is a drilled or dug well that has a gravel envelope opposite the part through which water enters. Commonly, these wells will be finished either with commercial screen or with slotted casing.

(H) A horizontal gallery or collector essentially 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) An open-end well is one 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 casing is well pipe that has had holes punched or slots cut in it to admit water. Do not use this designation if the well has a gravel pack. Use "F" instead.

(S) Screen refers to commercial well screen manufactured for the purpose of admitting water to a well. Common types of screen are wire mesh, wrapped trapezoidal wire, and shutter screen. Do not use this designation if the well also has a gravel pack. Use "G" instead.

(T) A sand point is the screen part of a drive point and usually is part of a driven well.

(W) A walled or shored well is usually a dug well in which the walls have been shored-up with open-jointed fieldstone, brick, tile, concrete blocks, wood cribbing, or other material. A few wells of this type may have gravel wells, however, they should be placed in this category instead of "F" or "G". 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) An open hole well is one that has a finished open hole in the aquifer. A well belongs in this class even if the casing does not actually extend to the geologic unit or zone from which the water is obtained.

This is the depth to the bottom of this section of casing, in feet below land surface.

Casin Diameter

This is the diameter of this section of casing, in inches.

Discharge in GPM

This is the discharge from the site in gallons per minute.

Owner

This is the name of the owner.

Municipality Name

This is the name of the municipality where the well is located. Town names are capitalized and city and village names are in upper and lower case.

Bottom of Casing