

ALTERNATIVE #7B — Steady 72-cfs Import from End of McClusky Canal to Sheyenne River

This Missouri River import alternative incorporates four features:

Feature 4C — A water-supply pipeline from the Sheyenne River near Kindred to the upper Red River near Wahpeton, with a branch to Abercrombie. The pipeline and its associated pumping plant provide water at 18 cfs to offset shortages at the existing Cargill plant and at New Industry 3 near Abercrombie.

Feature 12 — Conservation. This is about a 15-percent reduction in demand. However, it is offset by a 15- to 20-percent increase in demand during drought years.

Feature 14C — Pipeline direct from McClusky Canal (mile 73) to confluence of the North and South Forks of the Sheyenne River (34-mile gravity-discharge route). Biota treatment by ozonation/chloramine process on McClusky Canal at mile 59 plug. The New Rockford Canal is not used.

Feature 17 — Surface-water supply for rural water systems. Cost estimates included here provide for multiple river diversions, treatment plants, pumping plants, and main supply pipelines. For modeling purposes, though, the rural system shortages are consolidated demand points located at Fargo and Grand Forks.

Feature 4C Summary

This is the same as described above and in Alternative 7A.

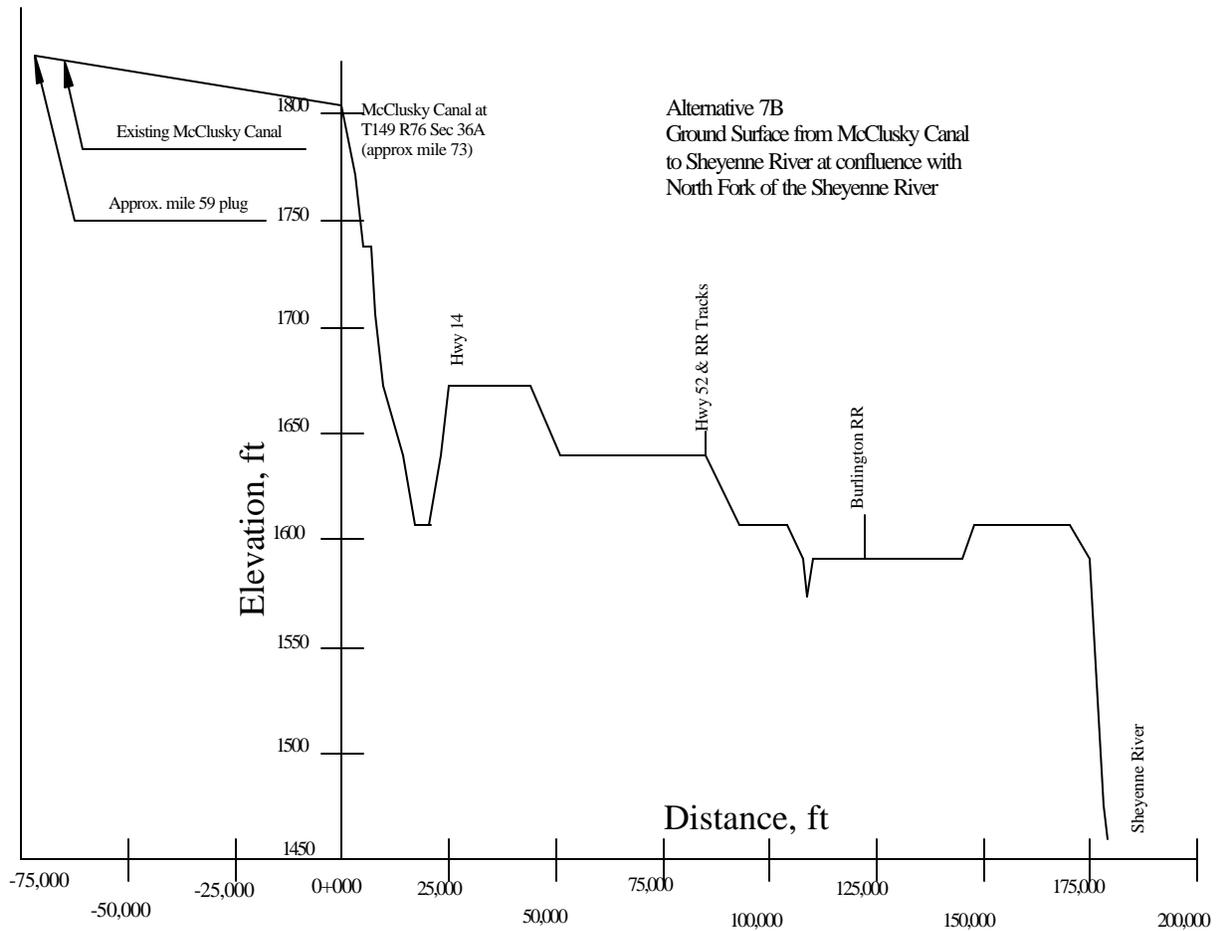
Feature 14C Summary

This alternative uses some of the existing Garrison Diversion Unit supply works. The cost estimate includes updating and rehabilitation of the Snake Creek Pumping Plant and the McClusky Canal, as provided by Reclamation's Dakotas Area Office, but does not include costs for the New Rockford Canal or the James River Feeder Canal.

