

County Well Index (CWI) Version 4 - 2011

This page last updated: 01/18/2012

Metadata created using [Minnesota Geographic Metadata Guidelines](#)

Metadata Summary

<i>Originator</i>	Minnesota Geological Survey
<i>Abstract</i>	<p>The County Well Index (CWI) is a PC-based database system developed by the Minnesota Geological Survey for the storage, retrieval, and editing of water well information. Data is entered into the database by staff at the Minnesota Geological Survey and the Minnesota Department of Health. The data base contains basic information on well records (e.g., location, depth, static water level) for wells drilled in Minnesota. The data base also includes information on well construction, stratigraphy, and some water chemistry for many of the wells. The data are grouped together by county.</p> <p>Most information in County Well Index is entered from the Water Well Driller Log form, which was submitted by the well driller to the Minnesota Department of Health at the time the well was constructed. Submission of a Water Well Driller Log is a requirement of the Minnesota Water Well Construction Code, passed by the State Legislature in 1974. While the County Well Index does not represent all wells in the state, it is the single most complete listing of state wells.</p>
<i>Browse Graphic</i>	none available
<i>Time Period of Content Date</i>	12/01/2011
<i>Currentness Reference</i>	County Well Index is updated continuously. Approximately 10,000 new wells are drilled in Minnesota each year. Updated versions of the full CWI database are posted to the ftp site for distribution on a quarterly basis. The distribution CD is also revised quarterly. See the readme file on the CD or MGS ftp site for the exact date that the current distribution version of the database represents.
<i>Access Constraints</i>	None
<i>Use Constraints</i>	Acknowledgement of the Minnesota Geological Survey is appreciated in products derived from these data.
<i>Distributor Organization</i>	Minnesota Geological Survey
<i>Ordering Instructions</i>	<p>Access to the data is either through purchase of a CD or free online download. You can also view the data online through the 'County Well Index Online' web mapping application at the Minnesota Department of Health - http://www.health.state.mn.us/divs/eh/cwi/</p> <p>To purchase CD: The CWI Version 4 Distribution CD is available for \$15.00 from the Minnesota Geological Survey's Map Sales Office (612-627-4780 Ext. 238. Allow two to three business days to process the order. The distribution CD is revised quarterly. Data is available in both Access 97 and Access 2000, and a data viewer is provided.</p> <p>To download from the MGS ftp site:</p> <p>cwidata_nps.zip - cwi data in Access97 format cwi_info.zip - information on table formats and field definitions cwilocs_nps.zip - associated gis data for located wells unlocs_nps.zip - associated gis data for unlocated wells</p>

For further information and the specific date for the published dataset see the readme.txt file at the MGS ftp site.

NOTE: As requested by the Minnesota Department of Health, this version of CWI does NOT include records for public supply wells. For public supply well information, contact Bruce Olsen of the MDH at
651-215-0796 .

Online Linkage

[Click here](#) to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" in Section 6 of this metadata.

Full Metadata

County Well Index (CWI) Version 4 - 2011

Go to Section:

- [1. Identification Information](#)
- [2. Data Quality Information](#)
- [3. Spatial Data Organization Information](#)
- [4. Spatial Reference Information](#)
- [5. Entity and Attribute Information](#)
- [6. Distribution Information](#)
- [7. Metadata Reference Information](#)

