

4 Conclusions

Localized flooding is expected to occur along the existing creeks during the design storm event with the three stormwater management release rates considered for future development (1.5, 3.0, and 5.0 L/s/ha).

Velocities and runoff volumes in the creeks will increase with development and will aggravate the on-going erosion issues in Whitemud and Blackmud Creeks. The magnitude of this impact will depend somewhat on the release rate adopted for new development and can be minimized by adopting the lowest release rate that is reasonably practical. Continuing the existing standard for the City of Edmonton, 5.0 L/s/ha, could cause erosion rates to increase by double or more compared with the existing condition. Otherwise there is little difference in flood level or extent or the cost of stormwater management facilities among the different release rates. However, adopting a release rate of 3.0 L/s/ha produces flows that are similar to the existing flows within most of the creeks except Irvine creek and LeBlanc Canal.

The City of Edmonton's design criteria have the effect of increasing the required storage volume in SWMFs by about 40%. AE recommends that the differences in design criteria be rationalized and that a uniform design criteria be adopted for the basin.

Based on the best information currently available it is concluded that climate change is unlikely to have a significant impact on storage volumes, release rates, and the basin drainage strategy.

Two alternative drainage concepts were developed for the 1:100 year design event with a release rate of 3.0 L/s/ha as agreed upon during discussions with the Group as follows:

- Constructing drainage parkways along Irvine Creek and Deer Creek to provide capacity and facilitate drainage of the adjacent lands which are otherwise too low to be drained with an underground drainage system.
- Constructing a network of outfall trunk sewers adjacent to the same stream channels to carry the releases from the connected stormwater management facilities to a downstream location where adequate channel capacity and depth are available.

The final concept plan might include a combination of the above concepts.

All proposed drainage works must be constructed in an environmentally sensitive manner. Further detailed analyses will be required to integrate existing wetlands into the urban fabric and to establish the appropriate water management strategy and water levels for existing and proposed wetlands. Cawes Lake should be preserved and provided with a defined outlet to manage lake levels for habitat enhancement and to prevent flooding of the adjacent lands. A regional wetland is proposed to replace the flood storage that would otherwise be lost with channelization of Irvine Creek. Existing floodplain areas should be preserved as Environmental Reserve and protected from further development.

Blackmud/Whitemud Creek Surface Water Management Group



More detailed floodplain modelling will be required during subsequent planning stages to define the extent of the floodplains and the design requirements for any channel improvements (drainage parkways) that might be adopted.

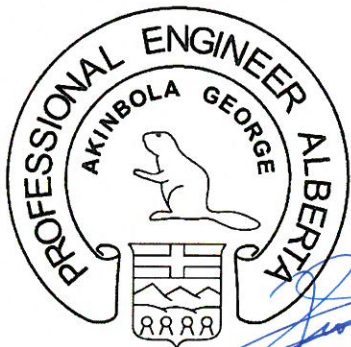
TECHNICAL MEMORANDUM NO. 5

Closure

This report was prepared for the Blackmud/Whitemud Creek Surface Water Management Group to summarize the surface water management options and their modelling results for the Blackmud and Whitemud Creeks.

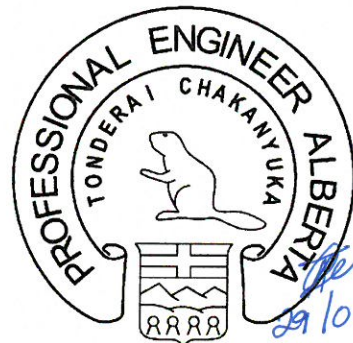
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Respectfully submitted,
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