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Watershed Data Management (WDM) Database for Salt Creek Streamflow Simulation, DuPage County, Illinois

Open-File Report 2006–1248

U.S. Department of the Interior
U.S. Geological Survey

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Conversion Factors, Abbreviations, and Datums

Multiply	By	To obtain
	Length	
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
square mile (mi^2)	2.590	square kilometer (km^2)
	Flow rate	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
inch per hour (in/h)	0.0254	meter per hour (m/h)
	Energy flux density	
Langleys per hour (Lg/h)	11.63	Watts per square meter (W/m^2)

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

$$°C=(°F-32)/1.8$$

Watershed Data Management (WDM) Database for Salt Creek Streamflow Simulation, DuPage County, Illinois

By Elizabeth A. Murphy and Audrey L. Ishii

Abstract

The U.S. Geological Survey (USGS), in cooperation with DuPage County Department of Engineering, Stormwater Management Division, maintains a database of hourly meteorologic and hydrologic data for use in a near real-time streamflow simulation system, which assists in the management and operation of reservoirs and other flood-control structures in the Salt Creek watershed in DuPage County, Illinois. The majority of the precipitation data are collected from a tipping-bucket rain-gage network located in and near DuPage County. The other meteorologic data (wind speed, solar radiation, air temperature, and dewpoint temperature) are collected at Argonne National Laboratory in Argonne, Illinois. Potential evapotranspiration is computed from the meteorologic data. The hydrologic data (discharge and stage) are collected at USGS streamflow-gaging stations in DuPage County. These data are stored in a Watershed Data Management (WDM) database.

This report describes a version of the WDM database that was quality-assured and quality-controlled annually to ensure the datasets were complete and accurate. This version of the WDM database contains data from January 1, 1997, through September 30, 2004, and is named SEP04.WDM. This report provides a record of time periods of poor data for each precipitation dataset and describes methods used to estimate the data for the periods when data were missing, flawed, or snowfall-affected. The precipitation dataset data-filling process was changed in 2001, and both processes are described. The other meteorologic and hydrologic datasets in the database are fully described in the annual U.S. Geological Survey Water Data Report for Illinois and, therefore, are described in less detail than the precipitation datasets in this report.

Introduction

The U.S. Geological Survey (USGS), in cooperation with DuPage County Department of Engineering, Stormwater Management Division, maintains a database of hourly meteorologic and hydrologic data for use in a near real-time streamflow simulation system, which assists in the management and operation of reservoirs and other flood-control structures in the Salt Creek watershed in DuPage County, Illinois. The Hydrological Simulation Program-FORTRAN (HSPF) hydrologic model (Bicknell and others, 2000) and Full Equations (FEQ) hydraulic model (Franz and Melching, 1997) are currently (2006) used by the USGS and DuPage County to develop simulations of the watershed rainfall runoff and routed streamflow, respectively, at a 1-hour time step. The meteorologic and hydrologic data are collected at various sites (fig.1). The precipitation data are from a watershed- and county-wide network of real-time tipping-bucket rain gages maintained by the USGS and DuPage County. The other meteorologic data (wind speed, solar radiation, air temperature, and dewpoint temperature) are from the Argonne National Laboratory located in Argonne, Illinois. Potential evapotranspiration is computed from the meteorologic data according to the method described in Murphy (2005). The hydrologic data are from both USGS stage and discharge gages and DuPage County stage gages. These data, which are provisional and subject to change, are stored in a Watershed Data Management (WDM) database that is updated at least weekly by USGS staff. The provisional data may be missing or flawed because of equipment malfunctions or other problems, so the WDM database is updated and corrected with quality-assured and quality-controlled (QA/QC) data annually. This update is done to maintain a record of the data in a model-compatible format and for studying historical storms. Although this database was compiled for the Salt Creek watershed, the data could be used in other hydrologic models in northeastern Illinois or for scientists studying rain distribution or climate in the area.

This report describes the data sources and data organization used to create the QA/QC version of the WDM database. The estimation of missing or inaccurate precipitation data is described. The QA/QC procedures for the other meteorologic and hydrologic data are given in the annual USGS Water Data Report (WDR) for Illinois (Cutshaw and others, 2004) and will not be repeated in this report. The QA/QC database discussed in this document encompasses the period from January 1, 1997, through September 30, 2004, and is named the SEP04.WDM.

Watershed Data Management (WDM) Database

The Watershed Data Management database is a binary, direct-access electronic file (Flynn and others, 1995). It was

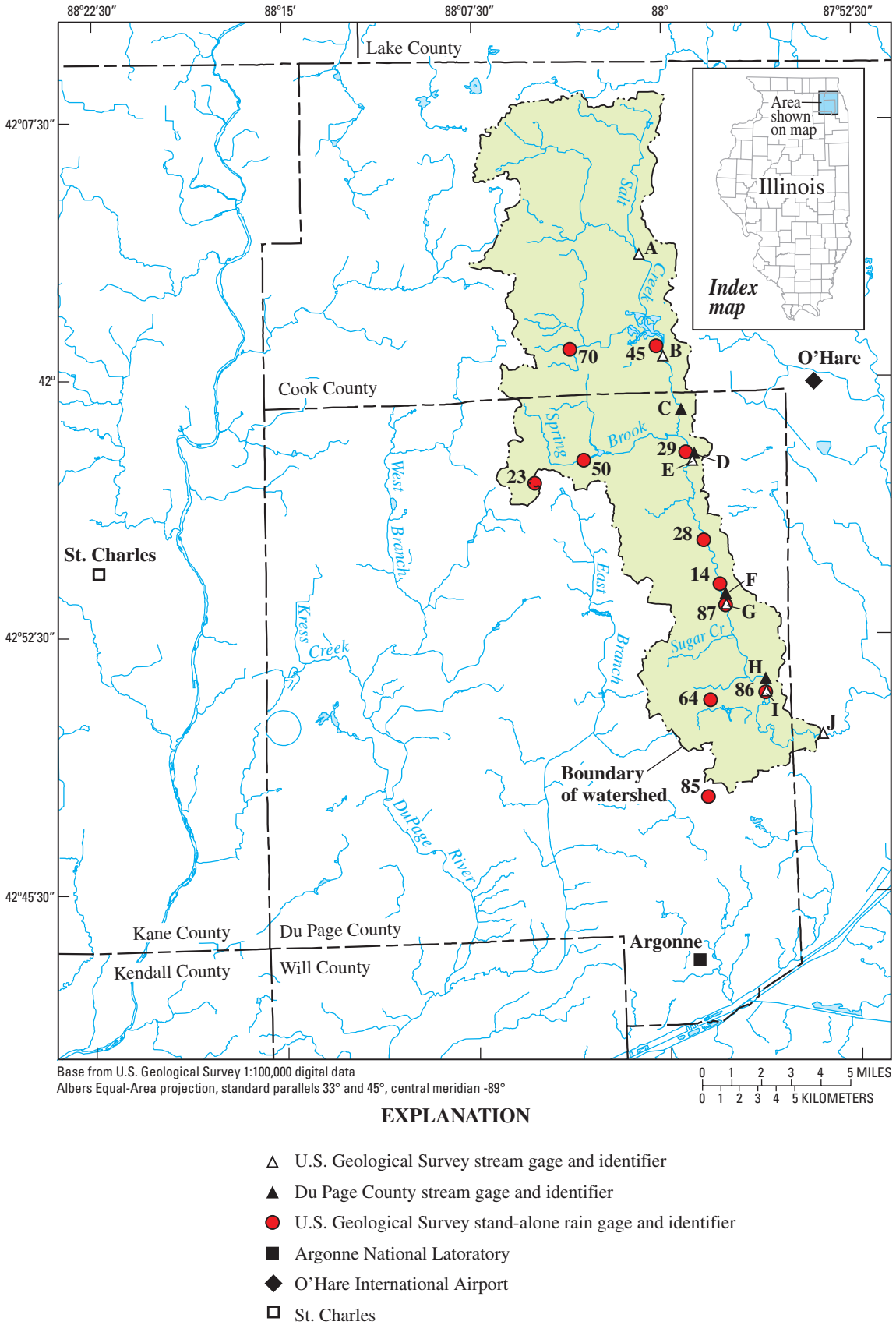

Figure 1. Location of the Salt Creek watershed and data-collection sites in and near DuPage County, Illinois.

developed by the USGS to be used with hydrologic and water-quality models and analyses. Data within the WDM is stored in datasets. WDM databases can be accessed with the ANNIE computer program (Flynn and others, 1995) or with the GenScn (Generation and Analysis of Model Simulation Scenarios) computer program (Kittle and others, 1998). The SEP04.WDM database contains meteorologic and hydrologic data collected in and near DuPage County, Illinois. The data organization, sources, and QA/QC procedures are discussed below. The precipitation data are described in the most detail because the other meteorologic and hydrologic data are described in the Illinois WDR (Cutshaw and others, 2004).

Database Numbering Scheme

To aid in identifying the contents of WDM datasets, dataset numbers (DSNs) are assigned in a systematic order. The DSNs are limited to four digits in the Hydrological Simulation Program-FORTRAN (HSPF), which uses the WDM. Up to 32,000 datasets are allowed in the WDM, but access to these datasets requires a direct-access computer program such as ANNIE (Flynn and others, 1995). In the SEP04.WDM, all DSNs are between 1 and 7019.

