

WRIA 9 PMT Meeting Notes

June 5<sup>th</sup>, 2012

9:00 to 12:00

Chinook Room at King Street Center

**Attendance:**

Jim Simmonds, King County (KC); Project Lead  
Tamie Kellogg, Kellogg Consulting; Facilitator  
Emily Santee, Floyd | Snider; Recorder  
Mary Roderick, University of Washington (UW)  
Dan Smith, KC  
Richard Horner, UW  
Jeff Burkey, KC  
Curtis DeGasperi, KC  
Ben Parrish, City of Covington  
Olivia Wright, UW

David Batts, KC  
David Funke, KC  
Elissa Ostergaard, KC  
Brendan Grant, KC  
Dave White, KC  
Michelle Wilcox, Environmental Protection  
Agency (EPA)  
Erkan Istanbuluoglu, UW  
Doug Navetski, KC  
Larry Jones, KC

**Not Present:**

Chris Knutson, KC  
Dino Marshalonis, EPA  
Ed O'Brien, Washington State Department of  
Ecology (Ecology)

Mindy Roberts, Ecology  
Curt Crawford, KC  
Don Robinett, City of Seatac  
Chris Thorn, City of Auburn

Introductions followed by and description of the purpose of meeting.

**Watershed modeling.** Jeff Burkey presents a Gantt chart showing progress; key points below:

1. Newaukum Creek modeling is complete and several other watersheds are nearly complete. Big Soos is one of the more difficult watersheds to model; impervious surface assumptions are being used to simplify modeling.
2. The focus of the modeling is on conditions at the mouth. Challenging basins to model are allocated more time to complete.
3. Multiple locations are used to vet the model for each basin after it has been calibrated, but these are a "check" and not strictly used for calibration.
4. Numeric values in the "calibration" columns indicate that a surrogate data set will be used for that watershed, due to lack of data density; e.g. Dumas Bay will be a surrogate for Browns Point. Blank cells in the calibration columns indicate modeling has not been completed yet, but will be completed.

Jeff describes figure corresponding to watersheds being modeled; green dots indicate data is available, but could be just one or two data points. He also describes data charts for each parameter, which illustrate that some watersheds have much more data than others.

Jeff presents and seeks comments on the draft outline and content of the report. Comments follow:

1. There may be data in these presented materials that are not in other reports and vice versa (e.g. Miller Walker/Port data); we should gather all data into one place. Jeff Burkey to check with

Chris Knutson to determine if there is additional data from either Chris's existing or new data report which should be included; the idea being to find a balance between seeking out all data and using the data readily available.

2. Jeff Burkey will ensure the surrogate data sets and justifications for why each surrogate was chosen are documented in report.
3. Mary Roderick volunteered to edit Jeff Burkey's watershed modeling report as part of her dissertation work.
4. The use and applicability of turbidity data will be documented in the report; but Total Suspended Solids (TSS) is the more important parameter for modeling.
5. Jim Simmonds and Jeff Burkey will refine scope of the report. This report is intended to be a "calibration report" so title of report should specifically identify that.
6. Global climate model and future land use scenarios (Section 3.31) may belong in a separate document. Intent was to identify what parameters would need to be changed for long-term modeling and climate change modeling, not to actually perform the modeling for those scenarios. This modeling does need to be done eventually, likely as part of second report; Jeff Burkey is best person to do this work.

Jeff presented statistical methods to be used to evaluate the data. If other statistical methods are desired, let him know as soon as possible.

