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Appendix 18 Green Stormwater Infrastructure

The Value of Green Stormwater Infrastructure

The following information arises from a recent study by Aqua-Tex for the District of Saanich, Federation of Canadian Municipalities and CMHC. The study will be available in its entirety from CMHC in the January 2009.

Willowbrook and Glanford Station Developments

Pre-development

Post-development. The trees along the berm on the right side of the photo now obscure the houses in 2008.

Project description: Willowbrook Subdivision is an in-fill development of 31 single family homes on former agricultural land. During construction, an agricultural drainage ditch was relocated and restored as a functioning creek (Swan Creek) that now runs through a park. Ecological stormwater measures included the construction of six ponds, the rehabilitation of 750 meters of fish bearing creek, and the use of a sewer right-of-way for additional wetland treatment. Glanford Station, directly northwest of Willowbrook, comprises 22 new and detached single-family homes, plus six pre-existing homes. Stormwater from Glanford Station drains into a cascading series of constructed ponds and wetlands before joining the rehabilitated Swan Creek. For the purpose of this study, both projects were analyzed as one, and were estimated to cost the developer $120,000. A traditional engineered solution would have included storage tanks and pumps, and would have cost between $260,000 and $300,000.

Key value findings:

- Community and regulatory support for ecological solutions expedited the approval processes to only 63 days. The develop therefore saved money on his construction loans as he was not paying interest during a prolonged approval period.
- In exchange for the developer donating and restoring 17% of the land (as dedicated parkland), the municipality agreed to relax building setback and lot size requirements in Willowbrook, and allowed the developer to use a city-owned utility corridor to accommodate stormwater treatment. These measures enabled the developer to increase lot count and hence revenues by an estimated $850,000.

- The ecological approach is estimated to save the municipality $13,503 in O&M costs over 25 years.
- Ecological benefits, including improved water quality, increased biodiversity, and carbon storage and sequestration are expected to provide a further $15,150 in savings over 25 years.
- Many schools in the area use the stormwater ponds and parkland for education, and the resulting educational value over 25 years is estimated to be worth $34,345.

Summary: Both the municipality and developer obtained value from using the ecological approach (approximately $60,000 and $965,000, respectively).

Rogers Subdivision Development

Project summary: Rogers Farm is a 72-house development on Christmas Hill situated directly east of the Patricia Bay Highway (Highway 17). To manage the subdivision's stormwater, a former dry detention pond on the opposite side of the highway was restored and expanded to become Baxter Pond. The repurposing of the land was agreed to by the municipality, and the developer's rehabilitation costs amounted to approximately $75,000. The alternative engineering solution would have been drains and on-site reservoirs, which would have required blasting and excavating of bedrock and cost an estimated $275,000.

Key Value findings:

- The creek is too far away to add value to subdivision house prices, and so the net economic benefit to the developer is largely the cost savings arising from using the ecological alternative ($200,000), plus additional lot yield ($345,000).
- The direct cost savings to the municipality was $75,000 for reconstruction of the pond. Other community benefits included carbon sequestration and storage, educational value, and social benefit, which amounted to a PV of approximately $123,466 over 25 years.

- Although not quantified financially, the pond also improved water quality, sediment capture and stormwater storage, while reducing downstream flooding potential. It also accommodated additional flows from the highway and other nearby subdivisions, and provided the public also with increased aesthetic value and an improved trail.

Summary: Both the municipality and developer achieved net benefits by employing the ecological approach ($121,448 and $535,000, respectively), and the public also gained. Furthermore, the project set a precedent for treating stormwater on municipal property that may be applicable to other situations.