The data are numbered in the WDM according to data type and location. Generally, the different data types are grouped into series with the last two digits used to indicate location (table 1). For meteorologic data, the last two digits indicate the station identification of the data source. For example, the dataset numbers from 100 to 199 are for precipitation. The last two digits are based on the DuPage County local site identifier for the rain gages (fig. 1). In addition to the hourly meteorologic data, the SEP04.WDM contains data flags describing the meteorologic data. The last two digits of the flag files are 10. These data flags are described in the WDR (Cutshaw and others, 2004).

Table 1. Description of dataset numbering system for the data in the SEP04.WDM Watershed Data Management database.

[IDCON, identification of data type; ELEV, elevation; PREC, precipitation; EVAP, evapotranspiration; TEMP, temperature; DEWP, dewpoint; SRAD, solar radiation; NEXRAD, Next Generation Radar; --, not used to store data; ISUR, impervious runoff; PERO, pervious runoff; The impervious and pervious runoff datasets are available for calculations made by the hydrologic model but do not contain data.]

Dataset numbers	Data type	IDCON attribute
	General data	
1–10	Datums	ELEV
11–99	--	--
	Meteorologic data	
100–199	Precipitation from tipping-bucket gages	PREC
200–299	Potential evapotranspiration	EVAP
300–399	Wind	WIND
400–499	Temperature	TEMP
500–599	Dewpoint	DEWP
600–699	Solar radiation	SRAD
700–799	Open for temporary analysis datasets	various
800–899	Computed NEXRAD precipitation	PREC
900–1099	--	--
1100–1199	Precipitation from weighing-bucket gages	PREC
	Hydrologic data	
2000–3999	Discharge	FLOW
4000–4999	Water-surface elevation from USGS gages	ELEV
5000–5999	Water-surface elevation from DuPage County gages	ELEV
6000–6999	Hydrologic model output	ISUR/PERO
7000–7999	Simulated flow components	various
8000–9999	--	--

For hydrologic data, the first two digits of the DSN indicate the type and location of the data, and the third and fourth digits are 00 if the data are observed. There are a few exceptions to the observed data label of 00. One exception is data recorded from multiple gages at the same location. Currently (2006), there are two locations with data from multiple gages—the DuPage County admittance and the ultrasonic water-surface elevation gages at Irving Park Road and Harger Road. The last two digits for these datasets are 00 for the admittance gages and 99 for the ultrasonic gages. Another exception is two gages that have data stored at a 15-minute time step in addition to the hour time step dataset. The datasets for these two gages have 01 as the last two digits. The complete list of datasets in SEP04.WDM is given in table 2, and a list of dataset attributes is given in Appendix 1.

As can be seen from table 2, the SEP04.WDM contains many datasets that are not part of the annual QA/QC process. These datasets have been created in the WDM for data analyses or for convenience of data processing. Datasets 2–5 contain a constant arithmetic value used to generate a datum for the water-surface elevations. Datasets 107, 707, 801–809, and 1107 are used in comparisons of precipitation data. Datasets 4600–5699 are for stage data collected by DuPage County, and datasets 6107–7019 are for model simulation outputs for reviewing model operations.

Precipitation Data

The source of precipitation data in the QA/QC WDM is the USGS/DuPage County real-time flood-warning rain-gage network. The real-time flood-warning rain-gage network contains seven rain gages in the Salt Creek watershed (14, 28, 29, 45, 50, 64, and 70; fig. 1) and two gages (23 and 85; fig.1) located on the periphery of the watershed. The real-time flood-warning rain-gage network consists of 6-, 8-, and 12-in. diameter tipping-bucket rain gages. A tipping-bucket rain gage is set to tip when 0.01 in. of rain has been collected in the gage. Some of the gages in the network are heated allowing them to record snowfall amounts (table 3). The rain gages have radio telemetry, which transmits the data to a DuPage County facility at a 5-minute time step. Two additional rain gages (86 and 87; fig.1) in the watershed are run as basic data network gages. These gages do not have radio telemetry and, instead, transmit data over a telephone line.

Most of the radio-telemetered rain gages also have an onsite datalogger that records the data. Files from the datalogger are downloaded during quarterly site visits. Data collected with a datalogger are generally more reliable because transmission failures are avoided. Since water year 2001, the data published in the annual WDR (Cutshaw and others, 2004) and stored in the QA/QC WDM have been based primarily on the data collected with the datalogger. When the datalogger is missing data, radio-transmitted data are used as a backup record at the gages. Missing data are filled with data from a nearby gage if there is no backup record available at the gage. The rain gage at Spring Creek Reservoir near Bloomingdale, Ill. (number 50; fig. 1) transmits data through the radio only and has no datalogger. Missing data from this gage must be estimated from nearby gages.

The rain-gage network data were checked for accuracy and processed for publication in the WDR. As part of the annual data-checking process, missing data were estimated from nearby gages and snowfall-affected data were flagged. Snowfall-affected data were flagged for both heated and unheated rain gages. Snowfall-affected data were flagged because rain gages inaccurately record precipitation data at temperatures below freezing. Frozen precipitation, usually in the form of snow, accumulates in the funnel of unheated rain gages. This frozen precipitation is measured when it melts. Wind can blow snow out of the rain gage before it can melt, leaving some precipitation unmeasured. The determination of which data were snowfall-affected took into consideration air temperature at the O'Hare meteorologic station (fig. 1), gage placement, and the amount of precipitation observed at heated gages in the network. In addition to the documentation published in the WDR, Appendix 2 contains detailed records of which data were used for the missing data estimation (table 2–1) and to fill the snowfall-affected periods (tables 2–2 and 2–3).

After the precipitation data were checked, missing data estimated, and snowfall-affected data flagged, a unit-value file was created. The unit-value (uv) files contain the date, time, and amount of rain recorded. The data are recorded when there is a tip at the gage, so there can be consecutive minutes with tips recorded and large periods of time when no tips are recorded. This time-step irregularity of the uv files made reading these data directly into the WDM difficult. A program developed by the USGS, unitvaluesummation.exe, was used to create a data file at a uniform hourly time step from the raw uv files (Tim Straub, U.S. Geological Survey, written commun., 2004).

Water Years 1997–2000

For water years[1] 1997–2000, the radio-transmitted data were used as the basis for the QA/QC WDM and, when available, the backup datalogger data were substituted for missing hourly data in the WDM. When no backup data were available, the dataset was filled with data from a nearby gage. The record of missing periods for the gages and the gage used to fill in the missing period is given in table 2–1 (Appendix 2).

In the WDM, for the water years 1997–2000, the snowfall-affected data were replaced with data from heated gages outside the DuPage network, specifically, the O'Hare and Argonne heated gages. The days with snowfall-affected data usually were determined by which days had snow at the O'Hare gage (U.S. Department of Commerce, 1997–2000). A record of periods with snowfall for 1997–2000 can be found in table 2–2 (Appendix 2).

[1]A water year (WY) is the 12-month period from October 1 through September 30 and is designated by the calendar year in which it ends and includes 9 of 12 months. For example, WY 2004 is from October 1, 2003, through September 30, 2004.

Table 2. List of datasets in the SEP04.WDM Watershed Data Management database.

[DSN, dataset number; STANAM, station name; TSTYPE, type of data; ft, feet; ELEV, elevation; in., inch; PREC, precipitation; WWTF, wastewater-treatment facility; EVAP, evapotranspiration; deg F, degrees Fahrenheit; TEMP, temperature; DEWP, dewpoint; SRAD, solar radiation; cfs, cubic feet per second; ADMT, admittance sensor; ULTR, ultrasonic sensor; ISUR, impervious runoff; in/h, inch per hour; mi^2, square mile; PERO, pervious runoff; SURO, surface outflow; IFWO, interflow outflow; PET, potential evapotranspiration; in/d, inch per day; ET, evapotranspiration; TAET, simulation evapotranspiration; UZS, upper zone storage; LZS, lower zone storage; AGWS, ground-water storage at start]

DSN	STANAM	TSTYPE
2	Dummy datum (600 ft)	ELEV
3	Dummy datum (600 ft)	ELEV
4	Oakbrook datum (600 ft) 15 minutes	ELEV
5	Elmhurst datum (652.65 ft) 15 minutes	ELEV
107	Argonne tipping-bucket prec (0.01 in.)	PREC
114	Elmhurst Quarry at Elmhurst (0.01 in.)	PREC
123	Bloomingdale Lift Station (0.01 in.)	PREC
128	Addison WWTF (0.01 in.)	PREC
129	Wood Dale WWTF at Wood Dale (0.01 in.)	PREC
145	Busse Woods at Elk Grove Village (0.01 in.)	PREC
150	Spring Creek Reservoir near Bloomingdale	PREC
164	Oak Brook Well at Oakbrook (0.01 in.)	PREC
170	Schaumburg Public Works at Schaumburg	PREC
185	Westmont Water Department at Westmont	PREC
186	22nd Street at Oak Brook (05531410)	PREC
187	Elmhurst Prairie Path (05531300)	PREC
207	Argonne evap-unadjusted wind (0.001 in.)	EVAP
307	Unadjusted argonne hourly wind (miles)	WIND
310	Argonne hourly wind flag	FLAG
407	Argonne hourly temp (deg F)	TEMP
410	Argonne hourly temp flag	FLAG
507	Argonne hourly dewpoint (deg F)	DEWP
510	Argonne dewpoint flag	FLAG
607	Argonne hourly solar radiation (Langleys)	SRAD
610	Argonne hourly solar radiation flag	FLAG
707	Disaggregated precipitation (daily to hourly)	PREC
801	NEXRAD hourly average for Lower Salt	PREC
802	NEXRAD hourly average for Upper Salt	PREC
803	Upper Salt	PREC
804	Lower Salt	PREC
805	NEXRAD hourly average for Spring Brook	PREC
806	NEXRAD hourly average for Neck of Lower Salt	PREC
807	NEXRAD hourly average Neck of Lower Salt and Spring Brook	PREC
808	NEXRAD hourly average Upper Salt—gage 170	PREC