**UW GIS Classes Supporting SUSTAIN.** Updates were provided as follows:

1. Class 469 (UW GIS students) prepared a report which focuses on impervious surface makeup across different land use categories. Students hand digitized the map on p. 26 of the report based on ortho-images. Field verification was not completed; for example, driveways may be gravel, but are treated as impervious. This work will be incorporated into the project, as different types of impervious area can receive.
2. UW Graduate students are working on a project focusing on Newaukum Creek sub-basins. They are setting up a model to assess stormwater facilities on agricultural lands; SUSTAIN isn't optimized for wetlands and agricultural areas, so this work is designed to see if SUSTAIN can show the benefits of putting "wetland" stormwater infrastructure into agricultural areas. The team will present and request input at next quarter's meeting.
3. Summer class 569 is working on a project related to land cover change projections, using Urban SIM and PSRP projections and the Envision forecast from Oregon. None are perfect; but they provide a basis for a better understanding of future land cover change. Work has been done for zoning/development codes for all of WRIA 9 and is available through Mary Roderick.

**SUSTAIN Workshop provided by EPA.** Overview of SUSTAIN Workshop and feedback from attendees. Attendees from the project team included Curtis, Jeff, Jim, Mindy, Ed, Olivia, Rich, and Erkan. Dino and others have been working diligently to make the model as useful as possible.

**SUSTAIN Modeling Status and Updated Post EPA Workshop.** Curtis DeGasperi presents the latest SUSTAIN model output for the Enumclaw catchment in the Newaukum Creek basin. Curtis has

developed optimized cost curves for reducing High Pulse Counts. Curtis also presents updated assumptions used in model, including changing the Best Management Practice (BMP) chain to include porous pavement BMPs for roads. “Rain barrel” options are still being explored; for now, 70 gallon rain barrel used. The percent reduction on the graph is based on high pulse count reduction; not even returning to completely forested conditions would achieve 100% reduction in high pulse count. Curtis presents charts showing the difference between existing conditions and the optimum SUSTAIN-derived scenario. Additional clarification will be requested from TetraTech on why the percent reduction in the graphic appears to be different from the percent reduction indicated by the model. Curtis presents assumptions used in the model; both with respect to costing and hourly basis of rainfall modeling.

A small team of Curtis DeGasperi, Jeff Burkey, Mark Wilgus, Olivia Wright, Rich Horner, and Ben Parrish was formed to help refine assumptions. Herrera will also be asked for input and review of the assumptions. Curtis will schedule a meeting for this group within the next two or three weeks. BMP model trains will also be outlined by this group. Comments from others may be emailed to Curtis over the next month. General comments identified as follows:

1. When BMPs overlap between projects and modeling efforts, assumptions need to match.
2. Lifetime costs for porous pavement for travel surfaces are different than driveways and parking lots; two models would be appropriate.
3. Could include Operations & Maintenance as unit cost in the model, but not included currently.

Criteria to determine the next catchment to model were discussed, including: team interest, data quality and robustness, and whether or not the catchment is within a basin of interest or whether it has resource protection impacts. A catchment <100 acres is preferred due to limitations of model; model parameters discussed. The catchment selected will impact which basin Jeff Burkey models next for report.

Suggestion made to model a Big Soos catchment, in light of upcoming need to retrofit stormwater infrastructure. King County watershed models don't contain details on existing BMPs in most watersheds, including Big Soos; if this data is provided (e.g. for City of Covington) then existing BMPs can be taken into account in SUSTAIN modeling. The team working on assumptions will also select the next catchment(s) to model and document why they selected it relative to the various considerations.

**Alternative BMP Analysis.** Olivia Wright has made substantial progress with the first approach based on baseflow separation of stream gage data. She will calculate runoff volume in order to route runoff through BMPs and determine results. Model is set up; still need to match costs and assumptions about rain barrel size, etc. Olivia has also made substantial progress with the second approach based on land use, rainfall, and simple BMP models. Olivia expects to be complete with modeling, if not paper, by the next Project Management Team (PMT) meeting in September.

