

Project Title and LOI#

Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington – LOI 2023-01

Applicant Information

Dana de Leon, PE
City of Tacoma, Environmental Services
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Project Purpose

The 2020 discovery of the linkage between 6PPDQ and Coho salmon mortality has shown us that emerging pollutants can drive biological degradation in our waterways. This discovery demands that we focus on the contaminants of emerging concern (CECs) of our time to document their prevalence and distribution across the landscape. We propose revisiting the 2007-2012 Phase I Permit S8.D monitoring locations and conducting a synoptic monitoring study throughout western Washington to correlate land use to environmental concentrations of not only 6PPDQ, but also 6PPD, microplastics, tire wear particles (TWP), emerging vehicle-derived chemicals, and PFAS.

The 2007-2012 S8.D data has proven extremely valuable for Permittees in the region. The data have been used for multiple purposes, including in The Nature Conservancy's Hot Spot Model, King County's WQBE model, Seattle's Integrated Plan, and by Ecology for adaptive stormwater management. However, these models and planning efforts are silent on some of the most toxic pollutants in our waterways, simply because we knew little, if anything, about them when the S8.D data were collected. The purpose of the proposed study is to generate a dataset which would augment and update the old S8.D data and produce long-term benefits by helping inform future stormwater management decisions. To help assure information durability, the data generated from this project will be hosted online and easily accessible for decades to come.

The 2019 Phase 1 Municipal Stormwater Permit has provided guidance for the Stormwater Management Action Planning (SMAP) program. SMAP is the first step in requiring stormwater retrofits in priority watersheds in permitted jurisdictions. With an increased focus on retrofitting existing MS4s there is a growing need for research on where these retrofits will be most effective and what pollutants they should be targeting. The data from this study will provide this foundational information so that Permittees can make informed decisions on where their BMPs should be located to target these CECs.

This proposal addresses the Stormwater Work Group's (SWG) Priority List Topic 16: "Regional stormwater discharge monitoring study (Appendix 9, WWA Permit) to characterize emerging pollutants in stormwater, e.g. 6PPDQ, PFAS, micro- and nano- plastic contamination in stormwater."

Due to the scope and scale of the proposed project it is essential to directly involve multiple Permittees. We already have a committed TAC and have met as a group in preparation for this proposal. More details on the TAC can be found in the Project Team section below.

Project Description/Scope of Work

Purpose

The purpose of this project is to provide Permittees with the information needed to develop strategies for the management of emerging pollutants of concern, including 6PPDQ.

Goals

The overall goal of this work is to build a dataset of average CEC concentrations associated with the following land uses: Industrial, Commercial, High Density Residential, Highway, and Low Density Residential. A secondary goal is to make this information widely available for Permittees to use in their modeling and pollutant management efforts. Finally, through the collection of sediment samples and a comparison to sediment samples collected from the same locations during the 2007-2012 S8.D required monitoring, our goal is to help determine if stormwater quality has improved in the ensuing decade.

Objectives

To meet our project goals, we have defined the following four objectives:

1. Develop a document identifying all available regional CEC data and sample collection best practices.
2. Develop a monitoring plan to guide the proposed sampling effort.
3. Conduct stormwater and sediment sampling at 15 locations, representing 5 land uses, for two water years.
4. Synthesize the project data and make it available to permittees through a report, fact sheet, presentations, and a project data dashboard.

Study Design and Methods

The proposed project will be implemented over the 2025 and 2026 water years. The project will begin with a literature review to document the state of the science for the project CECs. The review will result in the creation of a database of existing CEC data which can be associated with specific land uses. Multiple entities in the region have been collecting these data over the past 3 years, but the results have not all been synthesized in one place. The project team will work with the 6PPDQ SWG subcommittee to help gather these data for the literature review. If necessary, we will look beyond regional studies to gather this contextual information. For instance, the San Francisco Estuary Institute has been conducting microplastics studies for the past 5 years and recently produced a report describing the magnitude and sources (including TWP) of microplastics across the San Francisco Bay Area. ¹

