

























































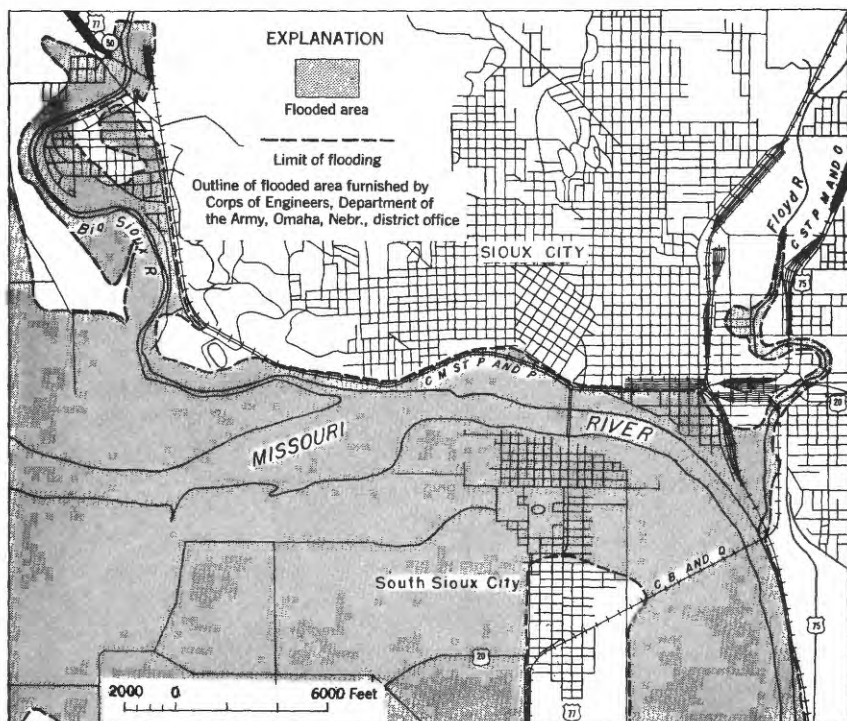


Figure 19. --Map of area flooded by Missouri River at South Sioux City, Nebr., and Sioux City, Iowa, April 1952.

of the flood became definitely known by stage reports and by discharge measurements from Bismarck, Mobridge, and Pierre, preliminary forecasts of the flood-crest stage at Omaha-Council Bluffs were made. On April 8 the first forecast issued for the major crest called for a stage of 26 feet on April 17. As more information became available, the crest forecast was revised from time to time. The final crest forecast revision of April 14 called for a stage of 31.5 feet to occur on April 17. A battle to raise levees and floodwalls was started on April 11 with the letting of emergency contracts by the Corps of Engineers for raising levees. Figure 20 shows the locations of the levees and floodwalls protecting the twin-city area. The "bulge" of Council Bluffs, located on the flood plain and extending between protective levees towards Omaha, was evacuated of all residents, and business places were closed. About 6,000 Army troops from Fort Leonard Wood, Mo., Camp McCoy, Wis., and Camp Carson, Colo., were flown to the twin cities for work on levees and patrol duty.

The Omaha-Council Bluffs levees were raised by adding earth fill upon which wood flashboards were erected and anchored by sandbag weights. (See fig. 21.) The concrete floodwall protecting industrial Omaha was raised by addition of wood flashboards bolted to the permanent structure. The amount of raise varied

