

Water-Data Report 2011

413119081213200 Local number GE-351

Mississippian aquifers
Cuyahoga Formation

Geauga County, OH

LOCATION.--Lat 41°31'19", long 81°21'32" referenced to North American Datum of 1927, Geauga County, OH, Hydrologic Unit 04110003, Chester Township.

GROUNDWATER RECORDS

WELL CHARACTERISTICS.--Depth 126.5 ft. Upper casing diameter 6.0 in; top of first opening 56.75 ft, bottom of last opening 126.5 ft. Domestic water-supply well, not currently in use.

DATUM.--Land-surface datum is 1,137.96 ft above North American Vertical Datum of 1988. Measuring point: Top of wood in base of instrument shelter. MP altitude surveyed 10/2007., 1.25 ft above land-surface datum, Jan. 22, 1997, to present. Land-surface datum is accurate within 0.1 ft.

PERIOD OF RECORD.--Manual measurement on January 22, 1997. Continuous water-level data from May 15, 1997 to current year. No continuous data from Sept. 13, 1997 to Oct. 8, 1997, June 16, 1998 to Oct. 20, 1998, Feb. 17, 1999 to Jan. 5, 2000 and June 11, 2008 to July 15, 2008 due to battery or transducer failure and June 9, 2008 to June 11, 2008 because the transducer was removed for well testing.

GAGE.--Pressure transducer and data logger (records hourly).

COOPERATION.--Groundwater-level data is collected as part of a USGS cooperative study with the Geauga County Planning Commission and the Board of County Commissioners.

REMARKS.--The long-term groundwater monitoring network in Geauga County consists of 31 wells. The purpose of the water-level study is to determine whether fluctuations in water levels represent consistent, long-term trends caused by human activity or are predominantly the result of seasonal and annual variations in recharge. The sudden fluctuations in water level that occurred from June 22, 2006 through March 2009 at well GE-351 were verified with a second transducer, although the cause of the fluctuations is unknown at this time. An inspection of the well with a downhole camera in June 2008 showed no evidence of well casing failure or water leakage into the well that would influence water levels. Rather, the source of the fluctuations seems to be elsewhere in the aquifer, likely caused by human activities in the area. Flow in the shale aquifer occurs mainly through fractures, and changes in water level in one location are transmitted rapidly to nearby locations. The magnitude of sudden water-level fluctuations has lessened over time and the fluctuations have become less frequent. A water-level rise on June 1, 2010 may have been caused by flooding of a nearby stream. High water marks observed on June 16, 2010 did not reach the top of the well casing.

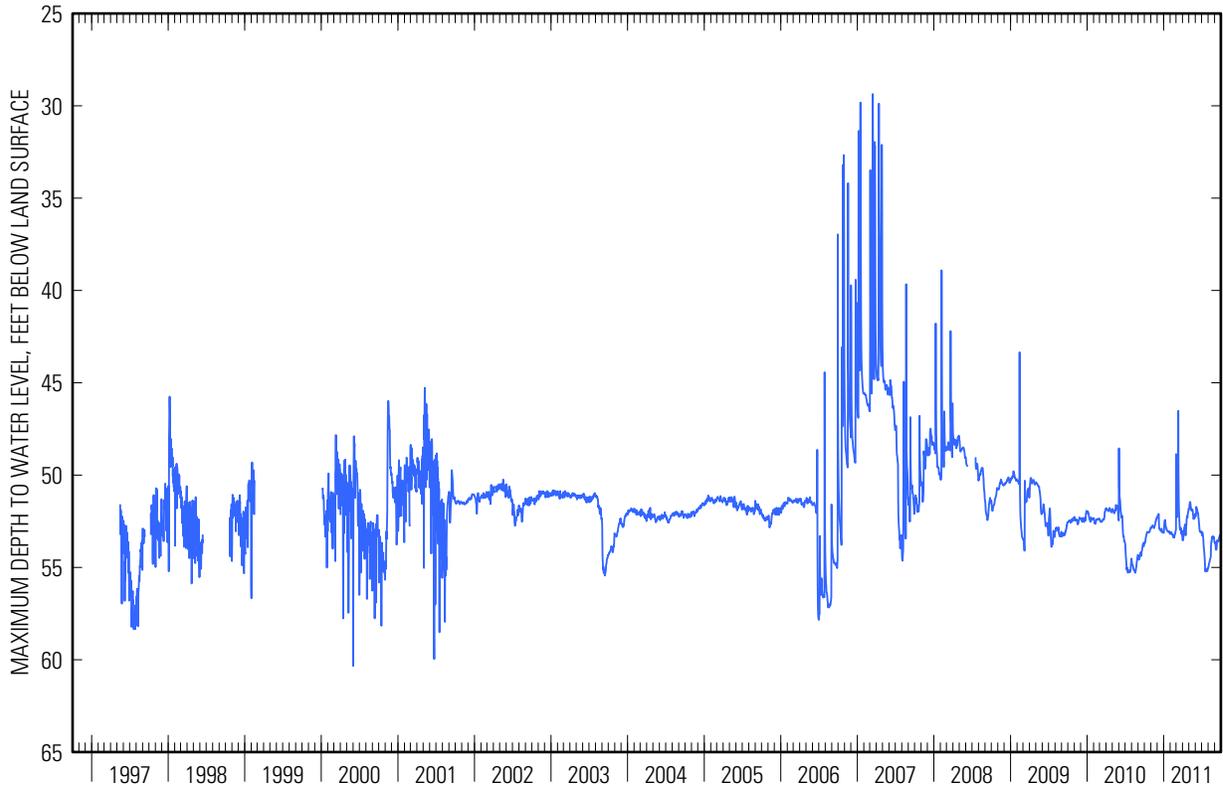
EXTREMES FOR PERIOD OF RECORD.--Minimum daily low, 29.36 ft below land-surface datum, Mar. 15, 2007; maximum daily low, 60.33 ft below land-surface datum, May 31, 2000.