The second component of the literature review will be to document other emerging contaminants derived from car tires and determine if they should be included in the study. This

¹ Moran, K.; Miller, E.; Mendez, M.; Moore, S.; Gilbreath, A.; Sutton, R.; Lin, D. 2021. A Synthesis of Microplastic Sources and Pathways to Urban Runoff. SFEI Contribution No. 1049. San Francisco Estuary Institute: Richmond, CA.

is a fast-evolving science, and we want to make sure we do not miss an opportunity to collect valuable data for analytes we are just starting to understand. Non-targeted LCMS spectra will be recorded for each sample collected and, in this way, a digital archive of samples will be collected to assess CECs as we become aware of them in the future.

Finally, the literature review will document best practices for sample collection, handling, and preservation. Herrera is currently conducting a study with Ecology to identify recommended field sample collection methods for 6PPDQ. The study proposed herein will leverage the information from that effort and synthesize results from other sampling method studies to develop sampling SOPs to be included as an appendix to the project QAPP.

The project QAPP will outline the proposed sampling methodology. Specifically, we intend to re-delineate and characterize the drainage basins for each of the proposed monitoring locations. The original S8.D effort produced basin maps and land use coverages for each target watershed. We will conduct a GIS analysis to confirm or update the land use for each watershed, in addition we will develop estimates of ADT for each basin. These data will be used in the *Data Management, Analysis, and Reporting* task to generate correlations between CECs and basin characteristics. The QAPP will use information from the literature review to enumerate field sampling techniques for each CEC. Because there is only one industrial basin of the 15 potential sites from the original S8.D data, we will work with our TAC to locate two additional industrial basins to increase the rigor of the experimental design and eliminate two high-density residential basins, as they are over-represented in the dataset.

The 15 locations will be targeted for stormwater grab samples to be analyzed for 6PPDQ, TWP, microplastics, emerging vehicle-derived chemicals, and PFAS. Grab sampling is proposed because of restrictions on using automated samplers for 6PPDQ and PFAS species.

Following the S8.D model, we propose sampling multiple times per year. However, to manage costs, instead of the 14 events per year in the original S8.D effort, we propose monitoring 9 events per year, with 2 of those events during the dry season (May 1 – September 30) and 7 during the wet season (October 1 – April 30).

Sediment samples will also be collected at the 15 locations. The sediment samples will be analyzed for the same chemical parameters as in the original S8.D effort plus the CECs noted above. Yearly sediment samples will be collected from sediment traps that will be installed where feasible at each location, which may be in-pipe or end-of-pipe at an outfall. Sediment chemistry sample data will provide a comparison over time with the sediment samples collected under the original S8.D effort.

All project data will be stored in a project database. Scripts will be written to complete data quality assurance using laboratory QAQC data and the measurement quality objectives identified in the QAPP. Results will be flagged appropriately. An accessible and interactive web application for data visualization will be developed using R Shiny. The application will include high-level summaries of results by parameter and sampling location and will allow the user to drill-down to see results at specific sites and sampling events.

Major tasks for this project consist of:

Task 1. Project Management and Technical Advisory Committee

- Invoicing
- TAC development and meetings
- Team coordination
- Grant coordination and reporting

Deliverable: Invoice and Progress Reports

Task 2. Review of CEC Literature and Available Data

- Collect available data correlating land use to CEC pollutant concentrations to supplement the data analysis of this Study
- Literature review will also cover proper sampling and handling techniques and emerging lab analysis standards for these pollutants

Deliverable: Tech memo with literature review findings and Sampling SOPs

Task 3. Planning for Monitoring

- Land cover assessment
- Safety planning, sampling equipment acquisition
- Site selection, focus on urban land cover with a range of characteristics that will include:
 - Land use
 - Road densities
 - Annual average daily traffic volumes (AADT, if known)
 - Impervious surface areas of watershed
 - Population densities
- Procurement and deployment of sediment samplers

