

## **Project Title and LOI#**

Flett Creek Ponds Optimization Project – LOI 2023-08

## **Applicant Information**

Dana de Leon, PE

City of Tacoma, Environmental Services, Science & Engineering

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and

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City of Tacoma, Environmental Services, Science & Engineering

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## **Project Purpose**

Continuous Monitoring and Adaptive Control (CMAC) of stormwater infrastructure is an accepted best management practice across the country and has been approved by the Washington State Department of Ecology and implemented in various locations regionally (e.g. King County, City of Redmond and Bellevue). CMAC has been primarily deployed to improve hydromodification of existing stormwater infrastructure, and has the potential to help communities provide affordable solutions to localized flooding and water quality concerns, while meeting community needs of environmental justice and climate resilience.

This proposal addresses the Stormwater Work Group's (SWG) Priority List Topic 19: Research and compile examples of innovative stormwater management – use of technology tools.

The CMAC software uses weather forecasts to determine the optimal amount of water to be drawn from ponds in order to meet multiple community and environmental objectives. Specifically, CMAC provides more control over competing objectives such as water quantity and quality compared to passive systems with similar storage capacity, making the most of existing infrastructure. This is a particularly important consideration for NPDES Permit Phase I and Phase II jurisdictions where their landscape is ultra-urban and Washington State House Bill 1110 now requires densification of all residential zoning which further limits space for new stormwater facilities.

This project will evaluate the benefits of retrofitting a set of older regional ponds with CMAC via pond optimization modeling. The study will focus on maximizing pond(s) functioning in series upstream of the Flett Creek/Chambers Creek system to provide additional flow control and water quality treatment for existing and future development conditions. This project can then be used by Phase I and Phase II jurisdictions to help decide if they want to pursue CMAC retrofits of storm ponds as another best management practice in their Stormwater Management Program to help meet permit requirements in the NPDES Phase I Permit such as S5.C.7 Structure Stormwater Controls or Appendix 1, Minimum Requirements #6 Runoff

Treatment and Minimum Requirement #7 Runoff Control; Appendix I-D.4 Using Regional Facilities to Meet Minimum Requirements and I-D.6 Regional Facility Area Transfers in the Stormwater Management Manual for Western Washington (SWMMWW).

## Project Description/Scope of Work

### Project Purpose

The purpose of this project is to provide Ecology and Permittees with an example of the innovative stormwater management tool - Continuous Monitoring and Adaptive Control (CMAC) and to model the benefits when used on older stormwater holding ponds.

This project will model and analyze the S. 80<sup>th</sup> Street (“Gravel Pit”) Regional Holding Pond sub-basin of the Flett Creek Watershed (see Figures 1 and 2) to quantify flow control and water quality benefits of 4 sites including, Wapato Lake, S. 80<sup>th</sup> Street Holding Basin, Hosmer Holding Basin, Wards Lake, respectively, (two regional stormwater holding ponds and two wetlands/lakes) under their existing passive conditions and with the addition of Continuous Monitoring and Adaptive Control (CMAC) to understand the potential for water quality and flood mitigation improvements and improve climate resilience in an area with environmental justice concerns.

