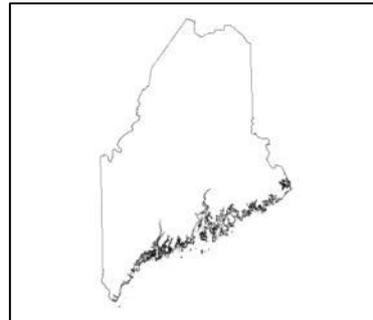


Geologic Site of the Month
July, 2000

***Old Topographic Maps:
Geological Tools and Records of History***



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Introduction

The Maine Geological Survey has a basic geologic mapping program funded through a cooperative with the U. S. Geological Survey (USGS) known as STATEMAP, which is authorized by Congress through The National Geologic Mapping Reauthorization Act. The program at the Maine Geological Survey produces detailed surficial and bedrock geological maps published on a 7.5-minute topographic base (scale 1:24,000). This topographic base is the standard for most detailed geological maps today and was introduced by the USGS soon after World War II. Prior to this, the 15-minute topographic map (scale 1:62,500) was the most detailed topographic base available. An informative history of the [topographic mapping](#) of the United States can be found at the USGS website.

Surficial geologists study the loose soil materials and sediments overlying the solid rock of the earth. Some surficial deposits have characteristic shapes, especially in an area where the land has undergone [glaciation](#). The shape of the land, or topography, as represented by the contours on topographic maps can be a helpful tool for interpreting the geology. The level of topographic detail on these maps is generally better on the 7.5-minute map, which usually has a 10-foot contour interval. The contour interval on the old 15-minute maps is usually at a 20-foot interval, hence the level of detail of the landforms found in the area under study may not be as sharp as the 7.5-minute map. However, this is not always the case!



Maps of the Brunswick sand plain

In some instances where the newer 7.5-minute map has a 20-foot contour interval, but sometimes even when the new map has a 10-foot interval, examining the old 15-minute sheet can be of value.