Deliverable: Quality Assurance Project Plan

Task 4. Sample Collection and Monitoring

- Sampling station reconnaissance and setup or access arrangements as needed
- Weather tracking and storm event targeting
- Coordination and planning and training for sample collection
- Sample collection and sample delivery to laboratories
- Sampling follow-up and QA/QC

Deliverable: Sampling event summaries (using template)

Task 5. Data Management and Analysis and Report

- Sampling data management
- Data EIM submittal
- Compilation and QA of published data from Task 2

- Analysis of data, to include statistical and spatial analysis
- Results graphing and data visualization dashboard
- Comprehensive report of Study

Deliverable: Data Dashboard

Deliverable: Data Management and EIM Submittal

Deliverable: Draft and Final Report

Task 6. Communication Plan and Grant Reporting

- Develop communication plan and project schedule
- Present findings from Study three times, including at an SWG meeting, a meeting of municipal stormwater permittees, and one other venue to be identified
- Prepare fact sheet about Study for SAM program

Deliverable: Project schedule

Deliverable: Presentations

Deliverable: SAM Fact Sheet

Anticipated Outcomes

It is anticipated that land use and/or ADT will be correlated with project CEC concentrations. An outcome of this project will be a dataset which can be used to extrapolate across the region to predict the magnitude of CEC export from specific land uses in western Washington. In addition, through the analysis of sediment chemistry from the same locations where sediment chemistry was collected 10 years ago under the 2007-2012 S8.D monitoring, we will be able to determine if there has been any change in pollutant export from these basins. This will provide one more snapshot to help us answer the question: are our management efforts helping to improve stormwater quality? Another project outcome will be data which can be easily accessed and used for future planning and modeling efforts. This outcome is essential for project success, building a foundational dataset for future stormwater management planning can only occur if the data are widely available, well organized, and easily accessed. Finally, an outcome of this effort will be the non-targeted LCMS spectra which will be saved for each sample. These spectra can be used as a digital archive of samples which will be a valuable resource as we discover new CECs.

Communication Plan

Regularly scheduled and effective communication between our team and Ecology is the key to success for this project. With field-based data collection projects, unforeseeable issues inevitably arise (changing lab methods, site access issues, floods, etc). We will keep Ecology informed every step of the way and work with Ecology and the team to adapt as needed to meet the project goals.

As mentioned above a key project goal is to not only collect and synthesize CEC data in the region but also to make those data widely available for Permittees, this cannot be done without a clear communication plan. We anticipate communicating project results through three

forums, 1. SWG and APWA meetings, 2. final report posted on Ecology’s website, and 3. a web-based data dashboard where the public can view and interact with the data and easily export it for their own uses. We will also load the project data in Ecology’s EIM database, but the data dashboard will be essential for wide and equitable distribution of the results. This study is intended to produce data to be used for future planning and modeling effort, for the project to be successful the data must be available, easy to interpret, and easy to access.

Project Team Description

For a project with a geographic scope as large as this, it is essential to have a committed team of experienced professionals representing interests across Western Washington. The roles and responsibilities of the project leads are as follows:

Dana DeLeon, the Study Lead, has been the Superfund program manager of The Thea Foss Stormwater Monitoring and Source Control Program since 1999. Dana will be the project manager and grant manager and be responsible for coordinating the TAC and selecting and organizing the project team. Dana has 15% capacity for this effort through 2027.

James Packman and Dylan Ahearn are 2007-2012 S8.D monitoring experts. Dylan would be leading the data management and reporting tasks and providing support for the other project tasks. He has 25% available capacity for this project. James would be leading the tasks for review of literature and available data and for monitoring and sample collection, and he would support the tasks on data management and reporting. He has 20% available capacity for this project.

Dr. Ed Kolodziej will provide support and technical guidance for the Task 2 literature review and, as the nation’s leading expert in 6PPDQ, help craft the experimental design to assure the data collected are valid and scientifically defensible. Ed’s team will also be assisting with collecting samples and helping manage data. His lab, on receiving appropriate accreditations, will be used for water quality analyses for 6PPDQ and a suite of other emerging contaminants. He has 20% available capacity for this project.