**Figure 1. Flow Path for The S. 80<sup>th</sup> Street Regional Holding Pond sub-basin**

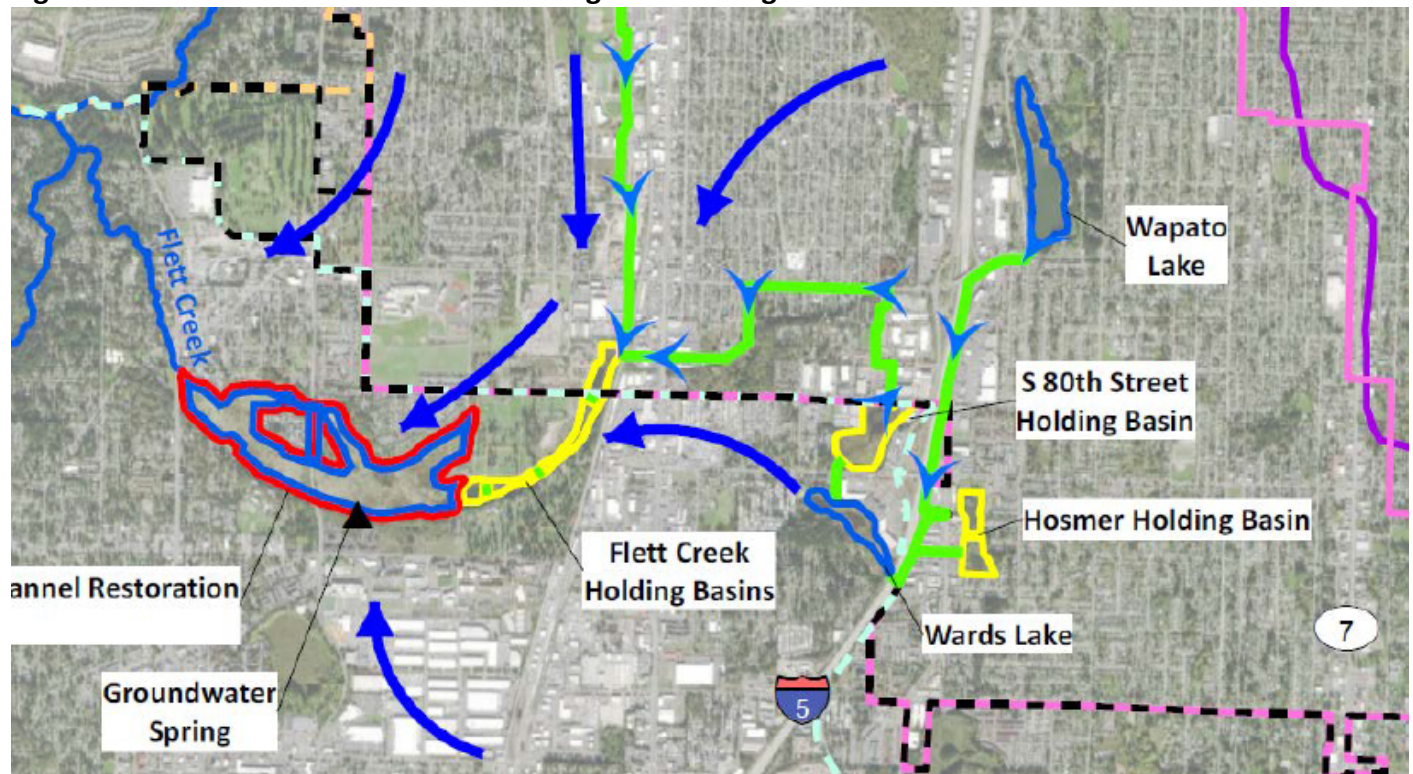
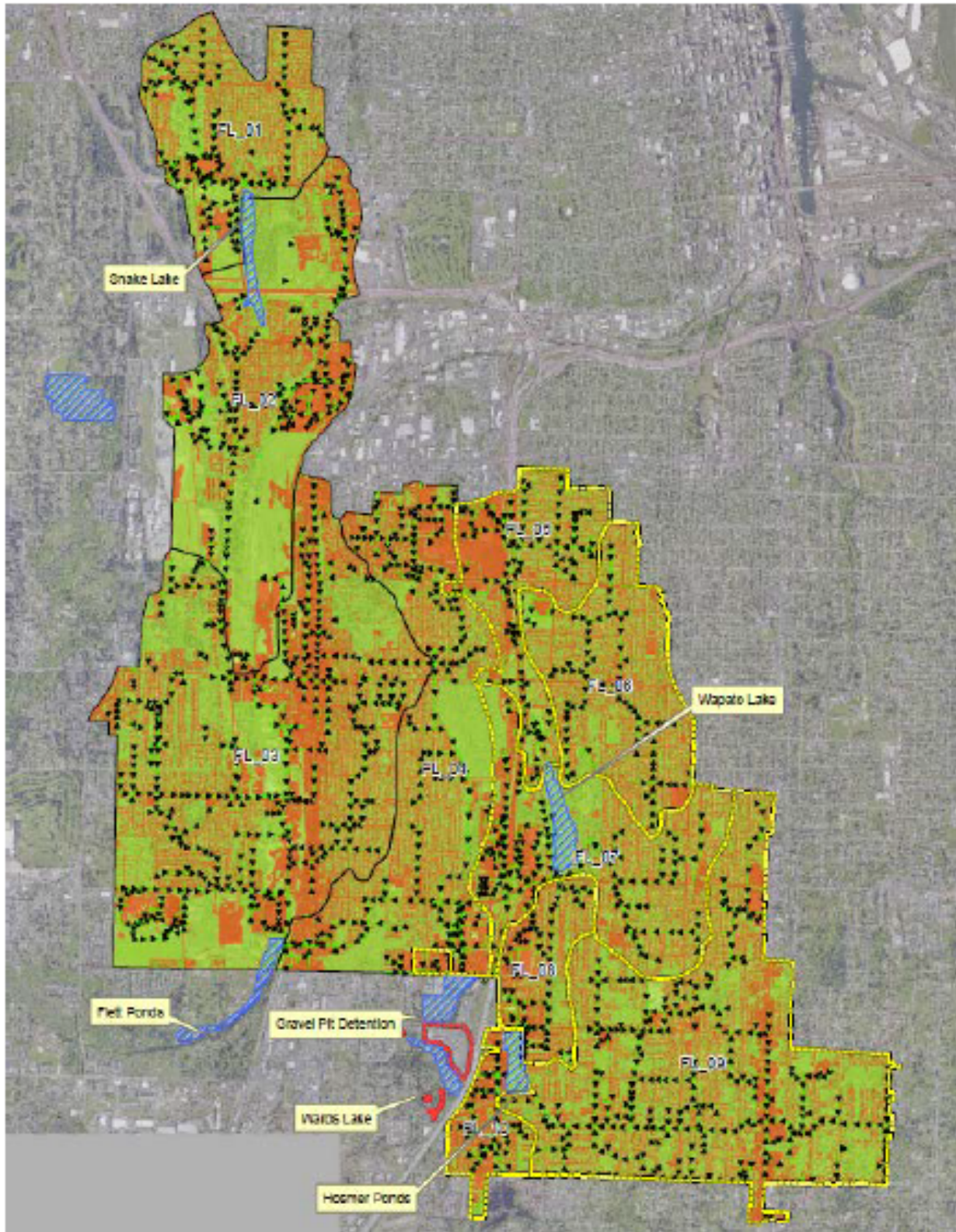