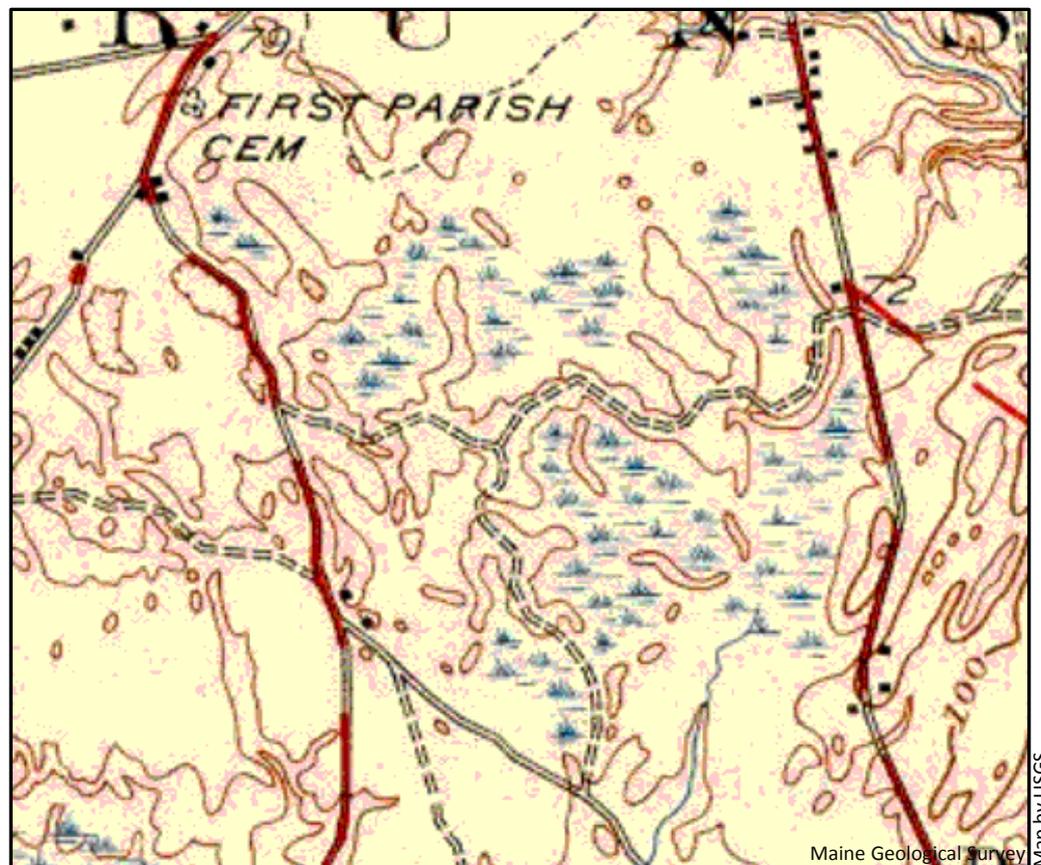


Figure 1. Portion of the Bath 15-minute quadrangle showing topography of the Brunswick sand plain.

Maps of the Brunswick sand plain

This summer, surficial geologic mapping of the Brunswick 7.5-minute topographic quadrangle is being conducted. A large sand plain is present in the towns of Topsham and Brunswick, easily recognized on the quadrangle map as the gently eastward-sloping, flat-surfaced areas in the southwest and southeast parts of the Brunswick quadrangle between elevations of 100-feet to 30-feet above sea level.

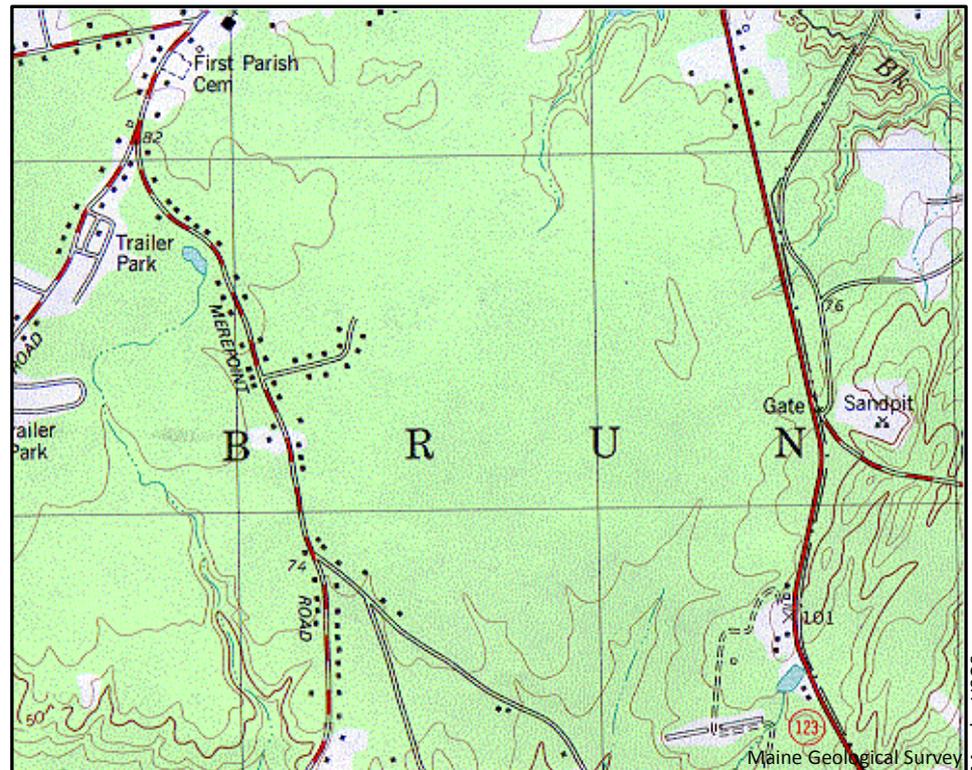


Figure 2. Portion of the Brunswick 7.5-minute quadrangle showing topography of the Brunswick sand plain.



