A Waterfall on the Move
An Overview of Three Activities

Instructions for teachers: There are three activities related to St. Anthony Falls and Mississippi River geology that will help prepare students for their Journey to the Falls experience; Mississippi River Bluff Strata, St. Anthony Falls from 1680-1876, and Map the River in the Twin Cities.
Each activity can stand alone but the three activities combined will best prepare students for their Journey to the Falls experience. The activities build upon each other and provide context for what the students will see and learn on the boat. The "Mississippi River Bluff Strata" activity sets the stage for the other two activities and should be done first followed by St. Anthony Falls from 1680-1876 and Map the River in the Twin Cities.

Overview of the three activities:

Part 1- Mississippi River Bluff Strata
This activity gives students the background to understand how the geology of the river determined the course of the Twin Cities. In this activity, students examine the three types of sedimentary rocks found within the river bluffs. Students will understand how the bottom layer of soft sandstone was eroded by a rushing waterfall causing the harder top layers to collapse with the result of the waterfall moving upstream. In its wake, the waterfall left rock debris in the river making navigation difficult between St. Paul where the Falls originated and its present location, Minneapolis. St. Paul was established as a port city, a safe place to land steamboats before rocks and rapids further upstream made travel on the river too difficult. Minneapolis began at its location to take advantage of the waterpower provided by St. Anthony Falls.

Part 2- St. Anthony Falls from 1680-1876
How do we know how much and how fast St. Anthony Falls moved? This measuring activity describes N. H. Winchell and his use of St. Anthony Falls location information provided by early explorers. As a geologist, Winchell examined the river bluffs, read early explorers journals then developed a map to show St. Anthony Falls' recession. The map records both the natural recession of St. Anthony Falls as well as increased recession due to human changes at the Falls. Human impact increased the rate of recession at the Falls because the dams built to channel the river to the saw and flour mills on each river bank, often left little water flowing over the Falls. Limestone is quite porous and became vulnerable to the freeze-thaw cycle in winter. Often logs escaped from log booms battering the fragile limestone, accelerating the recession.

Part 3- Map the River in the Twin Cities
In this activity, students map various features on a map of the Mississippi River. There are 14 different mapping items for students to complete. If students are unable to complete all items, it is strongly recommended that they complete numbers 1, 2, 4, 7, 8 and 9 of this worksheet with #8 being the most important. Students will travel the section on this map between the Lower St. Anthony Falls lock and Broadway Avenue.