BF 13078 Local Road Over Little Red Deer River
Hydrotechnical Summary

Channel Capacity :

S = 0.003
B = 20 m, h = 2.5 m, T_h = 35 m
Use AT equation

At Bank Height : Y = 2.5 m, V = 2.2 m/s, Q = 150 cms
At Channel Capacity : Y = 3.5 m, V = 2.8 m/s, Q = 300 cms

Historical Highwater Data :

HW was noted in 1952 (Y ~ 2.1m), 1970 (Y ~ 2m), and June 1980 (Y < 1m). A site inspection in 1968 notes that HW was been over the grade to the north. A HWM was noted during a site inspection in 1992 (Y ~ 1.4m). The 2004 design was based on Y = 3m, and Q = 212cms. BIM reports from 1992 and 1998 note HWM with Y = 1.5 – 2m.

WSC gauge 05CB002 (DA = 450km^2 (465km^2 AIT estimate), 1942 – Now) reports Q = 620cms in June 2005 with a rise in stage of ~ 3.3m. However, this flow value is based on a questionable measurement (would require 6m scour hole with high velocity flow, for which there is no evidence). The peak flow has been estimated by other techniques to be in the Q = 300 – 350cms range. The next highest flows are in the 100 – 120cms range in July 1986, June 1990, and July 1999. The largest storms in the storm database are about 115mm of rainfall in June 1928 and June 1970.

Basin Runoff Potential :

d = 60 mm, T_p = 20 hrs, q = 0.85 cms/km^2.
Gross DA = 550 km^2.
Q_p = 470 cms.

Conclusion :

The channel capacity estimate is consistent with historic observations and is within the basin runoff potential.

Recommended parameters : Y = 3.5 m, V = 2.8 m/s, Q = 300 cms.