Maps of the Brunswick sand plain

When the region became free from ice of the last glaciation, the coast of Maine was flooded by the ocean. About 14,000 years ago, the land emerged from the ocean in the Brunswick area and the postglacial Androscoggin River deposited the sand plain as a delta into the ocean. The climate at this time was warming, but vegetation in the area was similar to that found in tundra regions, with much open unvegetated area. Where there is a source for sand and silt, such as the Brunswick-Topsham sand plain, wind-blown deposits and dunes can form. Compare the detail of the topography of the region from the 7.5-minute sheet (Figure 2) to the same area on the 15-minute sheet (Figure 1). Exposures in the field show this area has an extensive cover of wind-blown sand on the surface of the sand plain, which can be found as a mantle over much of the area and also as vegetated ancient sand dunes. The dunes are shown on the 15-minute map by the northwest-southeast trending elongate closed-contours, but are not shown on the newer 7.5-minute map. Thus, the representation of these landforms cannot be as detailed on the 7.5-minute topographic base as compared to the older 15-minute map. Their interpretation on the new map when it is completed will be supplemented with an inset sidebar figure of the old map showing the dune topography of the area.



Maps of the Bay Bridge area

The 15-minute topographic maps are no longer published by the USGS. Fortunately, the University of New Hampshire [Dimond Library](#) has an online collection of the 15-minute quadrangles of the New England region, including many of the earliest versions of these maps. This collection of old maps was begun in part to locate abandoned railroad right-of-ways in New Hampshire.

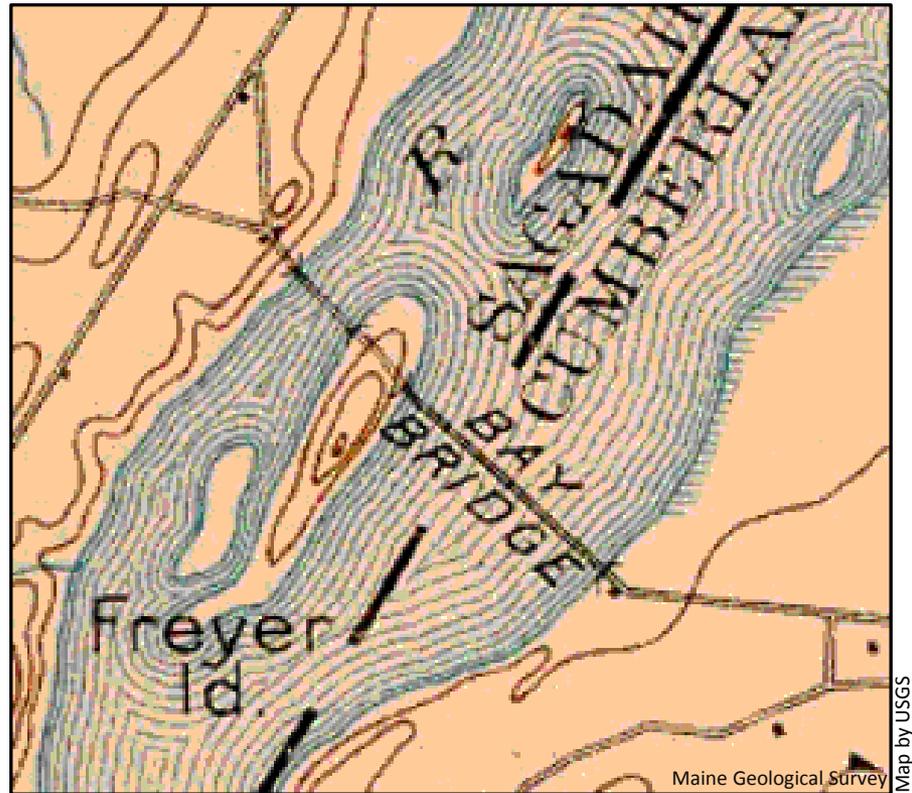


Figure 3. Portion of the 1894 Bath 15-minute quadrangle showing the site of the Bay Bridge.

Maps of the Bay Bridge area

Historians or individuals with interest in cultural or industrial features can use the maps in similar ways. For example, the Bay Bridge shown on the 1894 Bath 15-minute quadrangle (Figure 3) is missing on the 1945 edition (Figure 4).