Figure 2. The City of Tacoma Flett Creek Watershed



## **Project Goals**

The team will evaluate the benefits and implementation strategies for active controls and pond optimization. This study will focus on the following areas:

- Improve water quality benefits through pond optimization (e.g., TSS and nutrient removal)
- Increase effectiveness of regional ponds in the Flett system to reduce wide-spread flooding and downstream impacts to receiving waters (e.g. wet weather capture and flow based metrics)
- Improve community resilience by providing a cost-effective solution for adapting to future watershed development and climate conditions

## **Scope of Work**

### **Task PM. Project Management and Administration (City in-kind)**

The City will provide project management and administration costs as in-kind costs for this project.

#### **Task PM.1 – Project Administration/Management.**

- Prepare Invoicing and Progress Report
- TAC development and meetings
- Team coordination
- Grant coordination and reporting

#### **Task PM.2. Communication Plan**

- Present findings from Study at an SWG meeting and an APWA meeting
- Prepare a draft and final SAM Fact Sheet which is a two-page summary of the project results/ findings following the template

### **Task 1. Flett Creek Drainage Basin Stormwater System Model**

The City will contract the model development work with a consultant to analyze existing and future flow conditions into and upstream of S. 80th Street Holding Pond, also known as the Gravel Pit. The consultant will develop and calibrate a MIKE+ numerical stormwater system hydraulic model (MIKE+ model) for the Flett Creek Drainage Basin Stormwater system.