Section 1	Identification Information	Top of page
<i>Originator</i>	Minnesota Geological Survey	
<i>Title</i>	County Well Index (CWI) Version 4 - 2011	
<i>Abstract</i>	<p>The County Well Index (CWI) is a PC-based database system developed by the Minnesota Geological Survey for the storage, retrieval, and editing of water well information. Data is entered into the database by staff at the Minnesota Geological Survey and the Minnesota Department of Health. The data base contains basic information on well records (e.g., location, depth, static water level) for wells drilled in Minnesota. The data base also includes information on well construction, stratigraphy, and some water chemistry for many of the wells. The data are grouped together by county.</p> <p>Most information in County Well Index is entered from the Water Well Driller Log form, which was submitted by the well driller to the Minnesota Department of Health at the time the well was constructed. Submission of a Water Well Driller Log is a requirement of the Minnesota Water Well Construction Code, passed by the State Legislature in 1974. While the County Well Index does not represent all wells in the state, it is the single most complete listing of state wells.</p>	
<i>Purpose</i>	CWI is used by a variety of local and state agencies, and by private groups interested in ground-water resource management.	
<i>Time Period of Content Date</i>	12/01/2011	
<i>Currentness Reference</i>	County Well Index is updated continuously. Approximately 10,000 new wells are drilled in Minnesota each year. Updated versions of the full CWI database are posted to the ftp site for distribution on a quarterly basis. The distribution CD is also revised quarterly. See the readme file on the CD or MGS ftp site for the exact date that the current distribution version of the database represents.	
<i>Progress</i>	In work	
<i>Maintenance and</i>	Continually	

Update Frequency

Spatial Extent of Data

Minnesota, statewide

Bounding Coordinates

-97.5
-89.0
49.5
43.0

Place Keywords

Minnesota

Theme Keywords

inlandWaters, wells, water wells, ground water, stratigraphy, water levels, water chemistry, well construction, well management, county well index, CWI

Theme Keyword Thesaurus

ISO 19115 Topic Category

Access Constraints

None

Use Constraints

Acknowledgement of the Minnesota Geological Survey is appreciated in products derived from these data.

Contact Person Information

Tim Wahl,
Minnesota Geological Survey
2642 University Avenue
St. Paul, Minnesota 55114
Phone: 612-627-4801
FAX:
E-mail: tewahl@umn.edu

Browse Graphic

none available

Browse Graphic File Description

Associated Data Sets

1. CWILOCS_NPS - a point GIS shapefile of all wells from CWI which have had their location field verified and digitized or GPS'd - is also available on the distribution CD and online from the ftp site. See: <http://www.lmic.state.mn.us/chouse/metadata/wells.html>
 2. UNLOCS_NPS - a point GIS shapefile of all wells from CWI which do not have a good location. Point locations for these wells are derived by calculating the midpoint of the Public Land Survey (Township-Range-Section-Subsections) locations reported by the driller. These calculated locations vary in accuracy; see location accuracy code. For download see: <http://www.lmic.state.mn.us/chouse/metadata/wells.html>
 3. To search or view well locations and associated County Well Index information, go to the Minnesota Department of Health website, County Well Index Online at <http://www.health.state.mn.us/divs/eh/cwi/>
 4. Other ground water data collected by various agencies (such as water levels and water chemistry) can be used in conjunction with CWI data wherever the data collections contain the Minnesota Unique Well Number or RELATEID well identifiers.
- See also the County Well Index FAQ page for more information about this dataset:
<http://www.geo.umn.edu/mgs/cwifaq.html>

Section 2

Data Quality Information

[Top of full metadata](#)

[Top of page](#)

Attribute Accuracy

No statistical attribute assessment has been performed. Some attributes of the well, such as PLS location, depth, casing diameter, and driller record, may be checked if the well is in an area where geological studies are being done (for instance, a County Geologic Atlas or Regional Hydrogeologic Assessment by MGS). For wells in these

areas, locations are verified, and the driller's description of the geologic layers encountered is converted by MGS into interpreted lithologic codes and geologic formation codes. Otherwise, no verification is done of information on the well driller log. Older data which was originally entered into the MGS 'WELLOG' data base had been transcribed onto a coding form from the Water Well Driller Log, and keypunch data entry was done twice on each record in order to identify errors.

Note that the well owner name and address represents the owner of the well AT THE TIME THE WELL WAS CONSTRUCTED. Subsequent changes in ownership are not recorded in CWI.

Well records which have PLS locations reported to six quarter sections and which have Aquifer, Lithology, and Stratigraphy fields filled in are generally those which have been field-verified and interpreted by the Minnesota Geological Survey.