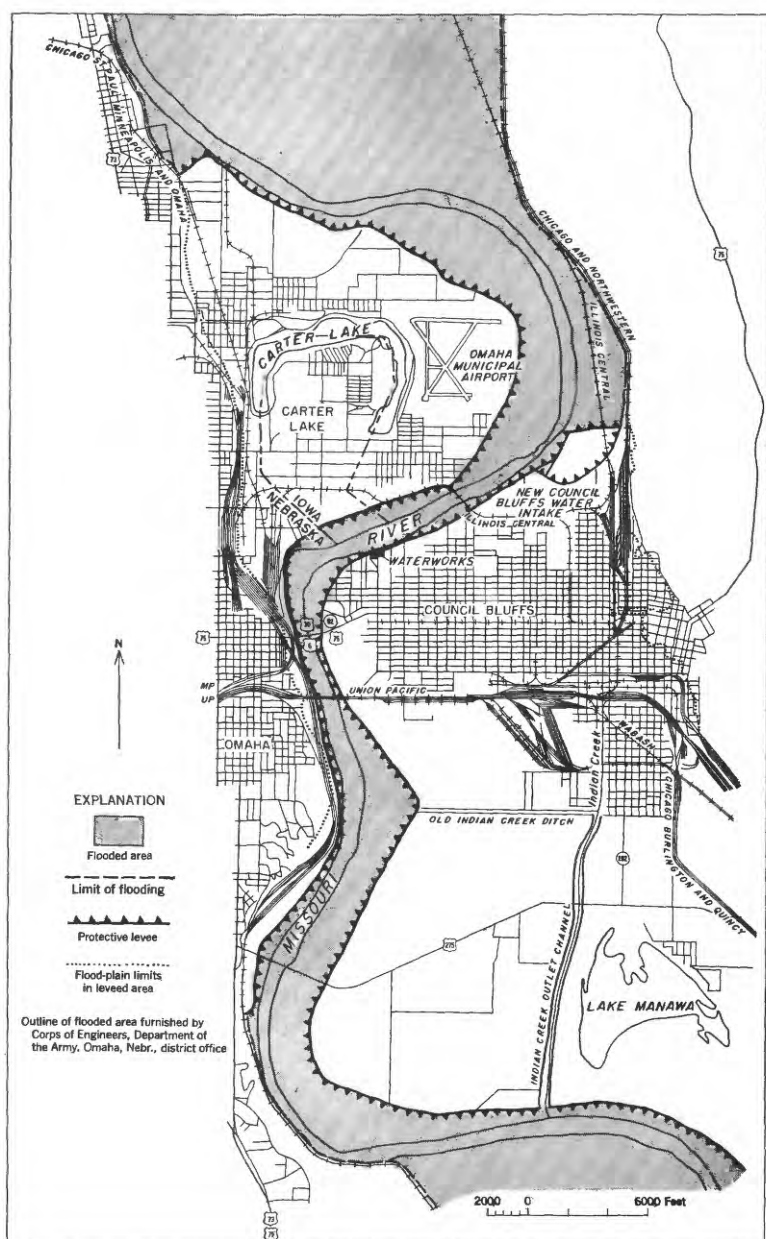


Figure 20. --Map of Omaha-Council Bluffs area showing location of levees that prevented flooding, April 1952.

from 3 to 4 feet. Sandbag ring dikes were hastily constructed around each sand boil as it developed. (See fig. 22.) The greatest single threat to the dikes occurred on the night of April 18



Figure 21.--Emergency levee built on existing levee at the intake structure of Council Bluffs. Photograph by Council Bluffs Nonpareil.



Figure 22. --Sand boils controlled by ring dikes of sandbags behind Council Bluffs levee. Photograph by Council Bluffs Nonpareil.

when the Grace Street sewer breakthrough started; it was brought under control within 6 hours by dropping steel beams and then rock across the river end of the sewer. Rainfall during the battle to raise the levees made the job more tedious by turning dirt roads and levee tops into quagmires.

The successful fight to save Omaha-Council Bluffs from the flood was given much attention by national press, radio, and television networks. The flood crest passed Omaha on April 18, but the threat to the levees remained for a few more days. In the week of concentrated action, labor and material were spent in almost unbelievable quantities to save the levees (Northwestern Bell Telephone Co., 1952, p. 17).

The Missouri Valley from Sioux City to the mouth of the Kansas River was flooded from bluff to bluff, except for the successfully protected area at Omaha-Council Bluffs and a few small agricultural areas protected by levees that withstood the flood. The small communities of Iowa, Nebraska, and Missouri situated in the flood plain were flooded, with few exceptions, and farms were flooded and deserted. Levees designed for much lower river stages failed during the high flood stage of 1952, and the leveed areas were flooded to almost the same extent as if the levees had not existed. The flood forecasts enabled most farmers to transfer farm machinery, furniture, and livestock to high ground. Plum Creek levee failure caused washout of the approach to the highway crossing at Nebraska City, Nebr., and flooding of about half of Hamburg, Iowa. It also generated an artificially high peak discharge at and downstream from Nebraska City. Plate 2 shows the extent of flooding of the valley lands between Sioux City and Kansas City.

At St. Joseph, Mo., the river made two cutoff channels that isolated the St. Joseph airport from the town and stopped travel west of St. Joseph on U. S. Highway 36. (See fig. 23.) The Corps of Engineers have completed a permanent cutoff channel paralleling the upper cutoff made by the river. The lower cutoff was stopped by repairs made to the railroad and highway. At Fort Leavenworth, Kans., the Army lost a struggle to protect Sherman Field, the base airfield, from flooding. For a time, the approaching Missouri River flood was considered as a serious hazard to Kansas City where experience gained during the 1951 flood led residents to fear all possible repetitions. Protected by levees, the Kansas City area went safely through the flood. The Kansas River was discharging a flow of about 50,000 cfs at the time of the Missouri River flood crest.

From Kansas City to its mouth, the 1952 Missouri River flood broke levees and flooded farms, but it was not nearly so destructive as the July 1951 flood. The crest reached the mouth of the Missouri River on April 28 where it merged with a high flood on the Mississippi River.