Table 2. List of datasets in the SEP04.WDM Watershed Data Management database.—Continued

[DSN, dataset number; STANAM, station name; TSTYPE, type of data; ft, feet; ELEV, elevation; in., inch; PREC, precipitation; WWTF, wastewater-treatment facility; EVAP, evapotranspiration; deg F, degrees Fahrenheit; TEMP, temperature; DEWP, dewpoint; SRAD, solar radiation; cfs, cubic feet per second; ADMT, admittance sensor; ULTR, ultrasonic sensor; ISUR, impervious runoff; in/h, inch per hour; mi^2, square mile; PERO, pervious runoff; SURO, surface outflow; IFWO, interflow outflow; PET, potential evapotranspiration; in/d, inch per day; ET, evapotranspiration; TAET, simulation evapotranspiration; UZS, upper zone storage; LZS, lower zone storage; AGWS, ground-water storage at start]

DSN	STANAM	TSTYPE
809	NEXRAD hourly average Upper Salt—gage 145	PREC
1107	Argonne hourly precipitation (hundredths)	PREC
2100	Discharge at Western Springs (cfs)	FLOW
2107	Discharge at Western Springs (simulated)	FLOW
2500	Discharge at Elmhurst Prairie Path (cfs)	FLOW
2800	Discharge at Elk Grove Village (cfs)	FLOW
2900	Discharge at Rolling Meadows (cfs)	FLOW
4100	Water-surface elevation at Western Springs	ELEV
4200	Water-surface elevation at Oak Brook	ELEV
4201	Oakbrook 15-minute water-surface elevation	ELEV
4500	Water-surface elevation at Elmhurst	ELEV
4501	Elmhurst 15-minute water-surface elevation	ELEV
4600	Water-surfurce elevation at Wood Dale	ELEV
4800	Water-surface elevation nr Elk Grove Village	ELEV
4900	Water-surface elevation at Rolling Meadows	ELEV
5300	Water-surface elevation at Harger Road ADMT	ELEV
5399	Water-surface elevation at Harger Road ULTR	ELEV
5400	Water-surface elevation at Quarry	ELEV
5600	Water-surface elevation at Irving Pk Rd ADMT	ELEV
5699	Water-surface elevation at Irving Pk Rd ULTR	ELEV
6107	Impervious runoff	ISUR
6207	Flat grass runoff (in/h*mi^2)	PERO
6307	Moderate grass runoff (in/h*mi^2)	PERO
6407	Steep grass runoff (in/h*mi^2)	PERO
6507	Forest runoff (in/h*mi^2)	PERO
6607	Agriculture runoff (in/h*mi^2)	PERO
7012	Surface outflow (in/h*mi^2)	SURO
7013	Interflow outflow (in/h*mi^2)	IFWO
7014	PET (in/d*mi^2)	PET
7015	Simulated ET (in/d*mi^2)	TAET
7016	Upper zone storage (in.*mi^2)	UZS
7017	Lower zone storage (in.*mi^2)	LZS
7018	Ground-water storage at start (in.)	AGWS
7019	Simulated snow depth (in.)	Snow

Table 3. Characteristics of selected meteorologic data observed in and near DuPage County, Ill., stored in quality-assured/quality-controlled SEP04.WDM Watershed Data Management database.

[USGS, U.S. Geological Survey; Lat, latitude and Long, longitude, in degrees (°) minutes (') seconds ("); --, not applicable; ° F, degrees Fahrenheit; WDM, Watershed Data Management; WWTF, wastewater-treatment facility]

Site identifier (fig.1)	Data type	USGS station number	Units of measurement	Location of gage	Dataset number	Period of record in SEP04.WDM database (month/day/year)
Argonne	Precipitation	--	0.01 inches	Argonne National Laboratory	107	01/01/96–09/30/04
	Wind	--	miles per hour	Lat: 41°42'06" Long: 87°59'46"	307	
	Temperature	--	° F		407	
	Dewpoint	--	° F		507	
	Solar radiation	--	Langleys per hour		607	
14	Precipitation	415356087575000	0.01 inches	Elmhurst Quarry at Elmhurst, Ill. Lat: 41°53'56" Long: 87°57'50"	114	07/18/97–09/30/04 Heated since 10/07/03
23	Precipitation	415651088051900	0.01 inches	Bloomingdale Lift Station at Bloomingdale, Ill. Lat: 41°56'51" Long: 88°05'19"	123	10/01/00–09/30/04 Heated since 10/06/03
28	Precipitation	415518087583000	0.01 inches	Addison WWTF at Addison, Ill. Lat: 41°55'18" Long: 87°58'30"	128	08/01/98–09/30/04 Not heated
29	Precipitation	415751087591000	0.01 inches	Wood Dale WWTF at Wood Dale, Ill. Lat: 41°57'51" Long: 87°59'10"	129	07/01/97–09/30/04 Heated since 05/20/03
45	Precipitation	420057088001700	0.01 inches	Busse Woods at Elk Grove Village, Ill. Lat: 42°00'57" Long: 88°00'17"	145	07/18/97–09/30/04 Not heated
50	Precipitation	415737088031100	0.01 Inches	Spring Creek Reservoir near Bloomingdale, Ill. Lat: 41°57'37" Long: 88°03'11"	150	07/18/97–09/30/04 Not heated
64	Precipitation	415037087581700	0.01 inches	Oak Brook Well at Oak Brook, Ill. Lat: 41°50'37" Long: 87°58'17"	164	07/18/97–09/30/04 Heated since 10/29/99
70	Precipitation	420052088034200	0.01 inches	Schaumburg Public Works at Schaumburg, Ill. Lat: 42°00'52" Long: 88°03'42"	170	07/18/97–09/30/04 Heated since 11/14/01
85	Precipitation	414747087582700	0.01 inches	Westmont Water Department at Westmont, Ill. Lat: 41°47'47" Long: 87°58'27"	185	10/01/00–09/30/04 Not heated
86	Precipitation	05531410	0.01 inches	Salt Creek at 22nd Street at Oak Brook, Ill. Lat: 41°50'50" Long: 87°56'13"	186	07/18/97–09/30/04 Not heated
87	Precipitation	05531300	0.01 inches	Salt Creek at Elmhurst, Ill. Lat: 41°53'10" Long: 87°57'33"	187	07/18/97–09/30/04 Not heated

Water Years 2001–04

For water years 2001–04, the DuPage rain-gage network data stored on the dataloggers were used as the basis for the QA/QC WDM and any missing unit values of precipitation (one value every 5 minutes) were estimated (David Fazio, U.S. Geological Survey, oral commun., 2004). For water years 2001–04, the estimated values were included in the hourly summations stored in the WDM. As a result, the precipitation data in the WDM for these water years include estimated values. Because estimated data in the WDM are not flagged, it is necessary to refer to table 2–1 to determine the periods for which data are estimated.

In the WDM, for water years 2001–04, the snowfall-affected data values were left as recorded at the gage, not filled with data from the O'Hare and Argonne heated gages as they had been in previous years. As a result, the data in the WDM for these water years include snowfall-affected data values from both heated and unheated gages (see table 3 for which gages are heated). The snowfall-affected data are given in table 2–3 for all but two basic-data rain gages; Salt Creek at 22nd Street at Oakbrook, Ill. (number 86 in figure 1) and Salt Creek at Elmhurst, Ill. (number 87 in figure 1) (David Fazio, U.S. Geological Survey, oral commun., 2004). These two gages are operated as part of the regular data-collection network; consequently, no determination of snowfall-affected data has been made.

Other Meteorologic Data

The Department of Energy (DOE) facility, Argonne National Laboratory (Argonne), was the main source of meteorologic data other than precipitation (fig. 1). The temperature, dewpoint temperature, wind speed, and solar radiation data were obtained from the Argonne Web site (Argonne National Laboratory, 2005). Any missing data were estimated to provide a full and accurate data record in the WDM database. The data through the end of water year 2004 were quality-controlled by Argonne staff (Argonne National Laboratory, 2005). These data were then adjusted to account for different data-collection methods at the Argonne station over the period of record, and missing values were estimated from adjusted data derived from the St. Charles and O'Hare meteorologic stations (Tom Over, U.S. Geological Survey, written commun., 2004). To make the adjustment, the meteorologic data from 1989–95 at Argonne were compared to the data for the same period at O'Hare, and a relation was established between the two datasets. This relation was used as a guide to adjust the Argonne data from 1949–88 using the O'Hare data for the same period. The filled and adjusted meteorologic data were used to compute potential evapotranspiration with the Lamoreux Potential Evapotranspiration (LXPET) program as described by Murphy (2005).