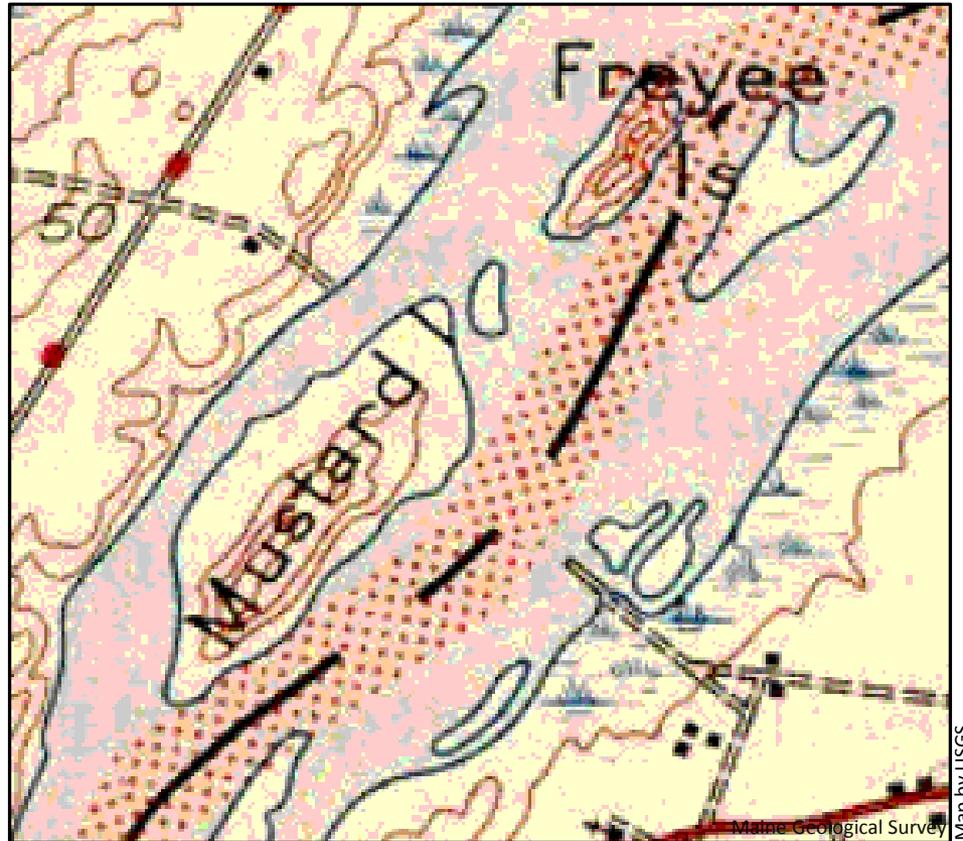


Figure 4. Portion of the 1945 Bath 15-minute quadrangle showing the former site of the Bay Bridge.

Maps of the Bay Bridge area

The bridge was built in 1846 and was an important link for commerce between the communities west of Merrymeeting Bay and the city of Bath. It was destroyed in a flood in 1896, but remnants of it and the roads that led to it can be seen on the 1945 edition.

