North Platte River at Bridgeport, Nebraska Combined Stations

06684499 Browns Creek Channel

06684498 Main Channel

06684500 Combined

LOCATION 06684500 Combined

Latitude and Longitude

41.67658 -103.097

Road Log

Morrill County on the right bank 75 feet downstream from the U.S. Highway 26 Bridge, 0.8 miles north of Bridgeport.

Hydrology

Drainage Area

25,300 square miles, of which approximately 23,300 square miles contributes directly to surface runoff.

Floods

24,900 cubic feet per second June 26, 1899 (gage height 5.39 feet, site and datum then in use).

Extremes for Period of Record

24,900 cubic feet per second June 26, 1899 (gage height 5.39 feet, site and datum then in use); minimum daily, 55 cubic feet per second, May 28, 1934, August 14, 1940, but may have been less during periods of no records for Browns Creek Channel.

ESTABLISHED

Established by Nebraska Bureau of Irrigation, Water Power and Drainage currently Nebraska Department of Natural Resources.

LOCATION 06684499 Browns Creek Channel

Latitude and Longitude

41.68229 -103.0989

Road Log

Morrill County, on right bank 0.2 miles upstream from culvert on U.S. Highway 26, 0.8 miles north of Bridgeport.

Equipment Details

Recording Gage

SUTRON CBS flow meter connected to stream with an open-end orifice. SATLINK DCP communications installed so a near real time data is available in one-hour transmissions. Instrument powered from 12-volt gel cell battery connected to solar panel. All instruments housed in a 48-inch CMP gage house.

Real-time data accessed through the internet at https://nednr.nebraska.gov/RealTime

External Gage

Referenced to an enameled staff gage on a 2x6 timber attached to a cantilever type chain gage located on right bank near orifice. Base gage is chain gage.

Bench Mark and Reference Marks

Datum of gage is 3662.51 feet National Geodetic Vertical Datum of 1929.

R.M. No. 1 destroyed

R.M. No. 2 is a standard bronze tablet in a concrete post 112 feet north and 131 feet west of door latch on shelter. Elevation 5.21 feet to gage datum, levels August 16, 2016.

Elevation 5.21 feet to gage datum, levels March 31,2021.

R.M. No. 3 is a standard bronze tablet in a concrete post 135 feet south and 15 feet east from door latch on shelter. Elevation 4.69 feet to gage datum, origin levels August 16, 2016.

Elevation 4.69 feet to gage datum, levels March 31,2021. **Origin**

R.M. No. 4 is a standard bronze table in a concrete post 135 feet south and 41 feet west of door latch on shelter. Elevation 4.69 feet to gage datum, levels August 16, 2016.

Elevation 4.69 feet to gage datum, levels March 31,2021.

Chain gage elevations checked with no corrections made by Levels August 16, 2016.

Chain gage elevation found to be low. Adj. Chain gage +.54ft levels ran March 31,2021.

Channel and Control

The channel is straight above and below the gage. The bottom and banks are composed of very fine sand and silt subject to moderate shifting. This channel takes off the main channel approximately 0.5 mile upstream from the gage. The canal diversion is located 0.5 mile below channel gage. Regulation of this diversion may have an effect on the stage–discharge relation at the channel gage.

Two man-made diversion structures are located approximately 300- feet and 200-feet above channel gage. These structures designed to help regulate discharge passing channel gage. Usually checkup flow at the lower structure in late fall and diverted back to the upper structure spillway to the main river channel. Operation of channel gage will cease at this

time and resume in early spring when flow returned to channel for irrigation demand. Bank overflow will occur near a 5.0 feet stage.

Sectional control will be in effect for stages up to 1.0 foot. Channel control will take over near 1.0 foot stage and remain in effect until box culvert under U.S. Highway 26 0.2 mile downstream becomes restricted or when canal diversion gates for Browns Creek Canal, located 0.5 mile below gage, are operated in a manner that causes backwater.

Discharge Measurements

Wading discharge measurements made in vicinity of the gage. Discharges that cannot be waded measured by handline or crane from the highway culvert 0.2 mile downstream from the gage.

Point of Zero Flow

Variable. PZF: 0.51 Date: 04/10/18.

