



Western Washington University
Western CEDAR

Salish Sea Ecosystem Conference

2018 Salish Sea Ecosystem Conference
(Seattle, Wash.)

Apr 4th, 4:45 PM - 5:00 PM

Washington State Phase I county watershed-scale stormwater planning studies: a long term plan to identify stormwater management strategies to improve receiving waters

Dan Gariépy

Washington State Dept. of Ecology, United States, daga461@ecy.wa.gov

Andy Rheume

City of Redmond, United States, ajrheume@redmond.gov

Follow this and additional works at: <https://cedar.wwu.edu/ssec>



Part of the [Fresh Water Studies Commons](#), [Marine Biology Commons](#), [Natural Resources and Conservation Commons](#), and the [Terrestrial and Aquatic Ecology Commons](#)

Gariépy, Dan and Rheume, Andy, "Washington State Phase I county watershed-scale stormwater planning studies: a long term plan to identify stormwater management strategies to improve receiving waters" (2018). *Salish Sea Ecosystem Conference*. 114.
<https://cedar.wwu.edu/ssec/2018ssec/allsessions/114>

This Event is brought to you for free and open access by the Conferences and Events at Western CEDAR. It has been accepted for inclusion in Salish Sea Ecosystem Conference by an authorized administrator of Western CEDAR. For more information, please contact westerncedar@wwu.edu.

Watershed Studies from Phase I Municipalities

April 4, 2018

Salish Sea Ecosystem Conference

Dan Gariépy, P.E.
Senior Stormwater Engineer



Path to long-term SW planning



Phase I County Studies

- Contributing to the Salish Sea:
 - Little Bear Creek Watershed (Snohomish County)
 - Bear Creek Watershed (King County)
 - Spanaway Lake Watershed (Pierce County)
- 10+ square mile watersheds
- Watersheds under pressure of development, not fully developed



Little Bear Creek Watershed Plan

Little Bear Creek Location Map



Little Bear Creek Study Area and Basin



Source: Snohomish County



Conditions Studied

- Existing Conditions
 - Monitored
- Modeled forested
 - Used as target
- Modeled build out
 - with Permit Requirements for new and redevelopment
 - With additional strategies to meet beneficial uses



Monitoring Spanaway Lake Watershed Plan

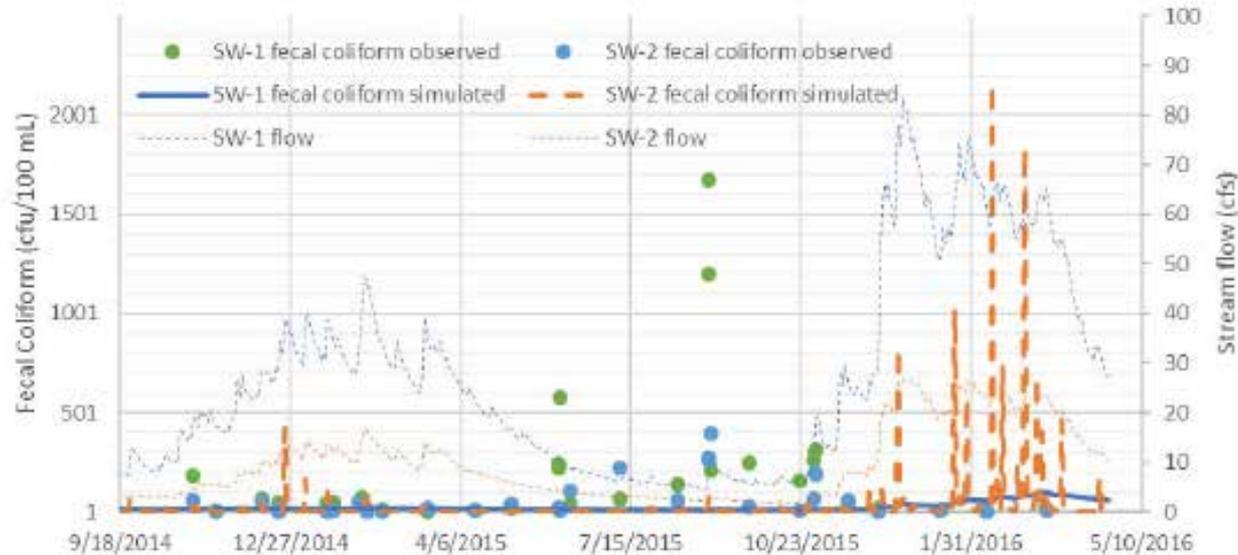


Figure 6-1. Time series of calibrated fecal coliform for Spanaway Creek Outlet (SW-1) and Coffee Creek Inlet (SW-2)

Source: Pierce County



Basis of Study Modeling

- Continuous modeling (HSPF/SUSTAIN)
- Calibrated to flow and quality monitoring
- Used flow metrics to tie to stream health



Modeling and Optimization Bear Creek Watershed Plan

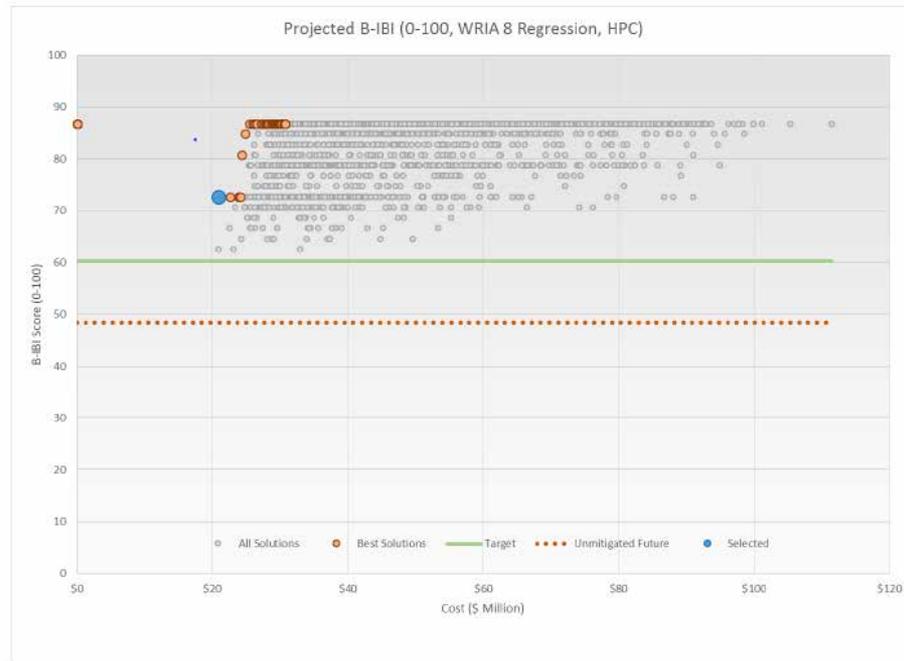


Figure 174 Cost-Effectiveness Curve for BEA270

Source: King County



Study take-aways

- Current conditions are impaired
- Future conditions remain impaired
 - Even all feasible LID measures were not sufficient to restore beneficial uses
- Consistent with messages from SWMMWW – additional measures are required



Study proposed measures

- Proposed actions are unfunded
 - Costs per acre are much lower for these basins than for more developed basins
- Riparian restoration and large amounts of detention are needed to improve conditions
- Fecal coliform seems difficult to work with as a target variable
- Similar suite of supplemental strategies were considered despite unquantified benefits



Questions and Discussion

Dan Gariépy
dan.gariepy@ecy.wa.gov