Currently, model uses effective impervious area/contributing area (only surface runoff that makes it to outlet regardless of area it's from). Three methods to determine contributing area were discussed; all produced results in the same ballpark. One source of differences could be the omission of the 4 mm

initial abstraction for the calibration constant determination using hourly runoff averages (it was included for daily runoff averages). One hour was shortest time period analyzed, because unsteady state conditions assumed present for shorter time periods. Suggestions on next steps include:

1. Report should be rephrased to discuss a calculated “rainfall runoff coefficient” rather than “contributing area,” as losses will occur in ditches that impervious areas drain into, etc. The rainfall runoff coefficient will vary based on season, moisture in soil, and other factors.
2. If time allows, Olivia could use same assumptions as in the Hydrological Simulation Program – Fortran (HSPF) and SUSTAIN models and input them into her model to compare results.

**Target Setting.** Rich Horner presents preliminary target setting process for the stream reaches where goals will be investigated. Steps to identify the next reach for analysis discussed. Group consensus that evaluation criteria are important, but should not result in lengthy process. Top two priorities are data availability (including flow gauge and benthic index of biotic integrity [B-IBI] data) and representativeness of the catchment (homogenous land use which increases diversity of modeled data set; presence of flow gauges, water quality data). Additional considerations should be written into a narrative, and could include high resource value, high management potential, special interest to group, etc. Curtis DeGasperi working to finish modeling for Newaukum Creek; Rich Horner will simultaneously be evaluating criteria to identify the next catchment to model. Then, Curtis will be able start on second catchment model. Additional, specific feedback from group regarding criteria for selection, relative importance of criteria follows:

1. Rich will review study area should so as not to arbitrarily/accidentally exclude streams, like Hamm Creek, which may have been assumed to be outside study area. Hamm Creek might be a good candidate, although nature of source runoff must be evaluated.
2. Suggestion to model streams with the greatest need for, or benefit from, a retrofit (identified as “management potential”); counterargument is to first prioritize “preserving the best” rather than try to salvage already-impacted watersheds.
3. Data availability criteria that Rich identified are nearby mouths of rivers, and may not suitable for HSPF modeling because they are not small catchments. Troubleshooting to use the reaches in SUSTAIN will be needed eventually no matter what; this can be done with just HSPF output. For next modeling effort, priority is to choose catchment with available HSPF output, of appropriate size (<270 acres).
4. Suggestion for variety of degrees of urbanization among selected catchments.
5. Jeff Burkey to provide Rich with land use designations for catchments previously identified as “of interest.”
6. Ecology’s Watershed Characterization model could also be of interest; however, the areas identified are of larger geographic scale (measured in square miles, not acres), so not Ecology areas are not directly applicable and should be used as a “check” rather than a “criteria.”

Rich presents and seeks input on six management goals falling into two categories: biological and water quality. Suggestion made to look at output and see which goal(s) are achieved, rather than using goals to drive the model end point. Goals should be thought of as a prioritization effort rather than true “goals” – purpose of goal identification is to determine achievable action (e.g. controlling summer stormwater

runoff peaks). Eventually our group will document and may offer an approach for others to refine and implement across the region; our “goals” and modeling efforts help determine what is achievable near- and long-term. As the relationships between indicators are linked, stakeholders will be interested in how goals are set. This topic will be revisited in more detail and with better focus at next meeting, and likely subsequent meetings, as this process is iterative with the results achieved through the SUSTAIN model.

Giles Pettifor has scheduled a stakeholder outreach meeting with the WRIA 9 Watershed Ecosystem Forum for August. Giles to provide update at next meeting.

**Quarterly email updates** and **project budget** – no actionable update.

**Project schedule.** Jim Simmonds will begin pushing harder to get things done, as we are getting behind schedule in some areas; may mean scoping down some efforts.

**Juanita report:** second review complete and editing underway; goal is to finish editing by end of June.

On the **Ecology/Herrera project**, Herrera found an undocumented assumption in the SUSTAIN model that lead to unreasonable water quality treatment result; troubleshooting now. Mindy Roberts will provide update at next meeting.

No update available for **EPA/Seattle/Bremerton Projects**.

**The next PMT meeting will be 9:00-12:00, Thursday, September 13<sup>th</sup>, 2012; details to follow. PMT members should put this on their calendars!**