

Big Blue River at Seward, Nebraska 06880500

LOCATION

Latitude and Longitude

40.90294, -97.11183

Road Log

At right bank on downstream side of bridge on U.S. Highway 34 at west edge of Seward, and 0.2 mile downstream from Lincoln Creek.

Nearby Features

Equipment Details

Recording Gage

A Sutron Continuous flow bubbler system is connected to a Satlink 3 data logger which stores values and transmits on a 60-minute cycle. Equipment installed housed in a stainless steel, gun cabinet type gage house 2'x 2.5'x 6' (new in May, 2015) shelter mounted on a steel platform supported by steel posts. The Sutron CF Bubbler unit is connected to an orifice located just downstream of the large cement and rock rubble pile at the right bank of stream under center of the bridge.

External Gage

Outside gage is a type A wire-weight gage mounted on the upstream side of bridge. The wire weight check bar has an elevation of 27.96 feet above datum (Levels 05/11/2021).

Bench Mark and Reference Marks

Original reference marks 1, 2, and 3 were destroyed when the new bridge was built. Reference marks 4, 5, and 6 are located at bridge on Highway 15 at south edge of Seward. RM 10 and RP2b were found destroyed by Levels 09/20/2011.

RM 7 is a brass tablet located at top right downstream bridge abutment. Elevation 26.31 feet. Origin. 05/11/2021

RM 8 is a chiseled square on top right upstream bridge abutment. Elevation 26.26 feet. Levels 05/11/2021.

RM 9 is a chiseled square located on top left downstream bridge abutment. Elevation 26.23 feet. Levels 05/11/2021.

RM 11 is located approximately 250 feet east of left downstream corner of bridge and 20 feet south on a fire hydrant. On the fire hydrant base the northwest edge is a chiseled arrow. Elevation 25.70. Levels 04/17/2017.

RP 2b is an arrow on the bottom camber lip of top bridge rail on the downstream side of bridge at station 203 over the middle of flow. Elevation 28.84. Levels 04/17/2017.

BM1 (NEW) is a center punch mark on the center of top nut of the fire hydrant located approximately 250 feet east of left downstream corner of bridge and 20 feet south on a fire hydrant. PID#LG0003 elevation 27.72 feet by levels on 04/17/2017.

Zero gage datum at this bridge has been maintained at 1,421.49 feet mean sea level since station was established January 12, 1954 NGVD29. NAVD88 was established by survey on 03/25/2014. Elevation gage datum NAVD88 1,422.053 feet.

Hydrology

Drainage Area

1,107 square miles.

Channel and Control

Low water channel meanders down the designed river course around the southwest edge of Seward. A large levee protects the west side of Seward and is the left bank of the reach through the bridge and gage station. The right banks are made up of dikes, high ground, and railroad grades. The channel is straight for 0.2 mile above and below the bridge. Bed of stream consists of shifting silt and sand with rubble riffles creating several pools above and below gage. The low banks are covered with small to large willow trees on the right and grass and small willow trees on the left (levee side). Channel control will exist at stages above four feet until peak occurs. Back water occasionally affects the rating on recession. The confluence with Plum Creek lies 1.2 miles downstream and can contribute high flows depending on rainfall patterns. A series of measurements defined this phenomenon in 1963.

Discharge Measurements

At low stages, wading measurements can be made in the vicinity of the gage. High water measurements are made from the downstream side of the bridge.

Floods

Extremes for Period of Record

Period of record; Maximum discharge, 15,600 cfs March 19, 2019, gage height 24.11 feet; no flow July 30-31, 1955 (result of irrigation pumping).

Point of Zero Flow

Varies with scour and fill. -0.00 feet July 19,2006.

Winter Flow

Stage-discharge relation may be affected by ice from November to March.

Regulation and Diversions

There is considerable pump withdrawal above and below station for irrigation during summer months.

Accuracy

Records are considered good except those for winter period which are poor.

Establishment and History

Established January 12, 1954, at present site and datum. Graphic recorder on composite pier installation near the right bank.

December 18, 1969 to November 7, 1983, graphic and digital recorders at site 1.2 miles downstream at datum 6.33 feet lower. Recording gages activated by a manometer located at the Highway 15 bridge at south edge of Seward.

November 7, 1983, to present, graphic and digital recorders activated by a manometer relocated on original gage site at Highway 34 bridge on right bank.

August 10, 1995, State of Nebraska Department of Natural Resources assumed operation of station after the CO-OP agreement between the U.S.G.S. and D.W.R. ceased. D.N.R. instrumentation, all funding, and publication of this station was started at this time.

On May 10, 2005 the Handar equipment was removed and new WaterLog recording equipment was installed.

On April 17, 2006 a tipping rain bucket gage was added to the system.

On July 17, 2009 the Stevens A-35 strip chart recorder (1-6), and WaterLog shaft encoder, and Fluid Data G-2 manometer with a safe purge gas system were removed and new equipment was installed.

OTT CBS unit self-contained bubbler system and transducer connected to a WaterLog 522+ Data Collection Platform were installed in 2015

Revision History

Original description by J. A. Anderson, 07-19-1954

Revised by E. K. Steele, 10-10-1966

Revised by G. B. Engel, 10-19-1970

Revised by L. Blackburn, 10-24-1981

Revised by J. A. Anderson, 07-19-1985

Revised by M. T. Thompson, 03-05-1991

Revised by J. A. Marburger, 02-03-1995

Revised by J. A. Marburger, 04-11-1996

Revised by J. A. Marburger, 01-20-1998

Revised by J. A. Marburger, 01-22-1999

Revised by J. A. Marburger, 11-07-2000

Revised by J. A. Marburger, 06/30/2004

Revised by J. A. Marburger, 06/17/2005

Revised by J. A. Marburger, 11/03/2006

Revised by J. A. Marburger, 07/06/2007

Revised by J. A. Marburger, 12/28/2009

Revised by J. A. Marburger, 09/20/2011

Revised by J. A. Marburger, 08/28/2015

Revised by J. J. Vifquain, 11/21/2017

Revised by S. Figuric, 11/09/2018

Revised by J. Hladik 10/11/2019

Revised by J.R. Williams 2021-06-17 to include WWCB elevation from 2021-10-15 survey

Revised by J. Hladik 06/22/2021

Revised by J. Hladik 01/18/2022