Hydrologic Data

In addition to the meteorologic data used as inputs to the HSPF model, the WDM contains observed hydrologic data (table 4). These data are observed discharge and water-surface elevation (stage) datasets used to compare with the simulated discharges and water-surface elevations generated by HSPF and FEQ, respectively. These datasets include some interpolated values. Periods of interpolated values are documented in the annual WDR (Cutshaw and others, 2004). Discharge data measured at four USGS gages are stored in the WDM. The water-surface elevation was measured at four locations by USGS gages, at three locations by DuPage County gages, and at one location by both USGS and DuPage County gages. DuPage County has two types of sensors, admittance and ultrasonic, at each of their gage locations (Chris Vonhamme, DuPage County Department of Engineering, Stormwater Management Division, oral commun., 1997). The data from the DuPage County-maintained gages were not quality-assured or quality-controlled by the USGS. These data were not published in the WDR, and the raw data were archived in the SEP04.WDM only as a reference for DuPage County. Although the WDM contains a dataset for discharge at Salt Creek at Elk Grove Village, discharge data were not quality-assured and published prior to water year 2005. Prior to water year 2005, these discharge data were computed with a provisional rating and used for operational purposes only.

Summary

The U.S. Geological Survey (USGS), in cooperation with DuPage County Department of Engineering, Stormwater Management Division, maintains a database of hourly meteorologic and hydrologic data for use in a near real-time streamflow simulation system, which assists in the management and operation of reservoirs and other flood-control structures in the Salt Creek watershed in DuPage County, Illinois. The precipitation data are from a watershed- and county-wide, network of real-time tipping-bucket rain gages maintained by the USGS and DuPage County. The other meteorologic data (wind speed, solar radiation, air temperature, and dewpoint temperature) are from the Argonne National Laboratory located in Argonne, Illinois. Potential evapotranspiration is computed from the meteorologic data according to the method described in Murphy (2005). The hydrologic data are from both USGS stage and discharge gages and DuPage County stage gages. Even though this database was compiled for the Salt Creek watershed, the data could be used in other hydrologic models in northeastern Illinois or for scientists studying rain distribution or climate in the area.

This database is updated annually with quality-assured and quality-controlled (QA/QC) data. A version of the database that contains QA/QC data for the period January 1, 1997, through September 30, 2004, is described in this report

Table 4. Characteristics of hydrologic data observed in DuPage County, Ill., stored in SEP04.WDM Watershed Data Management database.

[USGS, U.S. Geological Survey; IDCON, constituent identification attribute in Water Data Management (WDM) database; --, not applicable; ELEV, water-surface elevation; FLOW, discharge]

Site map identifier (fig. 1)	Source of data	Agency	USGS station number	Data type	Period of record in SEP04.WDM	WDM database dataset number and IDCON
A	Salt Creek at Rolling Meadows, Ill. (Algonquin Road)	USGS	05530990	Stage Discharge	01/01/1997–09/30/2004 01/01/1997–09/30/2004	4900-ELEV 2900-FLOW
B	Salt Creek near Elk Grove Village, Ill. (Busse Woods Dam)	USGS	05531044	Stage Discharge	01/01/1997–09/30/2004 01/01/1997–09/30/2004	4800-ELEV 2800-FLOW
D	Irving Park Road	DuPage County	--	Stage[1] Stage	07/10/1997–09/30/2004 09/20/2001–09/30/2004	5600-ADMT 5699-ULTR
E	Salt Creek at Wood Dale, Ill. (Irving Park Road)	USGS	05531175	Stage	01/01/1997–09/30/2004	4600-ELEV
F	Elmhurst Quarry Road	DuPage County	--	Stage	07/10/1997–09/30/2004	5400-ELEV
G	Salt Creek at Elmhurst, Ill. (Prairie Path)	USGS	05531300	Stage Discharge	01/01/1997–09/30/2004	4500-ELEV 2500-FLOW
H	Harger Road	DuPage County	--	Stage Stage	07/10/1997–09/30/2004 09/20/2001–09/30/2004	5300-ADMT 5399-ULTR
I	Salt Creek at 22nd Street at Oak Brook, Ill.	USGS	05531410	Stage	01/01/1997–09/30/2004	4200-ELEV
J	Salt Creek at Western Springs (Wolf Road)	USGS	05531500	Stage Discharge	01/01/1997–09/30/2004 01/01/1989–09/30/2004	4100-ELEV 2100-FLOW

[1]DuPage County stage gages have both admittance and ultrasonic sensors. These sensors are designated by the IDCON attribute, ADMT and ULTR, respectively.

and is named SEP04.WDM. As part of the QA/QC process, the SEP04.WDM precipitation datasets were filled when data were missing and corrected during periods of snowfall. The missing data were most often filled from backup datalogger records but sometimes were filled with data from a nearby rain gage. Periods of snowfall were flagged using records from heated gages and air temperature observations at O'Hare Airport. Snowfall-affected data were processed two different ways in the database; for water years 1997–2000, the snowfall-affected data were replaced with data from a heated gage outside the network, and for water years 2001–04, the snowfall-affected data were left as recorded at the gage.

The treatment of missing and snow-affected data in the precipitation datasets is the focus of this report; the other meteorologic and hydrologic datasets were fully described in the annual USGS Water Data Report and, therefore, are described in less detail in this report. The non-precipitation meteorologic data (wind speed, solar radiation, air temperature, and dewpoint temperature) in the database are collected at Argonne National Laboratory located in Argonne, Illinois, and missing data are filled from meteorologic stations at St. Charles, Illinois, and O'Hare Airport, Chicago, Illinois. The water-surface elevation (stage) and discharge data for Salt Creek are collected by the USGS at four locations, and the stage is collected by DuPage County at two additional locations.

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Appendixes

Appendix 1. Dataset attributes for the SEP04.WDM Watershed Data Management database

More information about these Watershed Data Management database attributes can be found in the following reference:

Flynn, K.M., Hummel, P.R., Lumb, A.M., and Kittle, J.L., Jr., 1995, User's manual for ANNIE, version 2, a computer program for interactive hydrologic data management: U.S. Geological Survey Water-Resources Investigations Report 95–4085, 211 p.

ATTRIBUTE	DESCRIPTION
DATCRE	Date the dataset was created (year, month, day, hour, and minute)
DATMOD	Date the dataset was modified (year, month, day, hour, and minute)
TSTYPE	Category of data; PREC, EVAP, WIND, ELEV, FLOW, etc.
TGROUP	Manner in which data are grouped in database 6 YEARS 5 MONTHS Affects the speed of data access
COMPFG	1 No compression 2 Compression—Should be used for precipitation data.
TSFORM	Manner in which the data are assigned to the time step 1 MEAN 2 TOTAL 3 INSTANTANEOUS AT END OF TIME STEP
TCODE	Time step of the data 1 SECONDS 2 MINUTES 3 HOURS 4 DAYS 5 MONTHS 6 YEARS
TSSTEP	1 Time step in TCODE units
VBTIME	1 Time step is constant
TSBYR	Base year- dataset can extend 100 years beyond the base year
IDSCEN	Scenario identification; 'OBSERVED' is used for observed data.
IDCONS	FLOW, ELEV, PREC, and others. Generally, the same as TSTYPE.
IDLOCN	Location identifier-- The attribute must correspond exactly to a node on the map for the dataset to be available through the map. Datasets 2 and 3 do not have a location associated with them and are assigned <UNK> for unknown.
STAID	Identification number, usually the gage number
STANAM	Station name and information about the units used. The maximum width is 48 characters.
TSFILL	0.00 default value for periods between data—Reset to a large negative value for better definition of missing value.

Attributes of DSN 2
DATCRE : 20030407114739
DATMOD : 20050915133508
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : <UNK>
STANAM : dummy datum (600ft)

Attributes of DSN 3
DATCRE : 20050621145813
DATMOD : 20050915133508
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : <UNK>
STANAM : dummy datum (600ft)

Attributes of DSN 4
DATCRE : 20040805124234
DATMOD : 20050915133457
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 3
TCODE : 2
TSSTEP : 15
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : OAKBROOK
STANAM : Oakbrook datum (600ft) 15 min

Attributes of DSN 5
DATCRE : 20040805124836
DATMOD : 20050915133457
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 2
TSSTEP : 15
VBTIME : 2
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : ELMHURST
STANAM : Elmhurst datum (652.65ft) 15 min

Attributes of DSN 107
DATCRE : 20030407115257
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : ARGONNE
STANAM : ARGONNE TIPPING BUCKET PREC (.01 IN)

Attributes of DSN 114
DATCRE : 20030211085348
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : D45
STANAM : ELMHURST QUARRY AT ELMHURST (.01 IN)

Attributes of DSN 123
DATCRE : 20030106152802
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : BLOOMING
STANAM : BLOOMINGDALE LIFT STATION (.01 IN)
TSFILL : -9990.0
STAID : 23

Attributes of DSN 128
DATCRE : 20030211093407
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : ADDISON
STANAM : ADDISON WWTP (.01 IN)
STAID : 28
TSFILL : -9990.0

Attributes of DSN 129
DATCRE : 20050113081137
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : WOODDALE
STANAM : WOOD DALE WWTP AT WOOD DALE (0.01 IN)
STAID : 29

Attributes of DSN 145
DATCRE : 20020503151909
DATMOD : 20050915133455
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : BUSSE WO
STANAM : BUSSE WOODS AT ELK GROVE VILLAGE (.01 IN)
ISTAID : 45
TSFILL : -9990.0
STAID : 45

Attributes of DSN 150
DATCRE : 20020503151916
DATMOD : 20050915133456
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : SPRINGCR
STANAM : SPRING CREEK RESERVOIR NEAR BLOOMINGDALE
STAID : 50
TSFILL : -9990.0