Our TAC includes stormwater managers from each municipal Phase I jurisdiction, WSDOT, WSU, UW Tacoma, and the consulting community. Because the 2007-2012 S8.D monitoring was conducted by Phase I permittees, we selected our TAC to represent these same entities. Many of the TAC members were project managers for the 2007-2012 monitoring efforts, so they are intimately familiar with the monitoring locations and the sampling process. This focused expertise will be essential for project efficiency and success.

Table 1 provides a list of all team and TAC members along with their roles and contact information. Those members with ‘sites’ included in their role in Table 1 are committed to providing access to their jurisdiction’s 2007-2012 S8.D monitoring locations.

Table 1. Technical Advisory Committee Roles and Affiliations.

Name	Email	Affiliation	Role
Anand Jayakaran	anand.jayakaran@wsu.edu	WSU	TAC member
Bob Hutton	Bob.Hutton@clark.wa.gov	Clark County	TAC member – sites
Brad Archbold	ArchboB@wsdot.wa.gov	WSDOT	TAC member – sites
Carla Milesi	milesi@uw.edu	UW-Tacoma	TAC member
Carol Falkenhayn Maloy	carol.falkenhaynmaloy@piercecounitywa.gov	Pierce County	TAC member – sites
Dana DeLeon	ddeleon@cityoftacoma.org	Tacoma	Study lead
David Batts	David.Batts@kingcounty.gov	King County	TAC member – sites
Dylan Ahearn	dahearn@herrerainc.com	Herrera	TAC member/ Study implementation
Ed Kolodziej	koloj@uw.edu	UW-Tacoma	TAC member/ Study implementation
James Packman	jpackman@aspectconsulting.com	Aspect	TAC member/ Study implementation
John Herrmann	John.Herrmann@co.snohomish.wa.us	Snohomish County	TAC member – sites
Jennifer Arthur	Jennifer.Arthur@seattle.gov	Seattle	TAC member

Project Lead Bios and Qualifications**Dana DeLeon, PE - Study Lead and Sponsoring Agency**

Dana de Leon, P.E. works for the City of Tacoma, Environmental Services Department as a Principal Engineer and Supervisor of Watershed Planning Group in the Environmental Programs Group. She has over 36 years of experience in Superfund and NPDES sampling programs and a variety of other projects. Dana (and the City of Seattle) assisted Ecology in developing the sampling protocols for the 2007-2012 S8.D monitoring. She was and is the program manager for the City of Tacoma’s 2007-2012 S8.D monitoring and the ongoing NPDES Permit and Superfund Stormwater Monitoring.

Dylan Ahearn, PhD - Study Technical Lead

Dylan has over 20 years of experience studying the environmental ramifications of human alteration to aquatic systems. Dylan is a seasoned project manager and has worked with his team to conduct over 100 surface water monitoring studies in the Puget Sound region. Dylan has particular expertise with the 2007-2012 S8.D monitoring, having conducted monitoring training, QAPP development, and equipment programming and deployment for the City of Tacoma, Clark County, Pierce County, and WSDOT. Through that experience he gained a deep understanding of the many ways a monitoring program can fail (e.g., unanticipated flows, freezing conditions, equipment miscalibration), and leverages that knowledge in his professional work today.

James Packman, PMP - Study Technical Co-Lead

James Packman is a hydrologist with over 24 years of professional experience in the Puget Sound. James specializes in assessing and monitoring hydrologic processes to manage surface water flow and discharge, measure and evaluate water and sediment quality, and protect and manage freshwater ecosystems. James' expertise includes: project management for complex surface water projects; monitoring and compliance programs for NPDES permittees; and evaluating pollutant and sediment loading to receiving waters. James is also an experienced SAM study researcher and has completed four previous SAM studies as the principal investigator and one previous SAM study as a support investigator.

