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- 6-A6. A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction, by Eric D. Swain and Eliezer J. Wexler. 1996. 125 pages.
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## Surface-Water Stations



Stream-gaging station, Cedar River near Austin, flood of July 10, 2000.

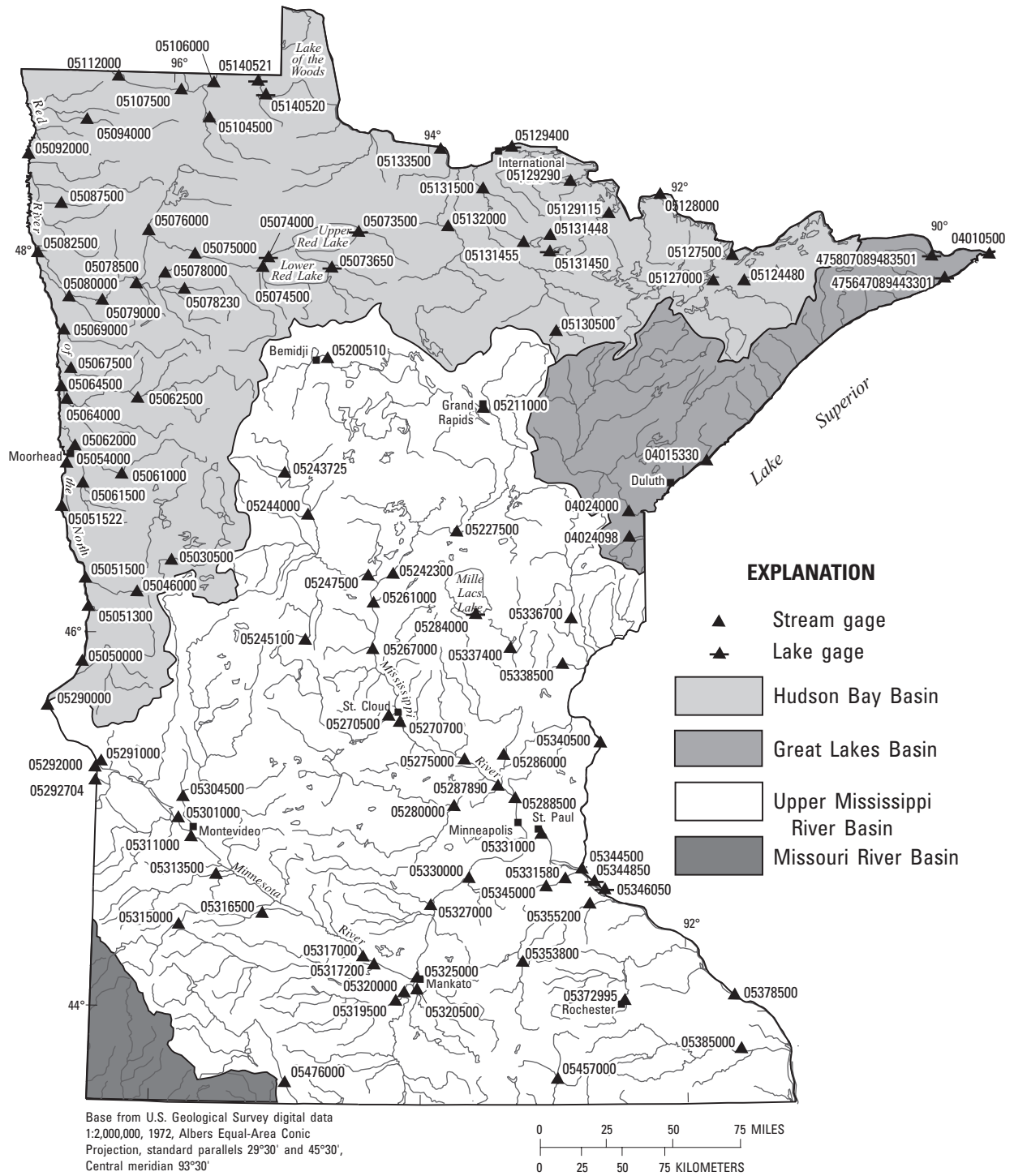
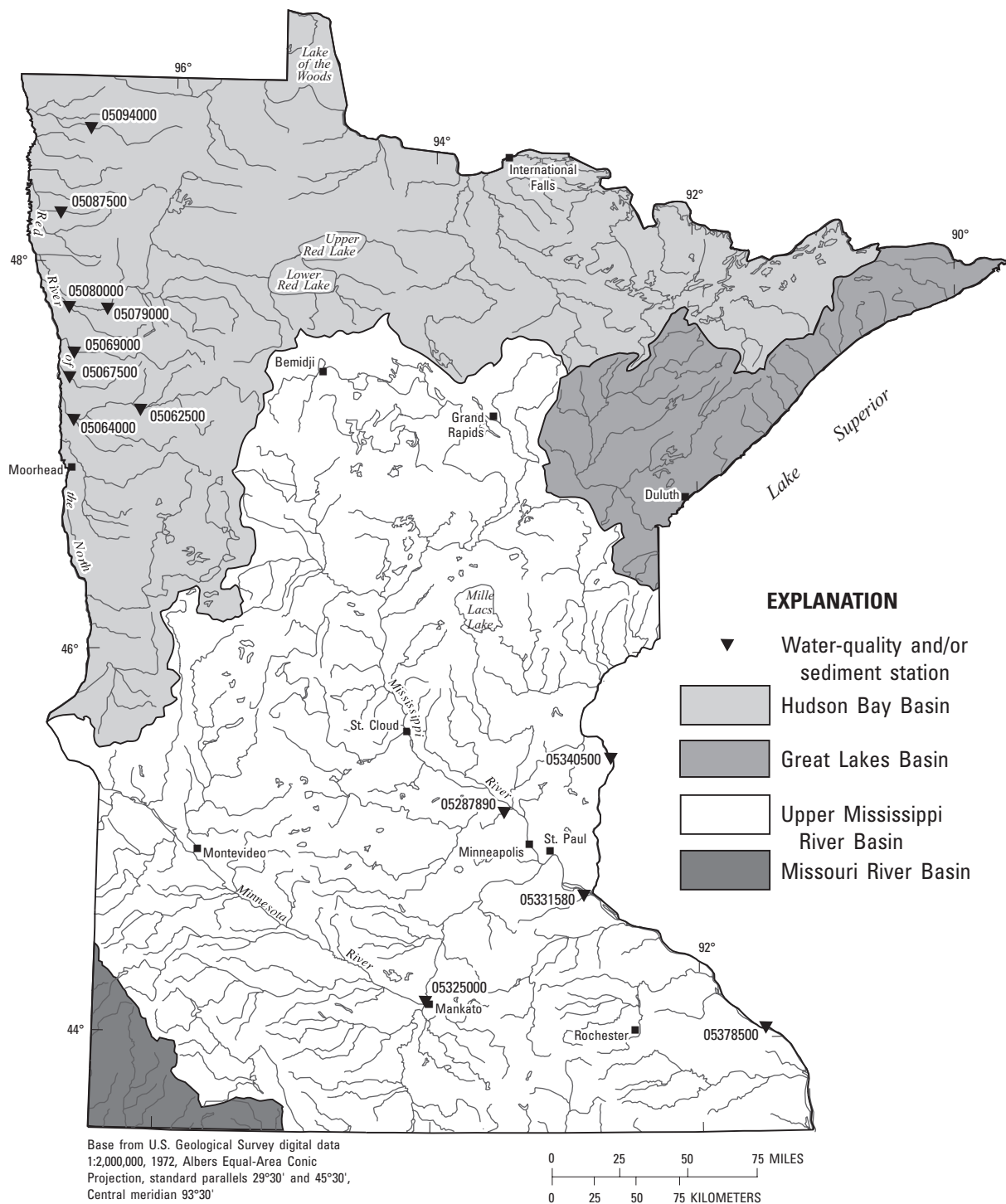


Figure 5. Location of lake and stream-gaging stations.



**Figure 6. Location of surface-water quality stations.**