

SUGGESTED SCENARIOS FOR THE TONGUE RIVER SALINITY WATER QUALITY MODEL

This list of scenarios was compiled by Montana DEQ and is based primarily on suggestions received at the October 11, 2016 stakeholder meeting in Miles City. The scenarios are broken into applicable source categories. For additional information about each source category, please review the presentation given at the meeting – found on the project website at: <http://mtwaterqualityprojects.pbworks.com/>

To Suggest Additional Scenarios:

Please email your suggestions and/or comments to Erik Makus at EMakus@mt.gov by **Monday, October 31, 2016**

Coal Bed Methane

- Remove all coal bed methane (CBM) wells from the watershed – from both Montana and Wyoming
- Lower surface water permit discharge limits for CBM operations (i.e., decrease salt load in the discharge)
 - In Montana
 - In Montana and Wyoming
- Incorporate a time lag of CBM discharge water reaching surface water (after injection into groundwater, etc.)
- Increase the number of CBM wells discharging to surface water in the watershed (i.e., a hypothetical future growth scenario)

Coal Mines

- Remove all coal mines from the watershed – in both the Montana and Wyoming portions
- Remove only the Decker coal mine (as part of this scenario, consider the natural contribution of salt from the coal seams beneath the Tongue River Reservoir)
- Lower surface water permit discharge limits for coal mines in the watershed (i.e., decrease salt load in the discharge)
- Increase Decker's discharge to their maximum permit limit (Decker currently discharges salt at levels that are under/less than their permit limit)
- Add a new coal mine(s) and associated surface water discharge(s) to the watershed (includes potential new mine(s) in Wyoming and/or Montana)

Irrigation

- Remove all irrigation from the Montana and Wyoming portions of the watershed
- Increase irrigation in the Montana portion of the watershed to reflect 100% usage of allotted water rights
- Modify irrigation practices in Montana and Wyoming
 - Convert more flood irrigation to sprinkler systems
 - TY&Y Canal flow modifications

Tongue River Dam and Reservoir Operations

- Remove the dam to represent natural flow condition
- Evaporation and other potential impacts linked to increased reservoir size
- Add hydroelectric power generation to the dam (does this have ability to impact flows or salinity?)
- Minimum flow considerations for fisheries or other uses
- Seasonal reservoir flow release modifications (probably a function of water year statistics)

Hydrology

- Modify run-off/high flow time periods

NOTE: It is understood that water rights requirements/considerations may limit the ability to implement certain Irrigation, Tongue River Reservoir Operations, and Hydrology scenarios.