Logical Consistency

Completeness

Most of the records in CWI are for wells drilled since 1974, when the water-well construction code required that drillers submit records for wells drilled in Minnesota. These records are sent to the Minnesota Department of Health (MDH), who forward copies to the MGS. CWI does have records obtained through the cooperation of drillers and local government agencies for some wells drilled before 1974.

The County Well Index database DOES NOT represent all existing wells. Water Well Driller reporting has only been required since the State Water Well Construction Code was passed in 1974. Although older wells have been identified and added to the file in some areas, most pre-1974 wells are not represented. Since the law's enactment, driller compliance has been incomplete, although it is improving over time. Driller reporting of well location ranges from excellent to poor. Minnesota Department of Health well inspectors visit 10 to 25 percent of newly-drilled wells each year. GPS is used as a means of obtaining higher-accuracy locational data on inspected wells. The Minnesota Geological Survey and the Minnesota Department of Health have been committed to keeping the CWI up-to-date by adding all newly-drilled wells. Over time, the number of wells, the location accuracy and the geological categorization of the well information is improving.

For the most part, only water wells are represented on the database. Some exploratory boreholes along with monitoring well records are being added to CWI.

Horizontal Positional Accuracy

Lineage

Since 1974 the state's Water-Well Construction Code has required that drillers submit records for wells drilled in Minnesota. These records are sent to the Minnesota Department of Health (MDH), who forward copies to the MGS. Since the early 1980's MGS has entered some information from water well driller logs into CWI. MGS also obtained well logs of pre-1974 from some drillers and entered this information into the system.

In 1997 the Minnesota Department of Health began entering all information from the well log into CWI for all new wells reported. When they were unable to keep up with all of the information, they entered complete well logs for all new wells drilled outside the 7-county metropolitan area, and summary information (the C4IX table information) for wells in the metro area. That left a backlog of additional well log information for new metro wells that was not in CWI.

As of 1999, MDH has been able to enter all information from the well logs for newly-drilled wells into the CWI database. Approximately 10,000 new wells are drilled in Minnesota every year.

The Minnesota Geological Survey edits and updates information already in CWI, and also is working to enter the backlog of well data not previously entered. MGS edits and updates consist largely of information that is gained during the course of geologic studies (such as County Geologic Atlases, Regional Hydrogeologic Assessments, and other work). For geologic studies, MGS verifies well locations, converts the driller information on layers encountered into geologic codes, identifies the aquifer, and makes other updates. Reported errors are corrected, and sometimes corrected or updated files received from other sources can be merged into the dataset.

Public Land Survey location information is stored in the CWI tables. Point file location used to create GIS files is stored on a separate file.

Source Scale

Section 3	Spatial Data Organization Information	Top of full metadata	Top of page
------------------	--	--------------------------------------	-----------------------------

Native Data Set Environment

Microsoft Access

Geographic Reference for Tabular Data

Wells which have been field-verified and their locations digitized or GPS'd have a point location in UTM Zone 15 NAD83 which has been used to create the WELLS well location shapefile. The link between the full CWI data set and the well point location is the field called 'RELATEID'.

All wells on CWI have location described both in address fields and in fields denoting their Public Land Survey (PLS) location. Locations are reported to varying degrees of accuracy. The unverified PLS location information can be used to calculate an approximate point location for each well.

In addition, special unload formats are included to create compatible files of selected fields for Minnesota Land Management Information Center's, EPPL7, GIS software.