The biota treatment plant is located at the existing McClusky Canal mi 59 plug. Water is discharged again into the McClusky Canal on the downstream side of the plug and flows by gravity to the end of the existing canal. The pipeline begins at the end of the existing McClusky Canal, mile 73, and is a gravity flow pipeline, 35 miles long, and discharges into the Sheyenne River at the confluence of the North Branch and South Branch. The pipeline discharge point contains an energy dissipater. For the purposes of this estimate, the biota treatment plant and gravity pipeline are sized at 72 cfs. General seepage losses in the Sheyenne River are included in the HYDROSS model, but some additional loss in the McClusky Canal between mile 59 and mile 73 may need to be included in future study.

The import water reaches the Sheyenne River at the junction of the North Branch and the main stem river channel. It has been assumed that this junction is a logical location where the river channel would begin to have sufficient capacity to accept this amount of import flow. The actual capacity of the river

channel and any need for bank stabilization or erosion control have not been assessed for this appraisal-level study. Where possible, shortages on the Red River have been shifted to the Sheyenne River in order to take advantage of the import water supply.

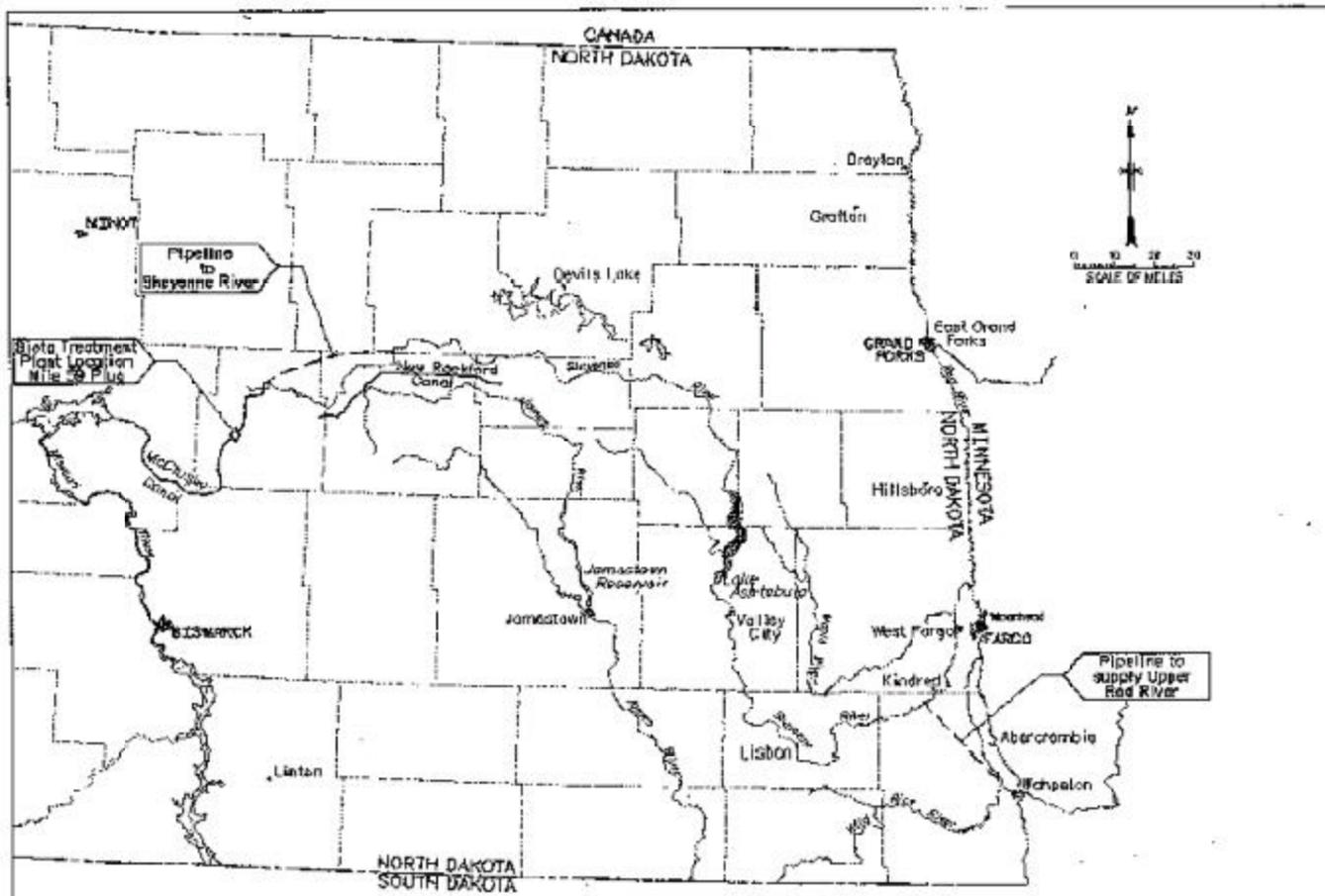


Ground Surface Profile from McClusky Canal Mi 59 Plug to Confluence of North and South Branch of Sheyenne River.

Feature 17 Summary: Rural Water Systems

This feature includes an estimate for rural water diversions from the surface water supply, same as in Alternative 2.

Cost estimates given below are based on operating both the import pipeline and the biota treatment plant at a steady rate year-round.



ALTERNATIVE 7 – Import Missouri River Water to Upper Sheyenne River

ALTERNATIVE 7B

- Treatment Plant at McClusky Canal.
- Pipeline Delivery to Sheyenne River.
- Modified Thomas-Acker Plan.
- Pipeline supply from Sheyenne River to Upper Red River.