Attributes of DSN 164
DATCRE : 20030211095023
DATMOD : 20050915133455
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : OAKBROOK
STANAM : OAK BROOK WELL AT OAKBROOK (.01 IN)
STAID : 64
TSFILL : -9990.0

Attributes of DSN 170
DATCRE : 20020503151932
DATMOD : 20050915133455
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : SCHAUMBU
STANAM : SCHAUMBURG PUBLIC WORKS AT SCHAUMBURG
ISTAID : 70
TSFILL : -9990.0
STAID : 70

Attributes of DSN 185
DATCRE : 20020503152233
DATMOD : 20050915133455
TSTYPE : PREC
TGROUP : 6
COMPFG : 2
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : WESTMONT
STANAM : WESTMONT WATER DEPT. AT WESTMONT
ISTAID : 85
TSFILL : -9990.0
STAID : 85

Attributes of DSN 186
DATCRE : 20030407142146
DATMOD : 20050915133454
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : U84
STANAM : 22ND STREET AT OAK BROOK (05531410)

Attributes of DSN 187
DATCRE : 20030407142242
DATMOD : 20050915133454
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : D57
STANAM : ELMHURST PRAIRIE PATH (05531300)

Attributes of DSN 207
DATCRE : 20050113091003
DATMOD : 20050915135005
TSTYPE : EVAP
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDCONS : EVAP
IDLOCN : ARGONNE
STANAM : ARGONNE EVAP-UNADJUSTED WIND (0.001 in)

Attributes of DSN 307
DATCRE : 20030204105557
DATMOD : 20050915133452
TSTYPE : WIND
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : OBSERVED
IDCONS : WIND
IDLOCN : ARGONNE
STANAM : UNADJUSTED ARGONNE HOURLY WIND (MILES)
TSFILL : -99.900
STAID : ARGONNE

Attributes of DSN 310
DATCRE : 20040303090812
DATMOD : 20050915133508
TSTYPE : FLAG
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : FLAG
IDCONS : WIND
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY WIND FLAG
TSFILL : -99.900
STAID : WINDFLAG

Attributes of DSN 407
DATCRE : 20030204105742
DATMOD : 20050915133449
TSTYPE : TEMP
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : OBSERVED
IDCONS : TEMP
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY TEMP (DEG F)
TSFILL : -99.900
STAID : ARGONNE

Attributes of DSN 410
DATCRE : 20040303090734
DATMOD : 20050915133508
TSTYPE : FLAG
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : FLAG
IDCONS : TEMP
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY TEMP FLAG
TSFILL : -99.900
STAID : TEMPFLAG

Attributes of DSN 507
DATCRE : 20030204105819
DATMOD : 20050915133446
TSTYPE : DEWP
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : OBSERVED
IDCONS : DEWP
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY DEWPOINT (deg F)
TSFILL : -99.900
STAID : ARGONNE

Attributes of DSN 510
DATCRE : 20040303090851
DATMOD : 20050915133508
TSTYPE : FLAG
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : FLAG
IDCONS : DEWP
IDLOCN : ARGONNE
STANAM : ARGONNE DEWPOINT FLAG

TSFILL : -99.900
STAID : DEWPFLAG

Attributes of DSN 607
DATCRE : 20030204110021
DATMOD : 20050915133444
TSTYPE : SRAD
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : OBSERVED
IDCONS : SRAD
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY SOLAR RADIATION (LANGLEYS
TSFILL : -99.900
STAID : ARGONNE

Attributes of DSN 610
DATCRE : 20040303090641
DATMOD : 20050915133508
TSTYPE : FLAG
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : FLAG
IDCONS : SRAD
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY SOLAR RADIATION FLAG
TSFILL : -99.900
STAID : SRADFLAG

Attributes of DSN 707
DATCRE : 20030116143614
DATMOD : 20050915133507
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : COMPUTED
IDCONS : PREC
IDLOCN : ARGONNE
STANAM : disaggregated precipitation (daily to hourly)

Attributes of DSN 801
DATCRE : 20030501144051
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 801
STANAM : NEXRAD HOURLY AVG FOR LOWSALT
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 802
DATCRE : 20030703114536
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 802
STANAM : NEXRAD HOURLY AVG FOR UPSALT
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 803
DATCRE : 20030501144056
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 803
STANAM : UPPERSALT
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 804
DATCRE : 20030501144100
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 804
STANAM : LOWSALT
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 805
DATCRE : 20030501160137
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 805
STANAM : NEXRAD HOURLY AVG FOR SPRING BROOK
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 806
DATCRE : 20030501144104
DATMOD : 20050915133503
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 806
STANAM : NEXRAD HOURLY AVG FOR NECK OF LOWER SALT
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 807
DATCRE : 20030709124049
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 807
STANAM : NEXRAD HOURLY AVG- NECK L. SALT & SPRING BRK
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 808
DATCRE : 20030501153238
DATMOD : 20050915133502
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 808
STANAM : NEXRAD HOURLY AVG- UPPER SALT-gage170
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 809
DATCRE : 20030501153242
DATMOD : 20050915133503
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : NEXRAD
IDCONS : PREC
IDLOCN : 809
STANAM : NEXRAD HOURLY AVG- UPPER SALT -gage 145
ISTAID : 4
TSFILL : -99.900
STAID : CELL01

Attributes of DSN 1107
DATCRE : 20020423170605
DATMOD : 20050915133507
TSTYPE : PREC
TGROUP : 6
COMPFG : 1
TSFORM : 2
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1940
IDSCEN : OBSERVED
IDCONS : PREC
IDLOCN : ARGONNE
STANAM : ARGONNE HOURLY PRECIPITATION (HUNDREDTHS)
STAID : 07
TSFILL : -9990.0

Attributes of DSN 2100
DATCRE : 20020507102813
DATMOD : 20050915133458
TSTYPE : FLOW
TGROUP : 6
COMPFG : 1
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1980
IDSCEN : OBSERVED
IDCONS : FLOW
IDLOCN : D108
STANAM : DISCHARGE AT WESTERN SPRINGS (CFS)
STAID : 05531500
ISTAID : 5531500
TSFILL : -99.900

Attributes of DSN 2107
DATCRE : 20020507131103
DATMOD : 20050915133457
TSTYPE : FLOW
STAID : 05531500
STANAM : DISCHARGE AT WESTERN SPRINGS (SIMULATED)
TCODE : 3
TGROUP : 5
TSFORM : 3
VBTIME : 1
COMPFG : 2
TSSTEP : 1
TSBYR : 1989
TSFILL : -99.900
IDSCEN : COMPUTED
IDLOCN : D108
IDCONS : FLOW

Attributes of DSN 2500
DATCRE : 20020507102902
DATMOD : 20050915133459
TSTYPE : FLOW
TGROUP : 6
COMPFG : 1
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : FLOW
IDLOCN : D57
STANAM : DISCHARGE AT ELMHURST PRAIRIE PATH (CFS)
STAID : 05531300
ISTAID : 5531300
TSFILL : -99.900

Attributes of DSN 2800
DATCRE : 20020507102957
DATMOD : 20050915133457
TSTYPE : FLOW
STAID : 05531044
STANAM : DISCHARGE AT ELK GROVE VILLAGE (CFS)
TCODE : 3
TGROUP : 5
TSFORM : 3
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1983
IDSCEN : OBSERVED
IDLOCN : D126
IDCONS : FLOW
ISTAID : 5531044
TSFILL : -99.900

Attributes of DSN 2900
DATCRE : 20020507103004
DATMOD : 20050915133459
TSTYPE : FLOW
TGROUP : 6
COMPFG : 1
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : FLOW
IDLOCN : U141
STANAM : DISCHARGE AT ROLLING MEADOWS (CFS)
STAID : 05530990
ISTAID : 5530990
TSFILL : -99.900

Attributes of DSN 4100
DATCRE : 20020507103016
DATMOD : 20050915133459
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D108
STANAM : WATER-SURFACE ELEV AT WESTERN SPRINGS
STAID : 05531410
TSFILL : 0.000

Attributes of DSN 4200
DATCRE : 20020507103025
DATMOD : 20050915133500
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : U84
STANAM : WATER-SURFACE ELEV AT OAK BROOK
STAID : 05531410
TSFILL : 0.000

Attributes of DSN 4201
DATCRE : 20050114103547
DATMOD : 20050915133504
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 2
TSSTEP : 15
VBTIME : 2
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : U84
STANAM : OAKBROOK 15 MIN WATER SURFACE ELEV

Attributes of DSN 4500
DATCRE : 20020507103047
DATMOD : 20050915133500
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D57
STANAM : WATER SURFACE ELEV AT ELMHURST
STAID : 05531300
TSFILL : 0.000

Attributes of DSN 4501
DATCRE : 20050114103721
DATMOD : 20050915133506
TSTYPE : ELEV
TGROUP : 6
COMPFG : 1
TSFORM : 1
TCODE : 2
TSSTEP : 15
VBTIME : 2
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D57
STANAM : ELMHURST 15 MIN WATER SURFACE ELEV

Attributes of DSN 4600
DATCRE : 20020507120526
DATMOD : 20050915133500
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : U22
STANAM : WATER-SURF. ELEV AT WOOD DALE
STAID : 5531175
TSFILL : 0.000

Attributes of DSN 4800
DATCRE : 20020507103121
DATMOD : 20050915133501
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D126
STANAM : WATER-SURF. ELEV NR ELK GROVE VILLAGE
STAID : 05531044
TSFILL : 0.000