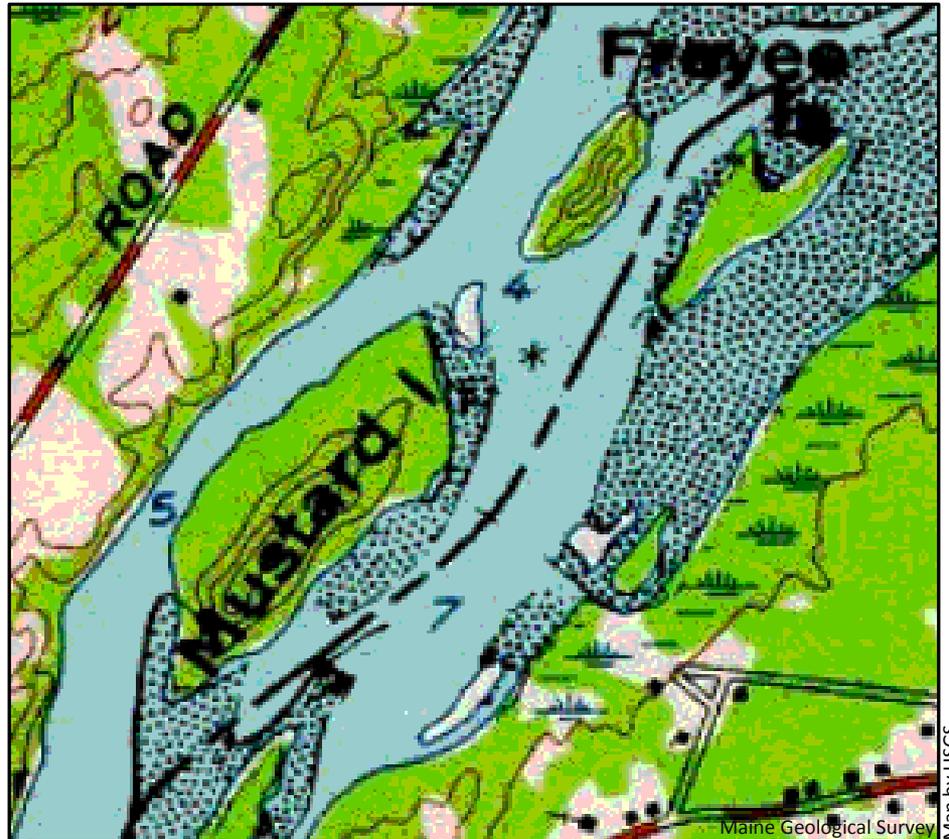


Figure 5. Portion of the 1957 Bath 15-minute quadrangle showing the former site of the Bay Bridge.



Maps of the Bay Bridge area

However, if you examine the 1957 edition (Figure 5), the remnants are not easily seen and roads from the west are not shown. The roads and bridge remnants are once again shown on the new 7.5-minute map (Figure 6).

