Revised List of Effectiveness Study Topics and Potential Questions

Topic	Recommended questions for 2014-2108 RSMP effectiveness studies
Source control: temporary erosion control performance and inspections	• Conduct a study of collective BMP performance in meeting water quality standards under field conditions in western WA. Identify situations where approved plans are not being followed versus situations in which plans are not adequate. Combine this with an inspection study. • What frequency of construction erosion and sediment control inspections are most effective for achieving compliance with codes/ordinance requirements at new development and redevelopment project sites? Gather professional knowledge. Look at balance of benefits of pre-, during-, and post-rainfall inspections to confirm implementation of CESCL plans and prevent, identify, and respond to problems.
Source control: inspections of existing sites	• What is the optimum frequency of inspections to maintain the functionality of stormwater treatment and control facilities and ensure the proper use of source control BMPs at businesses? o Which is more effective for specific high value BMPs: focusing on the property owners or focusing on the business owners, or a combination of the two? ▪ Target both structural and operational BMP types, and situations where a business owner is and is not cooperative and willing. o Which required BMPs were implemented based upon follow up inspection? Which optional BMPs were installed based upon follow up inspection? o What were the primary barriers to not adopting or installing BMPs? o Address the connection between in-person visits and source control BMPs, and identify situations where technical assistance and/or follow-up inspections are needed to ensure required BMPs are implemented. ▪ Gather data about percent compliance. Partner with LSC to do this study. • Are stormwater source control inspections more effective if combined with other types of inspections? How can coordination of inspections be improved or better organized regionally for referral of issues to the correct entity?
O&M – Pollution Prevention: Catch basin inspections	• Analyze/synthesize the catch basin inspection data previously collected by Phase I and some Phase II permittees to help permittees determine individual inspection frequency needs to comply with new permit requirements based on permittees' known areas of concern (and relative unconcern).
Low Impact Development (LID): Flow and pollutant reduction benefits to receiving waters	• How are collective installations of stormwater retrofits working to protect receiving waters at receiving water scale? o Look for opportunities to measure current condition and monitor receiving water after retrofits are applied. Focus on developed areas. Modeling will be useful. o How can we avoid failures? ▪ Need better sizing information to avoid facility bypass in moderate rainfall events. ▪ How do we best ensure that LIDs are not only properly designed but also properly constructed/installed? ▪ How do you do cost-effective testing for single family infiltration? • How are collective installations of stormwater retrofits working to protect receiving waters at receiving water scale?

	○ Look for opportunities to measure current condition and monitor receiving water after retrofits are applied. Focus on developed areas. Modeling will be useful. ○ How can we avoid failures? ▪ Need better sizing information to avoid facility bypass in moderate rainfall events. ▪ How do we best ensure that LIDs are not only properly designed but also properly constructed/installed? ▪ How do you do cost-effective testing for single family infiltration? • At what density of LID measures will a developed basin show measurable differences in pollutant loads compared to a similar basin with a lower density of LID measures? ○ What are the watershed scale effects of LID alone? ○ What administrative and other actions are needed and effective to achieve more LID implementation? ○ What are site suitability characteristics for deciding what LID to apply where? • Conduct soil amendment and bioretention soil mix leaching studies combined with plant selection studies for optimum removal of nutrients, bacteria, and metals. ○ Where and when are nutrient and metal outputs from LID of concern?
LID: long-term performance	• What type and frequency of maintenance is needed to ensure the longevity and long-term performance of bioretention facilities? How does maintenance affect function? Is maintenance as critical to function as it is for traditional BMPs? Where is minimal maintenance of LID installations recommended? ○ Consider a visual inspection and paper approach to this study, rather than measuring. ▪ Use annual inspection of new systems as a data source. ○ Study long-term infiltration rates. ○ Study long-term adsorption capacity.
Retrofits: Water quality and habitat benefits of retrofit efforts	• Which combinations of retrofit BMPs and LID in a basin are most effective at reducing stormwater impacts in receiving waters? Perform field studies of existing urban retrofitted BMPs in WWA to assess effectiveness at pollutant removal. ○ Select a stream in a developed area that is funded for retrofitting and establish baseline conditions with in-stream monitoring of water quality and hydrology. Measure changes in the stream's water quality and hydrology in response to retrofits being implemented. ○ Conduct a more extensive literature review, build on current work. ○ Compare model predictions to field data. ○ Compare BMPs and combinations for specific pollutants. ○ Develop urban-specific models.