Attributes of DSN 4900
DATCRE : 20020507103128
DATMOD : 20050915133501
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D141
STANAM : WATER-SURF. ELEV AT ROLLING MEADOWS
STAID : 05530990
TSFILL : 0.000

Attributes of DSN 5300
DATCRE : 20030409142644
DATMOD : 20050915133501
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ADMT
IDLOCN : D80
STANAM : WATER-SURF. ELEV AT HARGER ROAD ADMT
STAID : HARGER-ADM
TSFILL : 0.000

Attributes of DSN 5399
DATCRE : 20030409143350
DATMOD : 20050915133501
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 2000
IDSCEN : OBSERVED
IDCONS : ULTR
IDLOCN : D80
STANAM : WATER SURF. ELEV AT HARGER ROAD ULTR
STAID : HARGER-ULT
TSFILL : 0.000

Attributes of DSN 5400
DATCRE : 20030409144031
DATMOD : 20050915133502
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3

TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ELEV
IDLOCN : D45
STANAM : WATER SURFACE ELEV AT QUARRY
STAID : QUARRY
TSFILL : 0.000

Attributes of DSN 5600
DATCRE : 20030409143601
DATMOD : 20050915133502
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 1990
IDSCEN : OBSERVED
IDCONS : ADMT
IDLOCN : U22
STANAM : WATER-SURF. ELEV AT IRVING PK RD ADMIT
STAID : IRVING-ADM
TSFILL : 0.000

Attributes of DSN 5699
DATCRE : 20030409143701
DATMOD : 20050915133502
TSTYPE : ELEV
TGROUP : 6
COMPFG : 2
TSFORM : 3
TCODE : 3
TSSTEP : 1
VBTIME : 1
TSBYR : 2000
IDSCEN : OBSERVED
IDCONS : ULTR
IDLOCN : U22
STANAM : WATER SURF. ELEV AT IRVING PK RD ULTR
STAID : IRVING-ULT
TSFILL : 0.000

Attributes of DSN 5700
DATCRE : 20020507103335
DATMOD : 20020507103335
TSTYPE : ELEV
STAID : THORNDALE
STANAM : WATER-SURF. ELEV AT THORNDALE AV
TCODE : 3
TGROUP : 5
TSFORM : 3
VBTIME : 1
COMPFG : 2
TSSTEP : 1
TSBYR : 1991
TSFILL : 0.000
IDSCEN : none
IDLOCN : none
IDCONS : none

Attributes of DSN 6207
DATCRE : 20020507094540
DATMOD : 20020507094540
TSTYPE : PERO
STAID : 05551700
STANAM : FLAT GRASS RUNOFF (IN/HOUR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : PERO
ISTAID : 5551700
TSFILL : -99.900

Attributes of DSN 6307
DATCRE : 20020507094540
DATMOD : 20020507094540
TSTYPE : PERO
STAID : 05551700
STANAM : MODERATE GRASS RUNOFF (IN/HOUR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : PERO
ISTAID : 5551700
TSFILL : -99.900

Attributes of DSN 6407
DATCRE : 20020507094540
DATMOD : 20020507094540
TSTYPE : PERO
STAID : 05551700
STANAM : STEEP GRASS RUNOFF (IN/HOUR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : PERO
TSFILL : -99.900

Attributes of DSN 6507
DATCRE : 20020507094540
DATMOD : 20020507094540
TSTYPE : PERO
STAID : 05551700
STANAM : FOREST RUNOFF (IN/HOUR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1

COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : PERO
TSFILL : -99.900

Attributes of DSN 6607
DATCRE : 20020507094751
DATMOD : 20020507094751
TSTYPE : PERO
STAID : 05551700
STANAM : AGRICULTURE RUNOFF (IN/HOUR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : PERO
TSFILL : -99.900

Attributes of DSN 7012
DATCRE : 20020501154409
DATMOD : 20020501154409
TSTYPE : SURO
STAID : 05551700
STANAM : SURFACE OUTFLOW (IN/HR*SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : SURO
TSFILL : -99.900

Attributes of DSN 7013
DATCRE : 20020501154427
DATMOD : 20020501154427
TSTYPE : IFWO
STAID : 05551700
STANAM : INTERFLOW OUTFLOW (IN/HR *SQ MI)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : IFWO
TSFILL : -99.900

Attributes of DSN 7014
DATCRE : 20020501154504
DATMOD : 20020501154504
TSTYPE : PET
STAID : 05551700
STANAM : PET (IN/DAY*SQ MI)
TCODE : 4
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : PET
TSFILL : -99.900

Attributes of DSN 7015
DATCRE : 20020501154514
DATMOD : 20020501154514
TSTYPE : TAET
STAID : 05551700
STANAM : SIMULATED ET (IN/DAY*SQ MI)
TCODE : 4
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : TAET
TSFILL : -99.900

Attributes of DSN 7016
DATCRE : 20020501154523
DATMOD : 20020501154523
TSTYPE : UZS
STAID : 05551700
STANAM : UPPER ZONE STORAGE (IN*SQ MI)
TCODE : 4
TGROUP : 6
TSFORM : 1
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : UZS
TSFILL : -99.900

Attributes of DSN 7017
DATCRE : 20020501154531
DATMOD : 20020501154531
TSTYPE : LZS
STAID : 05551700
STANAM : LOWER ZONE STORAGE (IN*SQ MI)
TCODE : 4
TGROUP : 6
TSFORM : 1
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : LZS
TSFILL : -99.900

Attributes of DSN 7018
DATCRE : 20020501154541
DATMOD : 20020501154541
TSTYPE : AGWS
STAID : 05551700
STANAM : GW STORAGE AT START (IN)
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : AGWS
TSFILL : -99.900

Attributes of DSN 7019
DATCRE : 20020501154650
DATMOD : 20020501154650
TSTYPE : Snow
STAID : 05551700
STANAM : SIMULATED Snow DEPTH (IN)
TCODE : 3
TGROUP : 6
TSFORM : 1
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDLOCN : GENERIC
IDSCEN : COMPUTED
IDCONS : Snow
TSFILL : -99.900

Attributes of DSN 6107
DATCRE : 20020430172517
DATMOD : 20020430172517
TSTYPE : ISUR
STAID : 05551700
STANAM : IMPERVIOUS RUNOFF
TCODE : 3
TGROUP : 6
TSFORM : 2
VBTIME : 1
COMPFG : 1
TSSTEP : 1
TSBYR : 1940
IDSCEN : COMPUTED
IDLOCN : GENERIC
IDCONS : ISUR
ISTAID : 5551700
TSFILL :

Appendix 2. Descriptions of estimated data periods in the SEP04.WDM Watershed Data Management database

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Addison WWTF at Addison (site 28)	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/03/97–08/04/97
Salt Creek at Elmhurst (site 87)	08/11/97–08/12/97
Do.	08/15/97–08/16/97
Bloomingdale Lift Station at Bloomingdale (site 23)	08/18/97
Salt Creek at Elmhurst (site 87)	08/23/97
Do.	09/08/97
Bloomingdale Lift Station at Bloomingdale (site 23)	10/09/97
Salt Creek at Elmhurst (site 87)	11/28/97–12/01/97
Do.	02/10/98–02/12/98
Do.	02/16/98–02/17/98
Do.	06/26/98–06/29/98
Do.	08/23/99
Elmhurst Quarry at Elmhurst (site 14)	10/03/00
Wood Dale WWTF at Wood Dale (site 29)	10/04/00
Elmhurst Quarry at Elmhurst (site 14)	10/05/00–10/07/00
Do.	10/23/00
Wood Dale WWTF at Wood Dale 9site 29)	11/02/00–11/06/00
Elmhurst Quarry at Elmhurst (site 14)	08/24/01
Do.	09/09/01
Do.	09/17/01–09/23/01
Do.	10/04/01–10/05/01
Do.	12/05/01
Do.	12/12/01
Wood Dale WWTF at Wood Dale (site 29)	12/13/01
Do.	08/04/02
Elmhurst Quarry at Elmhurst (site 14)	09/02/02
Do.	09/10/02
Do.	09/18/02–09/20/02
Do.	09/22/02
Do.	10/02/02–10/04/02
Do.	01/25/03–06/30/03
Do.	09/12/03–09/15/03
Bloomingdale Lift Station at Bloomingdale (site 23)	
Spring Creek Reservoir near Bloomingdale (site 50)	10/01/02–10/05/02

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Busse Woods at Elk Grove Village (site 45)	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/03/97–08/04/97
Do.	08/11/97–08/12/97
Do.	08/15/97–08/17/97
Do.	08/23/97
Do.	09/08/97
Do.	10/09/97
Do.	11/27/97
Salt Creek at Elmhurst (site 87)	11/28/97–12/01/97
Bloomingdale Lift Station at Bloomingdale (site 23)	02/10/98–02/11/98
Do.	02/16/98–02/17/98
Do.	09/30/98
Do.	10/02/98–10/03/98
Do.	10/05/98–10/06/98
Do.	04/04/99
Wood Dale WWTF at Wood Dale (site 29)	04/05/99
Schaumburg Public Works at Schaumburg (site 70)	10/04/01
Do.	10/22/01–10/24/01
Do.	11/01/01
Do.	11/14/01
Do.	12/16/01–12/17/01
Do.	12/19/01
Do.	12/22/01
Do.	03/29/02
Elmhurst Quarry at Elmhurst (site 14)	
Salt Creek at 22nd Street at Oakbrook (site 86)	08/03/97–08/04/97
Salt Creek at Elmhurst (site 87)	08/12/97
Do.	08/15/97–08/17/97
Salt Creek at 22nd Street at Oakbrook (site 86)	08/18/97
Salt Creek at Elmhurst (site 87)	08/23/97
Salt Creek at 22nd Street at Oakbrook (site 86)	10/09/97
Salt Creek at Elmhurst (site 87)	11/28/97–12/01/97
Do.	02/01/98
Do.	02/16/98
Do.	03/30/98–03/31/98
Do.	05/07/98–05/08/98
Do.	05/12/98–05/13/98
Do.	05/24/98
Wheaton	05/25/98

