

## **A Giant Sucking Sound: Marion Drain and Mid-Toppenish Creek Groundwater Interactions**

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Toppenish Creek drains 1500 square kilometers of the East Cascades and flows in its entirety through the Yakama Reservation. Historically this watershed supported extensive salmon runs and cultural use of its floodplains. Drastic land-use changes in the last two centuries, however, have led to creek incision, floodplain de-watering, and impaired function for the creek and associated wetlands and riparian ecosystems. The loss of ecological function has in turn led to declines in cultural use of the system.

Marion Drain is a large agricultural drain located on the northern edge of the Toppenish Creek floodplain. It intercepts agricultural drain water flowing south from the Wapato Irrigation District and but also potentially drains water from Toppenish Creek because of the drain's low surface water elevation. In order to better understand the interaction between Toppenish Creek and Marion Drain, the Yakama Nation installed a network of ground-water monitoring wells in the floodplain between the creek and the drain. Data collected from 2005 to the present reveals that Marion Drain surface water elevation is indeed lower than that of Toppenish Creek for most of the year, and that the water table slopes away from the creek to the drain in parts of the floodplain.

This condition could have implications for floodplain recharge and wetland function in the Toppenish Creek floodplain. Strategies for mitigating the influence of Marion Drain on Toppenish Creek are considered and several scenarios are presented. Future study should include more wells south of Toppenish Creek, soils analysis, and temperature data in order to develop restoration strategies.