BF 73818 Hwy 879 Over Etzikom Coulee
Hydrotechnical Summary

Channel Capacity :

S = 0.0003
B = 10 m, h = 2.0 m, T_h = 16 m
Use AT equation

At Bank Height : Y = 2.0 m, V = 0.8 m/s, Q = 20 cms
At Channel Capacity : Y = 3.0 m, V = 1.0 m/s, Q = 45 cms

Historical Highwater Data :

HW was noted in 1950, 1951 (over grade and washout at small pipe crossing), 1952 (ice damage to Y = 1.8 – 2.1m), and 1978 (to bottom of stringers, Y = 3.0m, piers failed, possible result of surge from u/s lake). A 1973 report notes a HWM with Y = 2.4 – 3.0m, and a 1975 report notes a HWM with Y = 2.1m and estimates Q = 51cms. A 1988 AE memo estimates design Q = 30cms.

WSC gauge 05AF004 (DA ~ 950km^2, 1915 – 1917) reports Q = 8cms in April 1917. WSC gauge 05AF905 (DA = 3040km^2, 1982 – Now) reports Q = 38cms in June 2002 and Q = 21cms in March 1996. The largest storm in the database for this area is the June 2002 storm with about 170mm of rainfall.

Basin Runoff Potential :

d = 35mm, T_p = 40hrs, q = 0.25 cms/km^2.
Gross DA = 3005 km^2.
Q_p = 750 cms.

Conclusion :

The channel capacity estimate is consistent with historic observations. Wave effects due to wind should be considered in design.

Recommended parameters : Y = 3.0 m, V = 1.0 m/s, Q = 45 cms.