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Elmhurst Quarry at Elmhurst (site 14)—Continued	
Salt Creek at Elmhurst (site 87)	06/26/98–06/29/98
Do.	07/31/98
Oak Brook Well at Oak Brook (site 64)	08/01/00–08/02/00
Do.	08/05/00–08/06/00
Do.	10/04/00
Do.	11/02/00–11/06/00
Addison WWTF at Addison (site 28)	10/22/01–10/24/01
Do.	10/30/01
Do.	11/14/01
Do.	11/25/01–11/26/01
Oak Brook Well at Oak Brook (site 64)	12/13/01–12/22/01
Addison WWTF at Addison (site 28)	03/26/02–03/31/02
Do.	04/01/02–04/02/02
Oak Brook Well at Oak Brook (site 64)	
Salt Creek at 22nd Street at Oakbrook (site 86)	11/28/97–11/29/97
Salt Creek at Elmhurst (site 87)	11/30/97–12/01/97
Salt Creek at 22nd Street at Oakbrook (site 86)	02/16/98
Do.	04/07/98
Do.	06/11/99–06/13/99
Salt Creek at Elmhurst (site 87)	
Elmhurst Quarry at Elmhurst (site14)	07/18/97
Do.	07/22/97
Do.	07/26/97
Do.	08/03/97–08/04/97
Do.	08/10/97
Do.	10/10/97
Do.	10/13/97
Do.	10/24/97
Do.	09/28/99–09/29/99
Salt Creek at 22nd at Oak Brook (site 86)	
Oak Brook Well at Oak Brook (site 64)	08/05/98
Do.	08/07/98–08/08/98
Do.	09/28/99–09/29/99
Do.	05/08/00–05/09/00
Schaumburg Public Works at Schaumburg (site 70)	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/03/97–08/04/97
Do.	08/11/97–08/12/97
Do.	08/15/97–08/18/97

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Schaumburg Public Works at Schaumburg (site 70)—Continued	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/23/97
Do.	09/08/97
Do.	10/09/97
Wood Dale WWTF at Wood Dale (site 29)	11/27/97
Salt Creek at Elmhurst (site 87)	11/28/97–12/01/97
Bloomingdale Lift Station at Bloomingdale (site 23)	02/10/98–02/11/98
Do.	02/16/98–02/17/98
Do.	06/26/98–06/29/98
Do.	09/12/99
Do.	09/27/99–09/29/99
Busse Woods at Elk Grove Village (site 45)	03/24/2003–04/10/2003
Spring Creek Reservoir near Bloomingdale (site 50)	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/03/97–08/04/97
Do.	08/11/97–08/12/97
Do.	08/15/97–08/18/97
Do.	08/23/97
Do.	09/08/97
Do.	10/09/97
Salt Creek at Elmhurst (site 87)	11/27/97–12/01/97
Bloomingdale Lift Station at Bloomingdale (site 23)	02/10/98–02/11/98
Do.	02/16/98–02/17/98
Do.	06/26/98–06/29/98
Do.	07/03/98–07/04/98
Do.	07/19/98
Do.	08/04/98–08/07/98
Do.	08/22/98
Do.	08/24/98
Do.	09/06/98–09/07/98
Salt Creek at Elmhurst (site 87)	09/14/98
Bloomingdale Lift Station at Bloomingdale (site 23)	09/15/98
Do.	09/20/98
Do.	09/29/98–09/30/98
Do.	10/02/98–10/03/98
Do.	10/05/98–10/06/98
Do.	10/08/98
Do.	10/15/98–10/19/98
Do.	11/10/98
Do.	01/16/99–01/17/99

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Spring Creek Reservoir near Bloomingdale (site 50)—Continued	
Bloomingdale Lift Station at Bloomingdale (site 23)	01/21/99
Do.	01/23/99–01/24/99
Do.	06/10/99–06/13/99
Do.	06/22/99–06/23/99
Do.	06/27/99–06/28/99
Do.	07/01/99
Do.	07/03/99
Do.	07/09/99
Salt Creek at Elmhurst (site 87)	07/17/99
Do.	07/19/99–07/21/99
Bloomingdale Lift Station at Bloomingdale (site 23)	07/22/99
Salt Creek at Elmhurst (site 87)	07/23/99
Do.	07/26/99
Bloomingdale Lift Station at Bloomingdale (site 23)	08/07/99
Do.	08/09/99
Do.	08/12/99–08/13/99
Do.	08/18/99–08/19/99
Do.	11/19/99
Do.	11/22/99–11/24/99
Do.	11/26/99
Schaumburg Public Works at Schaumburg (site 70)	07/10/00
Bloomingdale Lift Station at Bloomingdale (site 23)	10/04/00
Do.	12/01/00–02/24/01
Do.	05/06/01–06/11/01
Do.	06/14/01–06/21/01
Do.	09/18/01–09/23/01
Do.	10/04/01–10/05/01
Do.	10/22/01–10/24/01
Do.	11/01/01
Do.	11/14/01
Do.	11/25/01
Do.	12/16/01–12/22/01
Do.	03/29/02
Do.	04/01/02
Do.	04/28/02
Do.	05/23/02–05/25/02
Do.	08/04/02
Do.	10/17/02–06/09/03

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Spring Creek Reservoir near Bloomingdale (site 50)—Continued	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/08/03–09/30/03
Do.	10/03/03
Do.	10/11/03
Do.	10/13/03–10/14/03
Do.	10/24/03–10/25/03
Do.	10/28/03–10/29/03
Do.	11/01/03–11/04/03
Do.	11/15/03–11/18/03
Do.	11/23/03
Do.	12/04/03–12/05/03
Do.	12/09/03–12/10/03
Do.	12/14/03
Do.	12/28/03
Do.	01/04/04–01/05/04
Do.	01/11/04
Do.	01/17/04
Do.	02/02/04–02/03/04
Do.	02/20/04
Do.	02/22/04
Do.	03/01/04
Do.	03/03/04–03/05/04
Do.	03/07/04
Do.	03/25/04–03/26/04
Do.	03/28/04
Do.	04/17/04
Do.	05/10/04–05/14/04
Do.	05/17/04–05/18/04
Do.	05/20/04–05/23/04
Do.	05/25/04
Do.	05/30/04
Do.	06/24/04
Do.	06/28/04
Do.	07/03/04–07/04/04
Do.	07/06/04–07/07/04
Do.	07/09/04
Do.	07/11/04
Do.	07/21/04–07/22/04
Do.	07/26/04

Table 2–1. Estimated data periods for real-time network of rain gages in and near DuPage County, Ill., water years 1997–2004 in the SEP04.WDM Watershed Data Management database for DuPage County data.—Continued

[WDM, watershed data management; WWTF, wastewater-treatment facility; site numbers correspond to figure 1; Do., ditto]

Station data used to fill missing period (site number)	Missing period (month/day/year)
Spring Creek Reservoir near Bloomingdale (site 50)—Continued	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/25/04–08/28/04
Do.	09/06/04
Westmont Water Department at Westmont (site 85)	
Oak Brook Well at Oak Brook (site 64)	11/18/03
Do.	11/23/03
Wood Dale WWTF at Wood Dale (site 29)	
Bloomingdale Lift Station at Bloomingdale (site 23)	08/03/97–08/04/97
Do.	08/11/97–08/12/97
Do.	08/15/97–08/18/97
Do.	08/23/97
Do.	09/08/97
Do.	10/09/97
Do.	11/27/97
Salt Creek at Elmhurst (site 87)	11/28/97–12/01/97
Bloomingdale Lift Station at Bloomingdale (site 23)	02/10/98–02/11/98
Do.	02/16/98–02/17/98
Do.	06/26/98–06/27/98
Do.	06/29/98
Do.	07/03/98
Salt Creek at Elmhurst, Ill (site 87)	07/19/99–07/21/99
Do.	07/23/99
Do.	07/26/99
Bloomingdale Lift Station at Bloomingdale (site 23)	08/07/99
Do.	08/09/99
Do.	08/12/99–08/13/99

Table 2–2. Rain gages used to determine and fill snow periods at real-time network of rain gages in and near DuPage County, Ill., for calendar years 1997–2000 in the SEP04.WDM Watershed Data Management database.