The goal of the stormwater system modeling is to develop a tool for accurately predicting stormwater flows in the sub-watershed upstream of the S. 80th Street Pond, which also includes Wapato Lake, Hosmer North/South Holding Basins and Wards Lake. Results from the stormwater modeling will be used to support the feasibility study for smart watershed management strategies. The MIKE+ model for sub-watershed will be developed and calibrated to existing flow meters in the storm system.

The consultant will use the calibrated model to simulate stormwater flows under existing conditions and will quantify flows discharged from S.80th Street Holding Pond and predict the effect of possible future increases in impervious surfaces. The calibrated model will also be used to simulate scenarios at the four water bodies to determine the impact of various pond flow release schemes on the timing of downstream flows. This data will be used to analyze and

quantify existing flow control and water quality benefits of ponds under their existing conditions with passive controls.

Under this task the consultant will conduct general project coordination, conduct meetings with City staff, and request applicable data identified during user workshops. In addition, the consultant will complete the baseline model to match storm simulations conditions identified in this proposal.

**Task 1.1 – Project Administration/Management.** The Consultant will coordinate with the City Staff as required to accomplish the work and to keep the project on schedule.

**Task 1.2 – Baseline model & Scenario development.** The consultant will develop and calibrate a Mike+ stormwater model representative of the hydrologic and hydraulic conditions in the study area. This Mike+ model will be compatible with the EPA SWMM5 environment.

**Task 1.3 – Data Review.** Review the City-provided storm pond SCADA data, flow meter data, pond geometry and other data required for the model development and calibration.

**Task 1.4 - Meetings (4) with City Personnel and other consultants to Discuss City’s Needs and Request Data.** Attend four one-hour long virtual meetings with City staff to discuss City staff requirements from the model. Assumed that two Consultant employees will attend these meetings.

**Task 1.5 – Agendas and Notes.** Prepare meeting agendas and send it to the City staff before the meeting. Take notes during the meeting, prepare meeting minutes, and distribute to meeting attendees for review. Address City staff comments on the meeting minutes and distribute the revised meeting minutes.

**Task 1.6 - Data Request.** Identify data gaps and request the missing data required for the model development from the City.

**Task 1.7 – Baseline Conditions Modeling Completion.** This work would include modeling up to two additional storm simulations on baseline conditions.

## **Task 2. Continuous Monitoring and Adaptive Controls - Smart Control System**

Operational Technology (OT) for stormwater monitoring and control such as sensors, actuated gates, and pumps already exist as part of SCADA installations. Opti’s Continuous Monitoring and Adaptive Control (CMAC) enhances the performance and overall watershed adaptability and coordination of these assets beyond what can be achieved with simple rules defined on a per-asset basis.

CMAC software leverages the weather forecast and information from sensors and flow controls in the field to automatically optimize discharge rates from stormwater holding basins/ponds. The automation through CMAC’s software can be configured to meet one or more stormwater mitigation objectives on water quality and quantity.

### **Task 2.1 – Project Administration/Management**

Opti will coordinate with The Consultant and City Staff as required to accomplish the work and to keep the project on schedule.

### **Task 2.2 – Mike+ Model Review and Conversion to EPA SWMM**

- A. **Review of Existing Information and Models** - Review the Mike+ Model and results from Task 2.
- B. **Model Conversion** – Opti will provide instructions and answer questions from The Consultant on how to convert the developed Mike+ model into an EPA SWMM input file format in order to simulate CMAC controls. Opti will validate that the exported EPA SWMM model is compatible with requirements for the CMAC Simulation and recommend adjustments to model configuration to facilitate results comparison with design alternatives.

### **Task 2.3 – Opti CMAC Configuration Builder**

Opti will collaborate with The Consultant and City Staff to translate performance objectives into standard Opti software configuration settings for 4 sites including, Wapato Lake, S. 80<sup>th</sup> Street Holding Basin, Hosmer Holding Basin, Wards Lake, respectively. Opti will also define Coordinated Release (CR) which uses information sourced from a sensor within the watershed (e.g., downstream water level) to optimize the upstream performance of individual stormwater holding basins to achieve improved watershed benefits. A CR configuration can take advantage of runoff routing time differences and maximize the utilization of ponds' storage capacities. For example, a series of small ponds can discharge its runoff volumes into a larger downstream pond during a wet weather event, and the downstream pond can be configured to impound received runoffs until the wet weather conditions have subsided. Opti will validate that all parameter settings are compatible with the Opti Platform prior to any simulations.