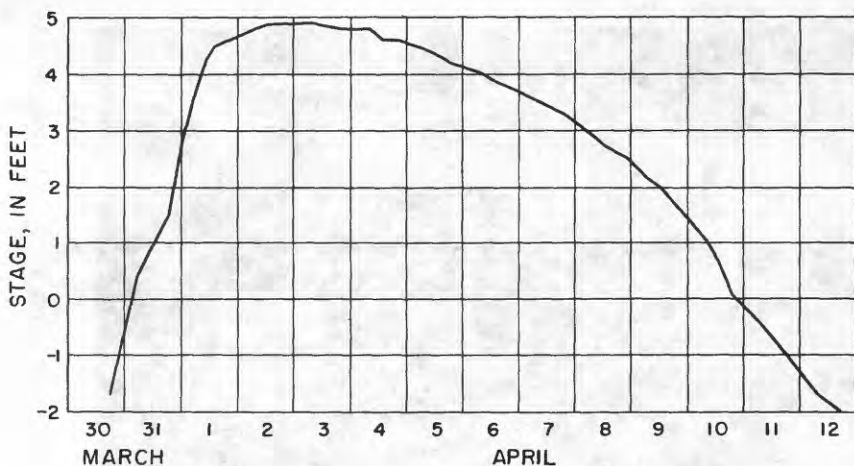


Figure 25. --Hydrograph of stage, Milk River at Havre, Mont., 1952.

Harlem was partly flooded on April 4, and about 100 persons were forced from their homes in the northern part of town. Thirtymile Creek caused most of the flooding at Harlem, although the Milk River was backed up nearly into the town. The cities of Malta, Glasgow, and Nashua began raising protective dikes on April 5 soon after the flood situation at Havre, Chinook, and Harlem was known. In 1938, the Corps of Engineers at Glasgow had constructed a levee which flood-protection workers found necessary to raise and strengthen to protect the city during the 1952 flood. (See fig. 28.) The reach of Milk River between Lodge and Battle Creeks and Frenchman Creek had one long flat flood crest that passed Malta on April 11. The long period that the river remained above flood stage added to the suffering and damage.

Below Frenchman Creek, the first flood crest on the Milk River occurred April 8-9 and stages set new records. The snow cover in the Frenchman basin in Canada was the heaviest ever observed there, with major melting beginning about April 10. The flooding that followed was unprecedented throughout the basin. The earth dam forming East End Reservoir was overtopped about noon on April 15, and breaching adjacent to the spillway resulted. Val Marie West Dam and Val Marie Reservoir Dam were artificially breached on April 16 and 17 to avoid overtopping and spillway damage. The Frenchman River at international boundary crested on April 15, the same day that Frenchman Dam at Valleytown, Mont., about 15 miles above the mouth, began washing out.

Floodmarks at Frenchman Dam indicate a maximum pool stage of 36.654 feet was reached. Contents at that stage were about



Figure 24. --Aerial view showing widespread flooding at north Havre, Mont., April 1952. Photograph by Corps of Engineers.











Figure 28. --Aerial view showing Glasgow, Mont., safe behind protective levee, April 17, 1952. Photograph by Corps of Engineers.

capacity curve. Aerial photographs by the Corps of Engineers at 2 p.m., 5 p.m., and 5:45 p.m. on April 15 show some flow over and around the dike on the right end and breakthrough near the spillway beginning about 5 p.m. Computed flow over and around the dike and through the spillway would total about 12,000 cfs just before the breaching. An aerial photograph by the Corps of Engineers at 6:30 p.m. on April 16 indicated the contents of the reservoir were about 4,000 acre-feet.

The flood from Frenchman Creek combined with near-record flows of Milk River above Frenchman Creek to produce a second flood, higher than the first. Rock Creek added materially to flood volumes at Hinsdale, but farther downstream the Milk River tributaries had receded to moderate flows. The crest of the second flood passed Nashua on April 18. The flood receded slowly as the floodwaters of the vast flood plain drained away. The stage at Nashua was above 25 feet until April 30, although danger of flooding through dike failures was past on April 25.

Transportation in the Milk River valley was possible by rail and by boat during the flood crest. The Great Northern Railway was not overtopped in any place along the main line through the Milk River valley, and at many cities and towns the railway embankment served as part of the protective dike system. The railway also served the flooded communities by loaning freight cars for storage of evacuees' furniture. Travel on valley highways was practically impossible during the Milk River flood; through traffic on U. S. Highway 2, which parallels the Milk River, was blocked April 1-24. Essential travel in the flooded valley between points not served by rail was by boat or airplane. Many highway bridges were damaged or carried away during the flood; on some secondary roads normal travel was not restored until many weeks after the flood crest.

The number of farm animals drowned was surprisingly large in view of the slow flood travel and the short distance to high ground on both sides of the Milk River. An estimated 1,000 sheep were drowned near Chinook. Aerial observers reported animals stranded on small islands where they starved, and they counted hundreds of drowned animals between Havre and the mouth of the Milk River. A few farm animals were rescued or were brought food by boat.































































































































































































































































































































































































































