Ed Kolodziej, PhD - Study Technical Co-Lead

Dr. Kolodziej has a background in environmental engineering, specifically contaminant fate and transport. His research group is located at the UW Tacoma Center for Urban Waters and has extensive prior research experience with water quality analysis, environmental mass spectrometry, stormwater sampling, and chemical characterization of roadway runoff. He and his collaborators are responsible for the foundational studies on 6PPDQ and related tire rubber chemical pollution. Dr. Kolodziej's laboratories at the Center for Urban Waters are globally recognized for topics of roadway runoff and tire rubber derived chemical pollution.

Project Management Strategy

The City of Tacoma has a long history of successfully managing grant funded work and water quality projects. This is due to our focus on effective project management. We understand that effective project management is first and foremost tied to effective communication. We promote proactive communication to assure that any issue that could potentially lead to out-of-scope work, or threaten the budget or schedule is discussed before it grows to become a larger project delivery problem. At the outset of any project our project manager will define preferred communication approaches (frequent check-in phone calls, face to face meetings, monthly progress report details, etc.) with our Ecology grant manager and consultant team to be sure we are tailoring our communications to what works best for the team. Our project manager will convene a consultant team kickoff meeting to clearly outline the scope of work, expectations and unique needs, and schedule and budget. The City has a dedicated contract administrator and accounting staff to assure that monthly invoicing, lab costs, and other administrative project management activities are handled consistently and in a timely manner to support the project's schedule and contract requirements.

Project Budget and Schedule

This project is expected to begin in January 2024 and continue through December 2027, when the final report and presentations have been delivered. Specific time periods expected for planning and sampling are outlined below in Table 2.

Table 2. Project Schedule.

Task	Schedule
Task 1: Project Management and Technical Advisory Committee	January 2024 – December 2027
Deliverable: Invoice and progress reports	Semi-annually
Deliverable: TAC meeting minutes	Quarterly
Task 2: Review of CEC Literature and Available Data	January 2024 – April 2024
Deliverable: Literature Review Report	June 2024
Task 3: Planning for Monitoring	January 2024 – December 2024
Deliverable: QAPP	December 2024
Task 4: Sample Collection and Monitoring	March 2025 – March 2027
Deliverable: Sampling event summaries	March 2025 – March 2027
Task 5: Data Management and Analysis	March 2025 – June 2027
Deliverable: Data Management and EIM submittal	September 2027
Deliverable: Data dashboard	June – October 2027
Deliverable: Final report	October 2027
Task 6: Communication Plan and Reporting	January 2024 – December 2027
Deliverable: Schedule	February 2024
Deliverable: Presentations	October – December 2027
Deliverable: SAM fact sheet	November 2027

Budget and Rationale

The budget was developed to reflect the significant effort this regional monitoring study will require. To recreate the full effort of the original S8.D monitoring at a regional scale would be a prohibitively expensive and labor-intensive endeavor. Thus, to help manage costs, the study excluded the use of automated samplers (except for the sites in Tacoma where automated sampling is routinely conducted) and limits the number of sampling events to approximately 9 per year.

The budget also includes the laboratory costs for sample analysis. Commercial laboratories will be used for all sediment sample analysis and microplastics, TWP, and PFAS in water samples. The UW laboratory will be used for 6PPDQ and other emerging contaminants in the water samples. In addition, the budget makes some key assumptions, especially due to the future schedule of the study. This includes a 6% to 10% annual increase on labor rates and lab rates through 2027.

Table 3 provides the estimated budget by deliverable. Note that labor costs are rolled up to the deliverable level and the deliverable name does not always fully characterize the work under the associated task. For instance, the QAPP deliverable includes all the effort associated with finding and finalizing the sites, site visits, access negotiations, GIS analysis, and procurement and deployment of monitoring equipment. Please refer to the task structure presented on page 4 above when referencing Table 3.

Table 3. Project Budget.