### **Task 2.4 – CMAC Simulation**

Opti will simulate the CMAC logic and behavior per the software configurations developed in Task 3. This simulation is intended to verify performance objectives are achieved at each state (i.e. dry weather, pre and post storm) and compared to passive performance.

Opti will run five (5) model simulations, two of which will include a typical year continuous simulation that represents prolonged wet weather conditions in the Pacific Northwest. The other three simulations represent a selected set of design storm events. The five (5) model simulations Storms provide a SWMM output file and graphic representation of the results. The graphic output will include the following passive to CMAC event metrics:

- Water elevation
- Controlled valve settings
- Controlled flow (i.e via orifice or pump)
- Total outflow
- Coordinated release

Based on the results, Opti will propose modifications to the software configurations and re-run the simulation up to two additional times.

### **Task 3. Systems Integration, Site Retrofit Feasibility, Cost-Benefit, Reporting**

#### **Task 3.1 – SCADA and CMAC Integration Feasibility Assessment**

Opti will provide recommendations in a report on integration pathways and IT/security considerations.

- A. **Integration Feasibility** - Opti CMAC solutions can be integrated with varying levels of decision support, automation, and remote control. Further, there are multiple technical options for connecting on-site equipment including sensors, actuators, and SCADA PLCs to the Opti Cloud Platform that can be deployed to meet Operations Teams' requirements. Opti will work with City Staff to gather requirements and assess various CMAC to SCADA and CMAC-to-sensors integration options. Opti will summarize all options discussed in terms of customer-required maintenance, support for Opti CMAC solutions, and Operations' stated feasibility.
- B. **Cybersecurity and IT** – Opti will review plans for Web API integrations for completeness and compatibility with the Opti Platform. Opti will provide a network architecture diagram for the On-Site Cellular Gateway and participate in IT security review of that integration, answering questions about its on-site presence and included-with-subscription cellular SIM and OTA patch management service.

#### **Task 3.2 – Site Retrofit Feasibility**

Opti and The Consultant will evaluate the feasibility of and approach for implementing CMAC hardware on the 4 sites, including the following tasks:

- A. Provide a desktop review of existing conditions and feasibility by:
  - a. Reviewing existing conditions (i.e. drawings, aerials, maintenance reports)
  - b. Considering design and safety risks
  - c. Reviewing relevant local regulatory requirements
- B. Develop and conceptual layout of CMAC hardware
- C. Develop preliminary outlet control sizes and types (e.g. gate, valve, pumps)

Deliverable(s): Written assessment of control hardware retrofit feasibility, approach, and assumptions.

#### **Task 3.3 - Cost-Benefit Analysis**

Cost-benefit analysis will evaluate the upgrade of the existing ponds with CMAC as compared to storage expansion and water quality treatment within the existing footprint and off-site. CMAC retrofits are especially critical in densely developed, urban areas where there is a lack of right-of-way space or public property to site new regional stormwater facilities. Budgetary estimates will include the capital and operational costs, and total lifecycle costs.

#### **Task 3.4 - Pond Control Alternatives Report**

- A. **Draft Pond Control Alternatives Report** – The Consultant and Opti will prepare a draft Pond Control Alternatives Report that includes results of the Smart control system - Continuous Monitoring and Adaptive Control (CMAC) based on the model simulations. Submit to the City for review.

**B. Final Pond Control Alternatives Report** – Review City’s comments on the Draft Pond Control Alternatives Report. Address City’s comments and finalize the Pond Control Alternatives Report. Submit to Ecology for review.

**C. Revised Final Pond Control Alternatives Report** – Review Ecology’s comments on the Final Pond Control Alternatives Report. Address Ecology’s comments and prepare a Revised Final Pond Control Alternatives Report. This assumes that Ecology’s comments do not involve additional model simulation runs.