Regulation and Diversions

Flow completely regulated by trans-mountain diversion, storage reservoir, power developments, groundwater withdrawals and diversions for irrigation and return flow from irrigated areas.

Accuracy

Records good with a twice-monthly measuring schedule and during open water. Records for periods of ice effect or estimated day will be poor.

Establishment and History

No gage maintained prior to June 1, 1934.

June 1, 1934 to August 31, 1936, staff gage at site a quarter of a mile downstream at different datum.

Sept. 1, 1936 to May 31, 1943, staff gages near present site at present datum.

June 1, 1943 Stevens Type E water-stage recorder installed and replaced with Stevens continuous Type A-35 at an unknown later date.

April 8, 1980 Fisher and Porter digital recorder replaced Stevens A-35 recorder as base recording instrument.

October 15, 1991 Fisher and Porter removed and Stevens A-35 continuous water stage recorder became base recording instrument.

April 13, 1995 Stevens Type A-35 removed and replaced with an ISCO Model 4230 Bubbler Flow Meter.

Gage datum lowered 1.00 - ft. on February 25, 1999 to 3662.51 ft.

March 4, 2016 the ISCO equipment and phone equipment was removed.

Chain gage elevation found to be low. Adj. Chain gage +.54ft levels ran March 31,2021.

LOCATION 06684498 MAIN CHANNEL

Latitude and Longitude

41.67658 -103.097

Road Log

Morrill County on the right bank 75 feet downstream from the U.S. Highway 26 Bridge, 0.8 miles north of Bridgeport.

Equipment Details

Recording Gage

SUTRON CBS Flow meter connected to stream with an open-end orifice or sand point. A SATLINK DCP radio provides 1-hour data transmissions for near real time data retrieval. Instrument powered from 12-volt gel cell battery connected to solar panel. All equipment housed in a 5 feet x 5 feet x 8 feet precut metal shelter.

Real-time data accessed through the internet at https://nednr.nebraska.gov/RealTime

External Gage

Base gage is Wire-Weight gage. Wire-Weight gage located 75 feet upstream from shelter on downstream side of concrete bridge rail 51 feet from right downstream end on U.S. 26 Highway Bridge.

Bench Mark and Reference Marks

Datum of gage is 3656.14 feet National Geodetic Vertical Datum of 1929.

R.M. No. 1, 2, 3, 5, 6, 7, 8, 9, and 12 destroyed.

R.M. No. 4 is a standard U. S. Coast & Geodetic Survey standard brass tablet stamped "Bridgeport 1933, 3666.321". Set in a concrete post in weather station plot, located 41 feet west of the northwest corner of the Nebraska Department of Natural Resources building at the intersection of 8th Avenue West and U. S. Highway 385 and 26 in Bridgeport, and 0.5 mi south of gage. Elevation, 3,666.321 feet National Geodetic Vertical Datum of 1929 and 10.17 feet gage datum. Original benchmark to establish elevation.

R.M. No. 10 is a standard bronze tablet in concrete post 28 feet southeast from southeast corner of previous shelter location. Elevation 11.18 feet, gage datum, levels March 13, 1998.

R.M. No. 11 is a standard bronze tablet in a concrete post 37 feet west of southwest corner of previous shelter location. Elevation 11.18 feet, gage datum, levels March 13, 1998.

R.M. No.13 standard bronze tablet on top of concrete bridge rail 21 feet north from right upstream end of U.S. Highway 26 Bridge; elevation 19.29 feet, gage datum, levels February 25, 2009 Used as origin.

Elevation shot 19.29 on March 31, 2021. **Origin**

R.M. No.14 -"X" chiseled on top of concrete bridge rail 18 feet 9 inches north from right downstream end of U.S. Highway 26 Bridge; elevation 19.24 feet, gage datum, levels September 28, 2016.

Elevation shot 19.20 on March 31, 2021.

R.M. No.15 - "X" chiseled on top of concrete bridge rail 8 feet 9 inches north from right downstream end of U.S. Highway 26 Bridge; elevation 19.22 feet, gage datum, levels September 28, 2016.

Elevation shot 19.23 on March 31, 2021.

R.M. No.16 - ¾-inch pipe set in concrete post 9 feet south and 6 feet east from door latch on shelter Given elevation of 12.18; shot elevation 12.16 feet, gage datum, levels September 28, 2016.