Tasks	Deliverable	Consultant Labor	Consultant Expenses	UW	TOTAL
Task 1 – Project Management and Technical Advisory Committee	D 1.1 TAC meetings	\$11,250	–	\$5,478	\$16,728
	D 1.2 Quarterly progress reports and invoices	\$58,677	–	\$21,913	\$80,590
Task 2 – Review of CEC Literature and Available Data	D 2.1 Technical memorandum	\$49,702	–	\$49,299	\$99,001
Task 3 – Planning for Monitoring	D 3.1 Sampling QAPP	\$123,630	\$2,358	\$62,307	\$188,295
Task 4 – Sample Collection and Monitoring	D 4.1 Sampling event summaries	\$564,226	\$30,039	\$220,002	\$814,267
Task 5 – Data Management and Analysis	D 5.1 Data Management and EIM data submittals	\$82,180	–	\$13,565	\$95,745
	D 5.2 Data dashboard	\$24,304	–	\$4,522	\$28,826
	D 5.3 Comprehensive report	\$132,264	–	\$72,348	\$204,612
Task 6 – Communication Plan and Reporting	D 6.1 Communication Plan and Schedule	\$4,574	–	–	\$4,574
	D 6.2 Presentations: SWG, permittees, and TBD	\$17,844	–	\$8,397	\$26,241
	D 6.3 Fact Sheet	\$6,552	–	–	\$6,552
Lab Fees not covered by UW	Sediment Samples				\$95,245
	Water Samples				\$337,634
TOTAL		\$1,075,203	\$32,397	\$457,831	\$1,998,310

Project Proponent Signature

Deleon, Dana

Digitally signed by Deleon, Dana
DN: E=ddeleon@cityoftacoma.org, CN="Deleon, Dana",
OU=SE, OU=Users, OU=ES, OU=GG, OU=COT,
DC=Tacoma, DC=Id
Date: 2023.05.31 13:21:44-0700

Dana de Leon, PE
Principal Engineer
City of Tacoma



May 10, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of Aspect Consulting, I am pleased to confirm our commitment to the *Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington* Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in waterways. There is now a pressing need to characterize the scale of the issue and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, Aspect is partnering with Herrera and will, if awarded, help implement the technical work of the project as a subconsultant. Toward this end, Aspect and Herrera established a Teaming Agreement among ourselves in January 2023 with our stated intent to share the work for this proposed project. This letter affirms that intention and indicates our commitment to the objectives of this project.

We are excited to help build the foundational dataset needed for jurisdictions to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls for these contaminants of emerging concern.

Sincerely,

A handwritten signature in blue ink, appearing to read "James J. Packman", is written over a light blue circular graphic element.

James J. Packman
Associate Hydrologist
Aspect Consulting, LLC



May 27, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of Herrera Environmental Consultants, Inc, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in waterways. There is now a pressing need to characterize the scale of the issue and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, Herrera is committed to supporting the City of Tacoma in their application and, if selected, the implementation of the study. This letter affirms that intention and indicates our commitment to the project objectives.

We are excited to help build the foundational dataset needed for jurisdictions to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls for these contaminants of emerging concern.

Sincerely,

A handwritten signature in black ink, appearing to read "Dylan Ahearn".

Dylan Ahearn, PhD
Principal Scientist
Herrera Environmental Consultants, Inc.



CLARK COUNTY WASHINGTON

PUBLIC WORKS
CLEAN WATER

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Vancouver, WA 98666-9810
564.397.4345

May 23, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of Clark County, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within Clark County.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our jurisdiction's waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

It is our directive to protect the water resources in our jurisdiction, and in that spirit, we are offering access and administrative support for the study to re-occupy our historical 2007 NPDES Permit S8.D monitoring locations. A qualified Clark County staff member will also sit on the project's technical advisory committee (TAC) to represent Clark County and our interests in the project.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

A handwritten signature in dark ink, appearing to read "Brent Davis".