[Records from the NOAA monthly Climatological Data Publication for Illinois for the period July 1, 1997, through December 31, 2000. The O'Hare precipitation data were used to fill the datasets on snowfall-affected days except as noted. OAK, Oakbrook; WHT, Wheaton; ORD, O'Hare; S, snowfall; T, trace snowfall]

Date (month/day/year)	Gage used to determine snowfall	Type precipitation	Date (month/day/year)	Gage used to determine snowfall	Type precipitation
11/07/97	OAK; filled with Argonne	S	01/01/99	ORD	S
11/08/97	OAK; filled with Argonne	S	01/02/99	ORD	S
11/09/97	OAK	S	01/03/99	ORD	S
11/10/97	OAK	S	01/05/99	ORD	S
11/11/97	OAK	S	01/06/99	ORD	S
11/12/97	OAK; filled with Argonne	S	01/08/99	ORD	S
11/13/97	OAK	S	01/09/99	ORD	T
11/14/97	OAK	S	01/10/99	ORD	T
11/15/97	OAK	S	01/11/99	ORD	S
11/16/97	OAK	S	01/12/99	ORD	S
11/17/97	OAK; filled with Argonne	S	01/13/99	ORD	S
11/18/97	OAK; filled with Argonne	S	01/14/99	ORD	T
12/04/97	OAK	S	01/15/99	ORD	T
12/05/97	OAK	S	01/18/99	ORD	S
12/06/97	OAK	S	01/20/99	ORD	S
12/07/97	OAK	S	01/23/99	ORD	S
12/08/97	OAK	S	01/24/99	ORD	T
12/09/97	OAK	S	02/05/99	ORD	T
12/10/97	OAK	S	02/12/99	ORD	S
12/23/97	OAK; filled with Argonne	S	02/16/99	ORD	T
12/24/97	OAK	S	02/17/99	ORD	T
12/25/97	OAK	S	02/19/99	ORD	T
12/26/97	OAK	S	02/20/99	ORD	S
01/08/98	WHT	S	02/21/99	ORD	T
01/09/98	WHT	S	02/24/99	ORD	S
01/13/98	WHT	S	02/28/99	ORD	T
01/15/98	WHT	S	03/03/99	ORD	T
01/22/98	WHT	S	03/05/99	ORD	S
01/23/98	WHT	S	03/06/99	ORD	S
11/04/98	ORD	T	03/07/99	ORD	S
11/07/98	ORD	T	03/08/99	ORD	S
11/08/98	ORD	S	03/09/99	ORD	S
11/11/98	ORD	T	03/10/99	ORD	S
12/20/98	ORD	T	03/25/99	ORD	T
12/21/98	ORD	S	12/05/99	ORD	S
12/29/98	ORD	S	12/16/99	ORD	S
12/30/98	ORD	S	12/17/99	ORD	S
12/31/98	ORD	T	12/20/99	ORD	T

Table 2–2. Rain gages used to determine and fill snow periods at real-time network of rain gages in and near DuPage County, Ill., for calendar years 1997–2000 in the SEP04.WDM Watershed Data Management database.—Continued

[Records from the NOAA monthly Climatological Data Publication for Illinois for the period July 1, 1997, through December 31, 2000. The O'Hare precipitation data were used to fill the datasets on snowfall-affected days except as noted. OAK, Oakbrook; WHT, Wheaton; ORD, O'Hare; S, snowfall; T, trace snowfall]

Date (month/day/year)	Gage used to determine snowfall	Type precipitation	Date (month/day/year)	Gage used to determine snowfall	Type precipitation
12/22/99	ORD	S	03/28/00	ORD	T
12/23/99	ORD	S	04/04/00	ORD	T
12/24/99	ORD	T	04/07/00	ORD	S
12/27/99	ORD	S	04/08/00	ORD	T
12/28/99	ORD	T	04/10/00	ORD	T
01/03/00	ORD	S	10/07/00	ORD	T
01/04/00	ORD	T	11/13/00	ORD	T
01/05/00	ORD	T	11/14/00	ORD	T
01/11/00	ORD	T	11/16/00	ORD	S
01/13/00	ORD	S	11/17/00	ORD	T
01/14/00	ORD	T	11/18/00	ORD	T
01/15/00	ORD	T	11/19/00	ORD	T
01/16/00	ORD	T	11/20/00	ORD	T
01/17/00	ORD	S	11/29/00	ORD	T
01/19/00	ORD	S	11/30/00	ORD	T
01/20/00	ORD	T	12/01/00	ORD	S
01/22/00	ORD	S	12/05/00	ORD	T
01/25/00	ORD	S	12/06/00	ORD	T
01/26/00	ORD	T	12/07/00	ORD	S
01/27/00	ORD	S	12/08/00	ORD	T
01/29/00	ORD	S	12/09/00	ORD	T
01/30/00	ORD	S	12/10/00	ORD	S
01/31/00	ORD	T	12/11/00	ORD	S
02/02/00	ORD	T	12/13/00	ORD	S
02/03/00	ORD	T	12/14/00	ORD	T
02/04/00	ORD	S	12/15/00	ORD	T
02/06/00	ORD	T	12/17/00	ORD	T
02/13/00	ORD	S	12/18/00	ORD	S
02/14/00	ORD	T	12/19/00	ORD	T
02/18/00	ORD	S	12/20/00	ORD	S
02/19/00	ORD	T	12/21/00	ORD	S
03/09/00	ORD	T	12/22/00	ORD	T
03/10/00	ORD	T	12/23/00	ORD	T
03/15/00	ORD	T	12/26/00	ORD	S
03/16/00	ORD	T	12/27/00	ORD	S
03/17/00	ORD	T	12/28/00	ORD	S
03/18/00	ORD	T	12/29/00	ORD	S
03/19/00	ORD	T	12/30/00	ORD	S

Table 2–3. Snowfall-affected periods for water years 2001–04 for the real-time network of rain gages in and near DuPage County, Ill., in the SEP04.WDM Watershed Data Management database.

[WWTF, wastewater-treatment facility; site numbers correspond to figure 1]

Snowfall-affected period (month/day/year)	Snowfall-affected period (month/day/year)
Addison WWTF at Addison (site 28)	
12/11/00	12/23/01
01/05/01–01/07/01	12/04/02–12/05/02
02/04/01	12/26/02–01/30/03
02/06/01–02/07/01	03/06/03–03/07/03
02/12/01	01/17/04
02/15/01	02/08/04
02/23/01	02/17/04–02/18/04
Bloomingdale Lift Station at Bloomingdale (site 23)	
12/07/00	02/07/01
12/11/00	12/03/02–12/04/02
12/13/00–12/15/00	01/04/03–01/29/03
12/18/00	01/05/04
12/20/00–12/21/00	01/17/04
12/29/00–12/30/00	01/23/04
01/26/01	02/02/04–02/03/04
01/28/01	02/06/04–02/07/04
02/04/01	
Busse Woods at Elk Grove Village (site 45)	
11/21/00	01/17/02
12/14/00	02/27/02–02/28/02
12/25/00–12/26/00	12/03/02–12/07/02
01/01/01	12/21/02–01/29/03
01/05/01–01/07/01	02/24/03–02/27/03
01/10/01	12/22/03
01/26/01–01/27/01	01/17/04
02/07/01	01/24/04
02/10/01	01/31/04
02/12/01	02/01/04–02/02/04
02/15/01	02/11/04
02/22/01	02/13/04
Elmhurst Quarry at Elmhurst (site 14)	
01/05/01	12/14/03
02/04/01	01/11/04
02/06/01–02/07/01	01/17/04
02/12/01	01/23/04–01/24/04
01/19/02	01/26/04
12/27/02–01/04/03	02/02/04–02/03/04
03/06/03–03/07/03	02/05/04–02/07/04

Table 2–3. Snowfall-affected periods for water years 2001–04 for the real-time network of rain gages in and near DuPage County, Ill., in the SEP04.WDM Watershed Data Management database.— Continued

[WWTF, wastewater-treatment facility; site numbers correspond to figure 1]

Snowfall-affected period (month/day/year)	Snowfall-affected period (month/day/year)
Oak Brook Well at Oak Brook (site 64)	
01/05/01–01/06/01	01/22/03–01/25/03
01/11/01–01/12/01	02/23/03–02/24/03
01/27/01	03/06/03–03/07/03
02/01/2001	01/11/04
02/04/01	01/17/04
02/06/01–02/07/01	01/23/04
02/12/01	02/02/04–02/04/04
12/03/02–12/04/02	02/09/04
12/28/02–01/06/03	02/11/04
Schaumburg Public Works at Schaumburg (site 70)	
11/17/00	01/16/02
12/22/00	03/03/02
12/25/00	12/02/02–12/03/02
01/05/01–01/06/01	01/04/03–01/29/03
01/11/01–01/12/01	01/17/04
01/27/01	01/23/04
02/04/01–02/05/01	01/25/04
02/07/01	02/02/04–02/03/04
02/12/01	02/06/04
02/26/01	
Spring Creek Reservoir near Bloomingdale (site 50)	
12/03/02–12/04/02	03/05/03–03/07/03
01/05/03–01/29/03	
Westmont Water Department at Westmont (site 85)	
12/14/00	03/06/03–03/07/03
12/25/00	03/13/03–03/14/03
02/04/01	01/17/04
02/06/01	02/01/04
02/12/01	02/04/04
12/03/02–12/04/02	02/06/04–02/07/04
01/05/03–01/31/03	02/11/04
Wood Dale WWTF at Wood Dale (site 29)	
12/14/00	03/05/03–03/07/03
01/05/01–01/07/01	03/13/03–03/14/03
01/27/01	12/14/03–12/15/03
02/03/01–02/04/01	01/11/04
02/06/01–02/07/01	01/17/04
02/15/01	02/02/04
12/26/02–12/27/02	02/11/04
01/03/03–01/31/03	02/18/04

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