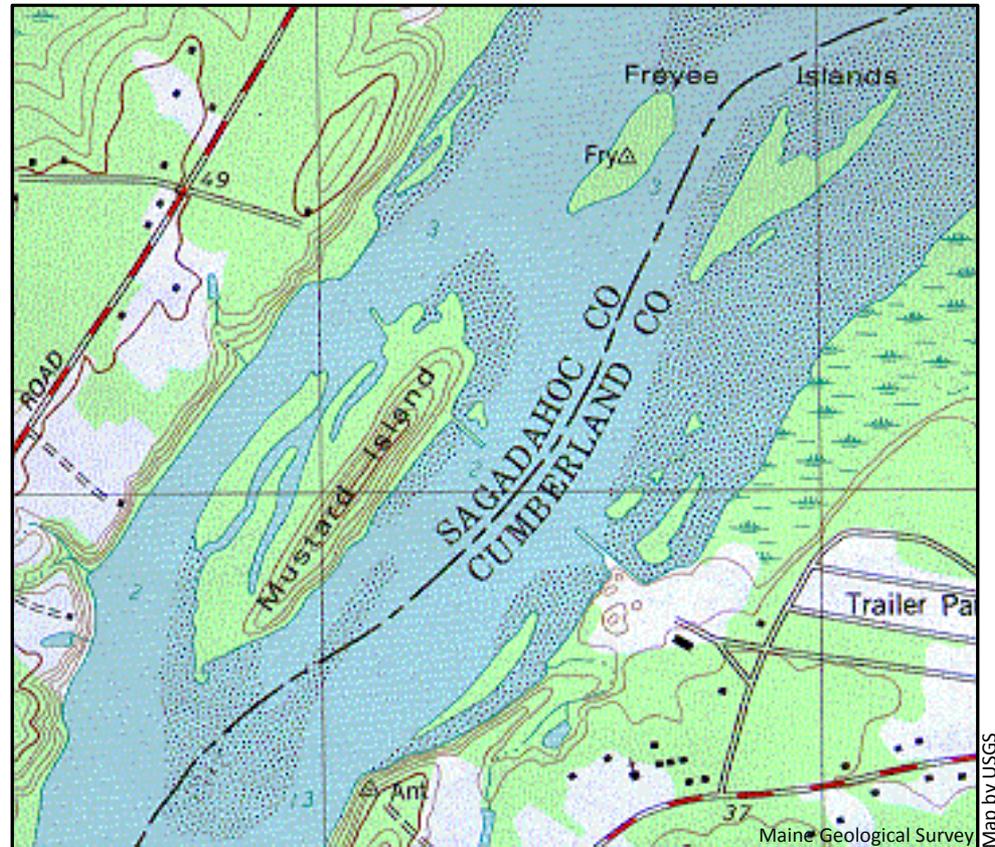


Figure 6. Portion of the 1980 Brunswick 7.5-minute quadrangle showing the former site of the Bay Bridge.



Maps of the Bay Bridge area

Another interesting historical record for the region is found on the Bath 15-minute sheet. The 1894 edition (Figure 7) shows the site of the Kennebec River ferries in Bath, at that time the only way to transport vehicles and goods across the river (note one ferry is located at the termination of railroad tracks).

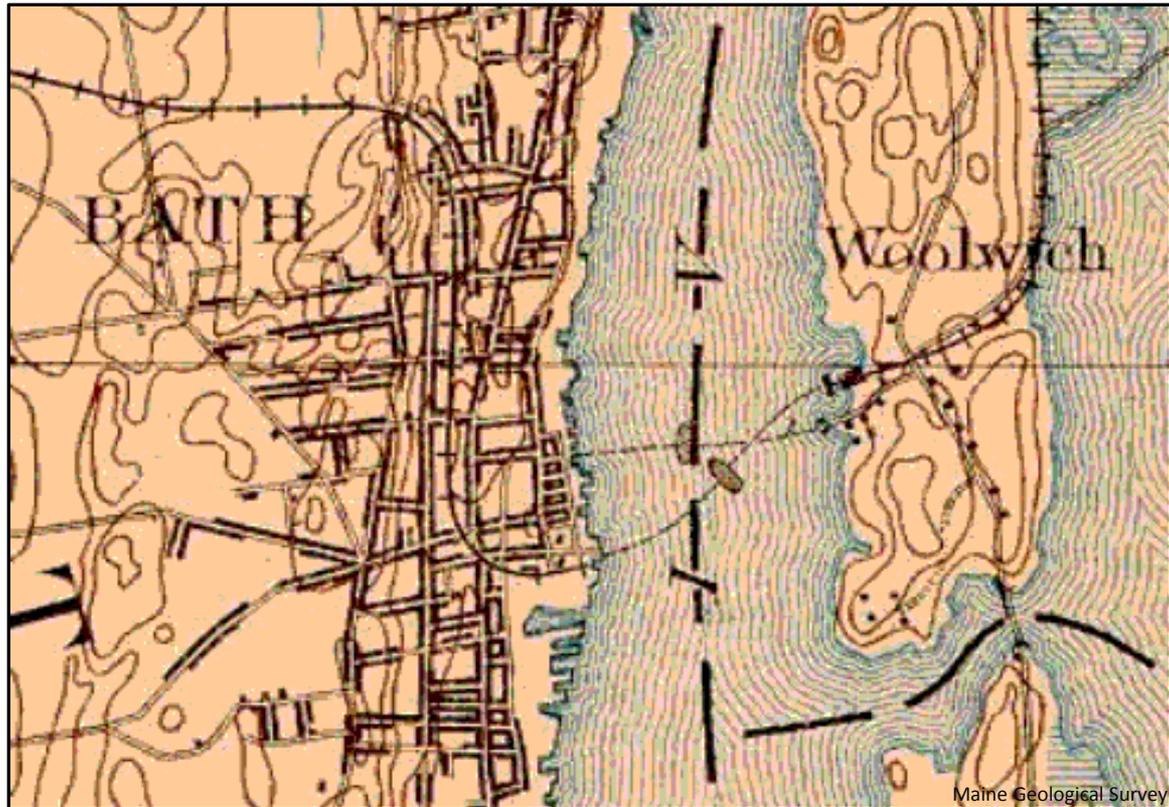


Figure 7. Portion of the 1894 Bath 15-minute quadrangle showing the site of the Kennebec River ferries.