Brent Davis
Interim Clean Water Division Manager (Public Works)



For other formats, contact
the Clark County ADA Office

Voice 564.397.2322
Fax 360.397.6165

Relay 711 or 800.833.6388
Email ADA@clark.wa.gov



King County

Department of Local Services
Road Services Division

May 26, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of King County Road Services Division (Roads), I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within King County.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our jurisdiction's waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

It is our directive to protect the water resources in our jurisdiction, and in that spirit, we are offering access and related logistic support for the study to re-occupy our historical 2007 NPDES Permit S8.D monitoring locations. Access to these sites will require a Special Use Permit from the Facilities Management Division, Real Estate Services Section. We expect that the data and information generated from the subject SAM effort will be shared with Roads for integration into efforts related to our Puget Sound Stormwater Strategic Initiative (SIL) project to model 6ppd-q and integrate into a stormwater retrofit prioritization webtool. If not constraint by other work commitments, we will also allow a member of the Roads Environmental Unit to sit on the project's technical advisory committee (TAC) to represent our interests in the project.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

DocuSigned by:

Katie Merrell

1D5B7080211744E...

Katie Merrell, Project Manager, Road's Stormwater SIL Project
Roads Service Division



2702 South 42nd Street, Suite 109
Tacoma, Washington 98409-7315
piercescountywa.gov/ppw

May 31, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of Pierce County Surface Water Management, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within Pierce County.

It is our directive to protect the water resources in our jurisdiction, and in that spirit, we are offering access and administrative support for the study to re-occupy our historical 2007 NPDES Permit S8.D monitoring locations. Carol Falkenhayn Maloy will also sit on the project's technical advisory committee (TAC) to represent Pierce County Surface Water Management and our interests in the project.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction and in the Puget Sound region.

Sincerely,



Kevin Dragon
Assistant County Engineer - Stormwater
Pierce County Planning and Public Works

KD:kj



Snohomish County

Conservation and Natural Resources

Surface Water Management

3000 Rockefeller Ave., M/S 303
Everett, WA 98201-4046
(425) 388-3464
www.snoco.org

May 26, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Dave Somers
County Executive

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of (Snohomish County Surface Water Management), I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within (Snohomish).

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our jurisdiction's waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

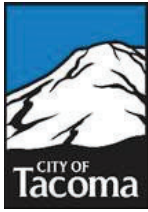
It is our directive to protect the water resources in our jurisdiction, and in that spirit, we are offering access and administrative support for the study to re-occupy our historical 2007 NPDES Permit S8.D monitoring locations. John Herrmann (Project Specialist IV) will also sit on the project's technical advisory committee (TAC) to represent (Snohomish County) and our interests in the project.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

Jim Blankenbeckler

Jim Blankenbeckler
Engineering Manager
Snohomish County Surface Water Management



City of Tacoma
Environmental Services Department

May 22, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of City of Tacoma, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within City of Tacoma.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our jurisdiction's waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

It is our directive to protect the water resources in our jurisdiction, and in that spirit, we are offering access and administrative support for the study to re-occupy our historical 2007 NPDES Permit S8.D monitoring locations. I will also sit on the project's technical advisory committee (TAC) to represent City of Tacoma and our interests in the project.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

Deleon, Dana

Digitally signed by Deleon, Dana
DN: E=ddeleon@cityoftacoma.org, CN="Deleon,
Dana", OU=SE, OU=Users, OU=ES, OU=GG,
OU=COT, DC=Tacoma, DC=icl
Date: 2023.05.27 07:57:00-0700

Dana de Leon, PE
Principal Engineer
City of Tacoma
Environmental Programs, Watershed Planning
Environmental Services, Science & Engineering



Transportation Building
310 Maple Park Avenue S.E.
P.O. Box 47300
Olympia, WA 98504-7300
360-705-7000
TTY: 1-800-833-6388
www.wsdot.wa.gov

May 11, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of the Washington State Department of Transportation, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, I will be sitting on the project's technical advisory committee (TAC) to represent WSDOT and our interests.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

Brad Archbold

Brad Archbold
Data and Reporting Manager
WSDOT Stormwater Monitoring Program

May 31, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

As staff in King County Water and Land Resources Division (WLRD), I am pleased to confirm my commitment to the *Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project*. The project represents a unique opportunity to collect valuable information on the distribution of contaminants of emerging concern across western Washington.