Spatial Object Type

Vendor Specific Object Types

Tiling Scheme

Section 4	Spatial Reference Information	Top of full metadata	Top of page
------------------	--------------------------------------	--------------------------------------	-----------------------------

Horizontal Coordinate Scheme

Ellipsoid

Horizontal Datum

Horizontal Units

Distance Resolution

Section 5	Entity and Attribute Information	Top of full metadata	Top of page
------------------	---	--------------------------------------	-----------------------------

Entity and Attribute Overview

Data for CWI are stored in 11 tables sharing the common field relateid. The relateid field is the primary key for the database, and is set in the index table C4IX. The 11 data tables are:

- C4IX - main index table, summary information
- C4ST - driller's description, interpreted stratigraphy
- C4AD - address , both owner and contact
- C4C1 - well construction information
- C4C2 - additional construction information
- C4ID - alternate identifier
- C4PL - pump test information (simplified)
- C4PT - pump test information ** not currently in use
- C4PR - pump test results ** not currently in use
- C4RM - remarks
- C4WL - historic static water level information

Codes are stored in a separate database and are accessed by SQL requests. The code database contains lookup tables for code types. Code types are numerous, but cover all field entries where a specific text value is required. Examples would be fields such as stratigraphy, lithology, logical (i.e. Y/N/U), casing material, street identifier, or driller's license number. Code tables are internal to the Cwi4View version of the dataset.

Because of the size of the data set, maintaining a real time, updated set of well locations is not possible given the current hardware and software available at MGS. Because of this, well locations are stored in a separate database. This database can be linked to the CWI database by the field relateid, and contains UTM coordinates, projection information, coordinate source and coordinate method codes.

***Entity and Attribute
Detailed Citation***

Section 6	Distribution Information	Top of full metadata	Top of page
<i>Publisher</i>	Minnesota Geological Survey		
<i>Publication Date</i>	12/01/2011		
<i>Contact Person Information</i>	Tim Wahl Minnesota Geological Survey 2642 University Avenue St. Paul, Minnesota 55114 Phone: 612-627-4801 FAX: E-mail: tewahl@umn.edu		
<i>Distributor's Data Set Identifier</i>	cwi4		
<i>Distribution Liability</i>			
<i>Transfer Format Name</i>	Microsoft Access		
<i>Transfer Format Version Number</i>	Access vers. 97 or 2000		
<i>Transfer Size</i>	158 MB zipped		
<i>Ordering Instructions</i>	<p>Access to the data is either through purchase of a CD or free online download. You can also view the data online through the 'County Well Index Online' web mapping application at the Minnesota Department of Health - http://www.health.state.mn.us/divs/eh/cwi/</p> <p>To purchase CD: The CWI Version 4 Distribution CD is available for \$15.00 from the Minnesota Geological Survey's Map Sales Office (612-627-4780 Ext. 238. Allow two to three business days to process the order. The distribution CD is revised quarterly. Data is available in both Access 97 and Access 2000, and a data viewer is provided.</p> <p>To download from the MGS ftp site:</p> <p>cwidata_nps.zip - cwi data in Access97 format cwi_info.zip - information on table formats and field definitions cwilocs_nps.zip - associated gis data for located wells unlocs_nps.zip - associated gis data for unlocated wells</p>		

For further information and the specific date for the published dataset see the readme.txt file at the MGS ftp site.

NOTE: As requested by the Minnesota Department of Health, this version of CWI does NOT include records for public supply wells. For public supply well information, contact Bruce Olsen of the MDH at
651-215-0796 .

Online Linkage

[Click here](#) to download data. (See Ordering Instructions above for details.) By clicking here, you agree to the notice in "Distribution Liability" above.

Section 7	Metadata Reference Information	Top of full metadata	Top of page
<i>Metadata Date</i>	01/18/2012		
<i>Contact Person Information</i>	Susanne Maeder, GIS Data Coordinator Minnesota Land Management Information Center (LMIC) 300 Centennial Building; 658 Cedar Street St. Paul, Minnesota 55155 Phone: 651-201-2488 FAX: 651-296-3698 E-mail: clearing.house@state.mn.us		
<i>Metadata Standard Name</i>	Minnesota Geographic Metadata Guidelines		
<i>Metadata Standard Version</i>	1.2		
<i>Metadata Standard Online Linkage</i>	http://www.lmic.state.mn.us/gc/stds/metadata.htm		