LOI # 13

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Organization: Washington State Department of Transportation

Study Title: Characterizing pollutants of concern in roadway runoff at different traffic volumes

Which topics from the SWG's priority list (Appendix A) do you propose to address?

Idea #4. Conduct a stormwater runoff study to characterize stormwater pollutants at different traffic volumes (e.g., low, medium, high traffic areas). Consider building on previously collected data under the 2013 Washington State Department of Transportation's highway characterization study and the on-going SAM stormwater characterization study.

What type of project is being proposed?

Literature review & synthesis;Environmental sampling study

Short description of the proposed project

This study would build on the foundation of WSDOT's 2013 highway runoff characterization study and the original monitoring locations but add in the characterization of emerging pollutants of concern such as 6PPDQ, PFAS/PFOS, tire-wear particles and other contaminants of emerging concern (CECs). This study would incorporate many of the same methods and analyses of the current SAM study being led by the City of Tacoma (Characterization of Stormwater Transport of Contaminants of Emerging Concern), but the study question will focus on effects of annual average daily traffic (AADT) volumes rand drainage system characteristics rather than the effects of land use.

The outcomes of the study will include expansion of the original highway runoff data set and incorporation of CECs, offering the benefit of long-term trend analysis via comparison to previous studies as well as the ability to fill key current data gaps related to CECs. This dataset and the associated relationships derived from the data will provide insight for stormwater management decisions along our region's highways and surface streets. The work products will support both WSDOT and local municipalities via the breadth of traffic volumes and drainage system types considered.

What type of information will be collected or analyzed for this proposed study?

This study will incorporate both a literature review and field data collection. Other regions are also researching many of these contaminants and we will seek to collaborate with other state transportation agencies and studies they are conducting where feasible.

The main data set will comprise stormwater and sediment samples from roadways with varying (low, medium, and high) AADT volumes. The proposed study would include the original monitoring locations to allow for trend analysis but additional sites may be added if changing traffic use patterns at the original sites no longer match the desired variability. These additional sites may include more recent WSDOT BMP performance monitoring locations or may involve coordination with other Permittees to find roadways with the desired traffic usage.

The key study question will focus on the correlation between the sample results and the traffic volumes. We expect that within these sites, there will also be an opportunity to study the effects of stormwater drainage system characteristics (e.g., swales, vegetated filter strips, pipes and the presence of other existing informal or formal BMPs) as supplemental outcome of this study.

What are the anticipated measurable outcomes and key deliverables that will be produced by the proposed study and how will they be used by Permittees and the Washington State Department of Ecology?

The anticipated outcomes from this study will be a dataset characterizing pollutants of concern in roadway runoff and correlating those results to traffic volumes. Findings may also reveal the effects of drainage system characteristics on pollutant transport. These results could be used by Permittees for water quality modeling, stormwater retrofit/treatment design, and planning.

All reports and data generated during this study will be posted on the SAM website and made publicly available. All newly collected monitoring data will also be uploaded to the Ecology EIM.

This study will yield data that may be helpful to update the Puget Sound Stormwater Heat Map, originally developed by The Nature Conservancy. The Stormwater Heat Map included a machine learning-based regression of pollutant concentrations vs AADT using the original Section S8 dataset. This study would provide additional information to improve this regression.

Incorporation of results into the Stormwater Heat Map would help broaden distribution and availability of the data.

List the permittees or agencies you are proposing to coordinate with.

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