The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has demonstrated that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our waterways. There is a now pressing need to try to identify which land uses are associated with the export of not only 6PPD-q, but also other pollutants of emerging concern, e.g. but not limited to PFAS/PFOA, and microplastics including but not limited to tire wear particles.

In support of this project, I will be sitting on the project's technical advisory committee (TAC) to represent King County WLRD Stormwater Services and our interests.

I am committed to the objectives of this project in helping to fill data gaps – data needed to help make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction and throughout Western Washington.

Sincerely,

David

**Batts,
David**  Digitally signed by Batts, David
DN: cn=Batts, David, ou=Users,
email=David.Batts@kingcounty.gov
Date: 2023.05.31 14:56:42 -07'00'

David Batts
Engineer III / M.Sci. / Senior Water Quality Specialist
Water and Land Resources Division / Stormwater Services Section
King County (WA) Department of Natural Resources and Parks



May 27, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of the City of Seattle, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington, including within the City of Seattle.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our jurisdiction's waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, I will be sitting on the project's technical advisory committee (TAC) to represent the City of Seattle and our interests.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Arthur".

Jennifer Arthur
Science Information Specialist, City of Seattle, Seattle Public Utilities



May 27, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of the University of Washington, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown us that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our waterways. There is a now pressing need to try and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, I will be sitting on the project's technical advisory committee (TAC) to represent University of Washington and our interests.

We are committed to the objectives of this project and are excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

Carla Milesi

Emerging Stormwater Technologies Coordinator
University of Washington/Washington Stormwater Center



May 21st, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

As the programmatic lead of the Low Impact Development Program at Washington State University and an affiliate faculty at the Washington Stormwater Center, I am pleased to confirm my commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality shows that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in our waterways. There is a pressing need to identify which land use practices are associated with the export of not only 6PPD-q but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, I will be sitting on the technical advisory committee (TAC) to represent the interests of the entities mentioned above.

I am committed to the objectives of this project and excited to help build the foundational dataset we need to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls within our jurisdiction.

Sincerely,

Anand Jayakaran, PhD PE – Professor
Green Stormwater Infrastructure Extension Specialist
Washington State University
Puyallup Research and Extension Center
2606 W Pioneer Ave, Puyallup, WA 98371

May 30, 2023

Brandi Lubliner
Stormwater Action Monitoring Coordinator
Washington State Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Subject: Letter of Commitment - SAM Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington

Dear Ms. Lubliner:

On behalf of the University of Washington, I am pleased to confirm our commitment to the Monitoring for Stormwater Contaminants of Emerging Concern in Western Washington Project. The project represents an outstanding opportunity to collect valuable information on the distribution and concentration of emerging contaminants across western Washington.

The 2020 discovery of the linkage between 6PPD-q and Coho salmon mortality has shown that emerging pollutants may be ubiquitous and toxic enough to drive acute biological degradation in waterways. There is now a pressing need to characterize the scale of the issue and identify which land use practices are associated with the export of not only 6PPD-q, but also other emerging pollutants (e.g., PFAS/PFOA, tire wear particles, microplastics).

In support of this project, the University of Washington is partnering with Herrera and will help implement the technical work of the project as a subconsultant. This letter affirms that intention and indicates our commitment to the objectives of this project.

We are excited to help build the foundational dataset needed for jurisdictions to make informed decisions on how and where to implement permit-required structural stormwater controls and source controls for these contaminants of emerging concern.

Sincerely,



Ed Kolodziej
Principal Investigator
University of Washington Tacoma



Date: 2023.05.30
12:23:36 -07'00'

Richard S. Sewell
Grant & Contract Administrator
Authorized Signing Official
Office of Sponsored Programs

Carol Rhodes
Director, Office of Sponsored Programs
University of Washington