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DEPTH TO WATER LEVEL, FEET BELOW LAND SURFACE
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MAXIMUM VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	53.63	52.86	52.23	53.13	53.19	48.86	53.54	51.82	52.24	53.20	55.03	53.68
2	53.69	52.86	52.23	52.98	53.14	50.96	53.53	51.80	52.22	53.27	54.98	53.65
3	53.66	52.86	52.21	52.70	53.15	51.78	53.49	51.71	52.14	53.09	54.90	53.64
4	53.60	52.85	52.19	52.51	53.13	52.15	53.42	51.55	52.06	53.11	54.81	53.70
5	53.56	52.82	52.16	52.47	53.09	52.27	53.21	51.55	51.72	53.15	54.77	53.85
6	53.48	52.80	52.14	52.47	53.09	50.78	53.18	51.46	51.84	53.20	54.75	54.00
7	53.37	52.76	52.10	52.43	53.13	51.46	52.98	51.45	51.83	53.31	54.71	54.05
8	53.35	52.73	52.12	52.52	53.17	51.67	52.91	51.55	51.85	53.43	54.63	54.05
9	53.30	52.72	52.76	52.67	53.19	51.77	52.82	51.65	51.90	53.61	54.61	54.02
10	53.24	52.74	52.89	52.77	53.21	50.14	52.81	51.75	51.95	53.82	54.52	53.96
11	53.19	52.77	52.92	52.79	53.21	46.52	52.80	51.87	52.00	53.97	54.50	53.74
12	53.12	52.80	52.91	52.86	53.25	49.81	52.67	51.91	52.07	54.07	54.48	53.54
13	53.10	52.81	52.93	52.93	53.26	51.16	53.05	51.91	52.06	54.18	54.40	53.53
14	53.08	52.79	52.95	52.93	53.33	51.83	53.26	51.85	52.13	54.37	53.86	53.55
15	53.07	52.87	52.98	52.93	53.37	52.12	53.26	51.84	52.30	54.53	53.69	53.56
16	53.10	52.87	52.99	52.98	53.37	52.47	53.25	51.92	52.35	54.74	53.59	53.58
17	53.10	52.77	53.01	53.02	53.34	52.66	52.99	51.91	52.50	55.09	53.60	53.59
18	53.10	52.77	53.02	53.03	53.35	52.86	52.76	51.89	52.65	55.22	53.44	53.60
19	53.10	52.75	53.02	53.05	53.38	52.95	52.64	51.93	52.77	55.22	53.39	53.60
20	53.11	52.69	53.01	53.06	53.39	52.97	52.35	52.12	52.92	55.09	53.40	53.45
21	53.08	52.64	52.90	53.04	53.28	52.99	52.32	52.18	53.00	55.09	53.32	53.44
22	53.08	52.57	53.05	53.05	53.19	52.89	52.22	52.36	53.06	55.19	53.38	53.39
23	53.08	52.48	53.09	53.07	53.19	52.86	52.29	52.38	53.06	55.17	53.41	53.36
24	53.09	52.48	53.10	53.09	53.18	52.93	52.31	52.35	53.06	55.15	53.40	53.30
25	53.08	52.47	53.09	53.07	53.12	53.19	52.11	52.33	53.09	55.15	53.39	53.30
26	53.06	52.36	53.07	53.07	53.04	53.18	52.09	52.33	53.06	55.19	53.33	53.28
27	52.96	52.34	53.04	53.04	52.99	53.08	52.01	52.34	53.06	55.20	53.35	53.24
28	52.94	52.35	53.07	53.08	52.94	53.01	51.95	52.32	53.05	55.20	53.37	53.24
29	52.93	52.35	53.10	53.11	---	53.19	51.84	52.28	53.05	55.08	53.49	53.24
30	52.90	52.32	53.12	53.15	---	53.31	51.85	52.10	53.08	55.02	53.59	53.24
31	52.83	---	53.13	53.19	---	53.52	---	52.20	---	55.02	53.67	---
Mean	53.19	52.67	52.79	52.91	53.20	51.98	52.73	51.96	52.47	54.39	53.99	53.58
Max	53.69	52.87	53.13	53.19	53.39	53.52	53.54	52.38	53.09	55.22	55.03	54.05
Min	52.83	52.32	52.10	52.43	52.94	46.52	51.84	51.45	51.72	53.09	53.32	53.24

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**WATER LEVELS IN FEET BELOW LAND-SURFACE DATUM
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

[Measurement method: V, calibrated electric tape--accuracy of instrument has been checked; T, electric tape. Water-level status: --, static.]

Date	Water level	Measure-ment method	Water-level status	Date	Water level	Measure-ment method	Water-level status
Nov 3	52.83	V	--	May 19	51.90	V	--
Jan 7	52.41	T	--	Jul 15	54.41	T	--
Mar 17	52.52	T	--	Sep 14	53.51	T	--