Elevation shot 12.14 on March 31, 2021.

Wire-Weight Gage attached to concrete bridge rail 51 feet from right downstream end of U.S. 26 Highway Bridge. Elevation 18.27 feet, gage datum from levels September 28, 2016.

Replaced Wire Weight Established Elevation of 18.25 feet, gage datum from levels March 31, 2021.

Channel and Control

Streambed is composed of fine sand and gravel subject to moderate shifting. The channel approach's bridge at moderate angles. Numerous islands covered with brush and small trees are in vicinity above and below gage. Sandbars will form at extremely low flow creating angles in measuring cross-section. Bank overflow will occur near 8.50 feet stage.

Upper Dugout Creek enters the river channel approximately 0.8mile upstream from the gage on the left bank. A spillway structure from the Browns Creek Channel is located approximately 0.3 mile above the gage on the left bank.

Sectional control will be in effect for stages up to near 4.0 feet. Channel control expected to take over for stages above 4.00 feet and remain in effect to bank overflow near an 8.50 feet stage.

Discharge Measurements

Wading discharge measurements up to 1,500 cubic feet per second made near the gage. Discharge measurements above 1,500 cubic feet per second made by handline or crane from State Highway Bridge at gage.

Point of Zero Flow

Variable.

Winter Flow

Prolonged cold temperatures will produce partial or complete ice cover above and below gage and ice conditions may become quite severe. Considerable backwater expected to occur during ice conditions.

Regulation and Diversions

Flow completely regulated by trans-mountain diversion, storage reservoir, power developments, groundwater withdrawals and diversions for irrigation and return flow from irrigated areas upstream.

Accuracy

Records good with a twice-monthly measuring schedule and during open water. Records for periods of ice effect will be poor.

Establishment and History

June 1896 to October 1900, staff gage at site 4 miles upstream (near Camp Clark site) at different datum.

May 1902 to November 1906, wire-weight gage.

June 1915 to May 1917, staff gage.

June 1917 to July 16, 1978, Stevens A-35 continuous recorder on downstream side and near center of bridge on U. S. Highway 385, 0.5 mi north of Bridgeport. Datum of gage is 3656.14 feet National Geodetic Vertical Datum of 1929.

On July17,1978 the gage was moved 0.3 mile upstream from U.S. Highway 385 Bridge on left bank.

December 7, 1979 Fisher and Porter digital (15 min punch) recorder replaced A-35 Stevens recorder as base recording instrument.

October 15, 1991 Fisher and Porter digital recorder removed and Stevens A-71continuous water stage recorder became base recorder.

October 19, 1993 a Data Fluid balance beam manometer connected to stream with a sand point orifice installed replacing stilling well operation.

July 21, 1994 a GS-93 Stevens data logger was installed and activated by a Data Fluid balance beam manometer and replaced Stevens A-71 as base recording instrument.

April13, 1995 all instruments removed and replaced with an ISCO - Model 4230 Bubbler Flow Meter.

On March 5, 1998 gage moved to present site.

February 22, 2016 the ISCO Model 4230 Bubbler Flow Meter and telephone equipment removed.

Replaced Wire Weight Established Elevation of 18.25 feet, gage datum from levels March 31, 2021.

Revision History

Original description prepared 06-27-1896 by O.V.P. Stout

Revised 05-04-1902 by R. H. Willis

Revised 03-15-1932 by F. F. LeFever

Revised 08-26-1941 by R. H. Willis

Revised 04-14-1953 by G. W. Caughran

Revised 09-18-1978 by J. W. Vassos

Revised 03-18-1987 by J. W. Vassos

Revised 03-30-1993 by J. W. Vassos

Revised 01-19-1994 by J. C. Retchless

Revised 03-25-1997 by J. C. Retchless

Revised 10-22-1999 by J.C. Retchless

Revised 01-04-2001 by J.C.Retchless

Revised 01-29-2002 by J.C.Retchless

Revised 01-09-2003 by J.C.Retchless

Revised 02-09-2005 by James W. Vassos

Revised 07-28-2009 by Andrew Leisy

Revised 12/29/2016 by J.A. Marburger

Revised 02/21/2019 by J.A. Marburger

Revised 11/02/2021 by K. Schwager