Maps of the Bay Bridge area

In 1927, the newly completed Carlton Bridge provided an easier and safer means to cross the river (see Figure 8, 1945 edition). In May 2000, the newly constructed Sagadahoc Bridge was opened to replace the Carlton Bridge (see [Subsurface Geology of the Kennebec River](#) for more information). Along with old photographs or other images and written descriptions, the old topographic maps are a record of the land, its past use, and how we adapted our culture to it.

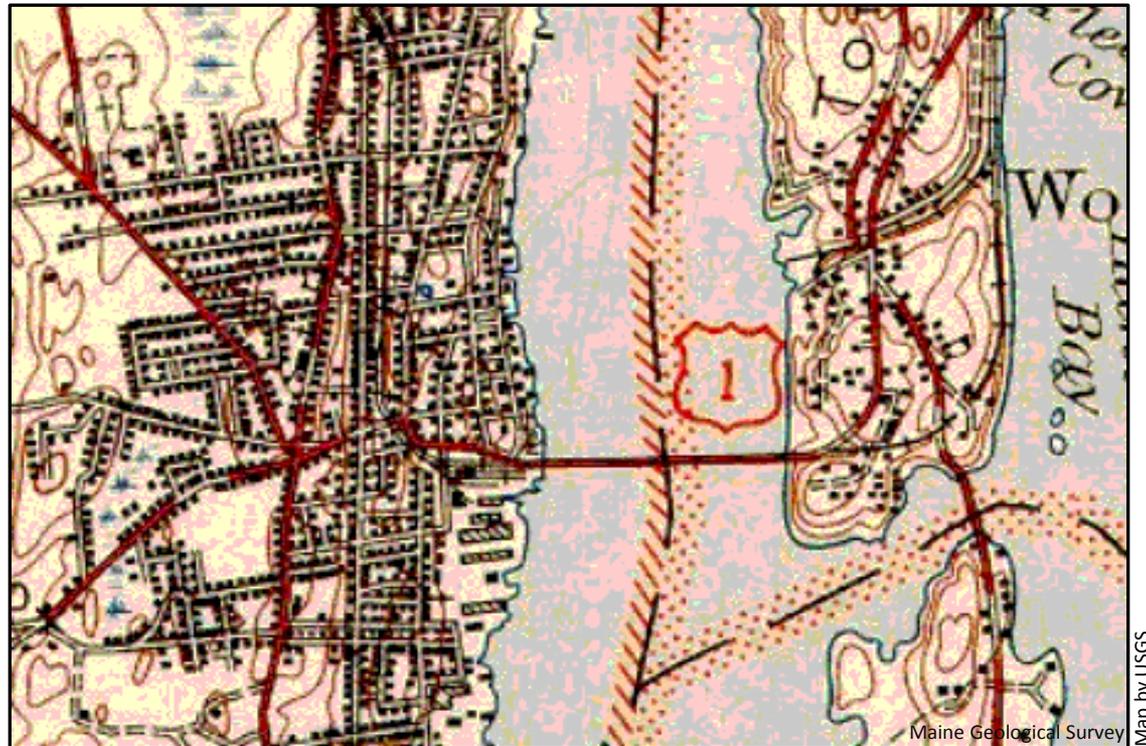


Figure 8. Portion of the 1945 Bath 15-minute quadrangle showing the site of the Carlton Bridge.

References and Additional Information

[The Pejepscot Historical Society](#) of Brunswick, Maine is acknowledged for assistance on the history of the Bay Bridge.

[Historic USGS Maps of New England website](#)

For a detailed study on wind-blown deposits in Maine, refer to "Late-glacial dunes, ventifacts, and wind direction in west-central Maine" by John B. McKeon, in *Studies in Maine Geology, Volume 6: Quaternary Geology*, Robert D. Tucker and Robert G. Marvinney (editors), published by the Maine Geological Survey.

