

## Fox Creek at Curtis, Nebraska 06840000

### LOCATION

#### *Latitude and Longitude*

40.63453, -100.4901

#### *Road Log*

On the left bank 15 ft. upstream from bridge on State Highway 23, 0.5 miles upstream from mouth, and 1 mile east of Curtis, NE.

#### *Nearby Features*

### Equipment Details

#### *Recording Gage*

A Sutron Constant Flow Bubbler recorder and a Satlink II are connected to the stream by bubble tubing encased in 1¼ conduit and 1¼ pipe, with an open orifice. The equipment is powered by 2, 12 volt gel cell batteries with a solar panel charging system. Equipment is housed in a 3' X 5' gun cabinet style gage house.

#### *External Gage*

A wire weight gage attached to the upstream guardrail of Highway 23 bridge is the reference gage. Check bar elevation is 27.10 ft. gage datum (Levels 7/27/2022). The gage datum is 2,519.58 feet above NGVD 29.

#### *Bench Mark and Reference Marks*

RMs 1-6 destroyed by road/bridge construction during 2014.

RM #7 is a rebar with an NDOR stamped aluminum cap set 1 foot below grade and is located 5.3 feet southwest the North concrete ROW which is located NW of highway bridge. And 5.5 feet south of West/East barb-wire fence. marker west of the highway bridge. Elevation, 27.73 ft. gage datum (Levels 7/27/2022).

RM #8 is a bronze cap in the top of the southwest concrete guard rail. Elevation, 28.37 ft. gage datum (Levels 7/27/2022).

RM #9 is a NDOR stamped bronze cap in the northeast concrete guard rail. Elevation, 28.005 ft. gage datum (Levels 7/27/2022).

Wire Weight Check Bar: Elevation, 27.10 ft. gage datum (Levels 7/27/2022).

## Hydrology

### *Drainage Area*

74.3 mi<sup>2</sup>.

### *Channel and Control*

The stream bed is composed of fine silt and sand. The banks are high with scattered, heavy weed and brush growth. The channel is fairly straight for about 300 ft. below and 50 ft. above the gage, otherwise the channel is very crooked. Flow is steady and slow at low stages but swift and turbulent at medium and high stages. The stream is subject to sudden changes in stage. The channel is subject to backwater from Medicine Creek when that stream is at fairly high stages and from beaver dams when Fox Creek is at low stages. Bank full stage is about 19.50 ft. gage datum.

Channel control prevails at all stages, except when beaver activity is noted at low stages.

### *Discharge Measurements*

Low and medium stage measurements are made by wading in the vicinity of the gage. Maximum wading stage is about 6.50 ft. gage datum. High stage measurements are made from the Highway 23 bridge. Station markings are painted on both guardrails of the bridge at 5 ft. intervals.

### *Floods*

Maximum stage known, 27.30 ft. June 21, 1947, from flood marks (discharge not determined). For the period of record, the maximum known discharge is 3,340 cfs. May 31, 1951, with a gage height of 15.35 ft. gage datum.

### *Extremes for Period of Record*

Maximum discharge 1,060 cubic feet per second on August 5, 2016, gage height 16.54 feet; minimum daily discharge 2.08 cubic feet per second on September 8, 2022.

### *Point of Zero Flow*

Variable due to recent bridge and channel reconstruction. 2.34 ft. +- 0.20 ft. (2015 WY); 3.67 ft. +- 0.10 ft. (2016 WY)

### *Winter Flow*

Subject to ice cover during periods of sustained subzero temperatures. Some backwater from ice does occur but generally the flow is not retarded for long periods, and the ice that does form is soon melted by the relatively warm spring water which feeds the stream. Flow reduction does occur during cold periods with little to no well, defined backwater effect.

### *Regulation and Diversions*

Several small pump diversions for irrigation.

## Accuracy

Measuring conditions are fair at best. Records of stage are fair to poor. Open water records are fair. Poor records during periods of backwater from beaver dams, ice affects and backwater from high stages on Medicine Creek.

## Establishment and History

Originally established March 27, 1951, by U.S. Geological Survey and operated as a continuous-recorder site until September 30, 1958.

The Original gage was a type-A wire weight gage at present site, check bar set at 26.00 ft.

On April 25, 1951, gage was moved 4 miles upstream and installed on the upper chord of the upstream truss of county road bridge, check bar set at 24.00 ft. gage datum.

The gage was moved back to the original site on June 5, 1951. The difference in datum between the sites was not determined.

On August 23, 1951 a Stevens's type-E weekly water-stage recorder was installed and used until

October 2, 1951 when a Stevens A-35b recorder was put into operation. Equipment was housed in a 48 inch steel culvert pipe well and shelter. Recorder (A-35) equipped with a 10 inch float and perforated steel float tape which was referenced to water surface by weighted tape, length 30.00 ft., and reference point mounted to the front of the instrument shelf. The well was connected to the stream by two 3 inch galvanized iron pipes, 29 and 34 ft. long. Both intakes were connected to a flushing tank. The wire weight gage, used as an auxiliary gage, was located 50ft. downstream from well, check bar set at 26.84 ft. gage datum.

Datum was raised 0.82 ft. on August 23, 1951 so that all records at original (present) site would be published at the same datum.

The station, when reestablished in October 1977, consisted of a 35 ft. servo manometer and a Stevens A-35 recorder.

A digital tape type recorder, with 30 minute punch intervals, was installed March 24, 1978.

Beginning October 1, 1985 the station was operated by the Nebraska Department of Water Resources.

The digital recorder was removed on October 3, 1985 and reinstalled on October 13, 1987.

The monometer and digital recorder were removed on November 1992 and a Fluid Data Systems "Water -Stage II" was installed. An A-35 equipped with a quartz clock was connected to the fluid data system with a plastic chain and sprockets.

The gage was discontinued in January 1995.

Gage was reestablished as a continuous-record site October 1, 2008 by The State of Nebraska Department of Natural Resources. A Sutron Constant Flow Bubbler recorder and a Satlink II are connected to the stream by bubble tubing encased in 1¼ conduit and 1¼

pipe, with an open orifice. The equipment is powered by 2, 12 volt gel cell batteries with a solar panel charging system. Equipment is housed in a 3' X 5' gun cabinet style gage house.

## Revision History

04/07/52	Original description prepared by P.N. Walker
03/31/80	Revised by M.M. Gilbert
04/10/88	" by B.D. Edgerton
02/16/88	" by B.D. Edgerton
03/09/09	" by D. Gunderson
02/17/10	" by D. Gunderson
04/07/15	" by D. Gunderson
01/13/17	" by J. Marburger
12/12/17	" by D. Gunderson
11/21/2022	Revised by D. Gunderson