## **Project Team**

For this project it is essential to have a committed TAC of experienced professionals representing both Phase I and II jurisdictions. The City will organize a TAC that is well rounded with expertise in stormwater infrastructure modeling and operation including: stormwater managers, stormwater asset managers, stormwater facility operators and the consulting community from municipal Phase I and II jurisdiction.

The project team consists of two City of Tacoma Professional Engineers, OptiRTC, and a Mike+ modeling consultant. The project Team and their expertise are as follows:

### **Dana de Leon, PE**

#### *Lead and Sponsor*

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 including: watershed planning, Stormwater Treatment Retrofit Prioritization, stormwater facilities design, developing environmental data management system, and statistical analysis of environmental data.

### **Shauna Hansen, PE**

#### *Co-Lead and Sponsor*

Shauna Hansen, P.E. works for the City of Tacoma, Environmental Services Department as a Stormwater Engineer in the Watershed Planning Group of the Environmental Programs Group. She has over 20 years of experience working on implementation of many elements of the City’s Stormwater Management Program including new and redevelopment permitting, reporting, staff training, public education and outreach and watershed planning. She also assists with stormwater modeling and environmental permitting for various stormwater capital and maintenance projects.

### **Viktor Hlas, OptiRTC**

#### **Study Technical Lead**

Mr. Hlas is responsible for the development and execution of Opti’s go-to-market strategy as well as managing client and partner relationships. Opti enables communities and businesses to continuously improve their stormwater management by delivering real-time visibility, adaptively controlling assets, and supporting smart city initiatives. Mr. Hlas is a licensed Professional Engineer in the State of Massachusetts, having experience in water resources



management as well as low impact development. He has an MBA from Babson College, in addition to holding an M.S. and B.S. in Civil Engineering from the University of New Hampshire.

### **Kenneth Yu, OptiRTC**

#### **Study Technical Co-Lead**

Kenneth Yu is a Hydroinformatics Engineer with Opti, where he develops stormwater management solutions integrating internet of things (IoT) technology with civil hydrology and hydraulic modeling. Mr. Yu's role at Opti includes providing subject matter knowledge on floodplain analyses and water quality modeling for regulatory compliance. Mr. Yu applies his knowledge of water resources, hydrologic and hydraulic modeling, and data analysis to develop quantitative, data-driven solutions. These solutions demonstrate the benefit of Opti's continuous monitoring and adaptive control (CMAC) technology and smart watershed management network (SWMN) to help communities create a more resilient stormwater system. Mr. Yu holds a B.S. in Civil Engineering from Northeastern University and a M.S. in Environmental Engineering from Massachusetts Institute of Technology.

### **Mike+ Modeling Consultant**

The City of Tacoma has several highly experienced consultants on contract with the expertise to model our stormwater infrastructure using Mike+. At the start of this project, the City will select one of these consultants for the project based on their availability at the time.

## **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 developing sound scopes of work and budgets/schedules and effective project management. Tacoma has a \$10M/yr stormwater capital program and City staff is well qualified to manage projects to benefit the Stormwater Utility. In addition to the TAC, a dedicated, experienced cross-functional team will be involved throughout all stages of planning, design, collaboration, and implementation of this project.

The City worked with several consultants to develop a detailed scope of work (SOW) and associated budget/schedule for this project. The detailed SOW and budget/schedule provided by the consultants identify the required deliverables, the anticipated submittal dates, and the estimated hours and resources required to complete each task. Project costs were estimated by the individual consultants based on the effort required for similar projects. The consultants assisting with the grant budget estimates have direct pertinent experience supporting this scope of work. As such, the City is confident that the proposed project budget and schedule are reasonable.

Effective communication within our consultant team and communication with our grant coordinator is key to effective project management. 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. The project manager will define preferred communication approaches with our grant manager and consultant team. A consultant team kickoff meeting will be convened 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 and other administrative project management activities are handled consistently and in a timely manner to support the project’s schedule and contract requirements.

The signed City of Tacoma agreement (Grant Approval Form) for this project is attached. The Grant Approval Form was signed for the Washington State Department of Ecology, SFY2023 Grant submittal. This project was one of three projects submitted in the SFY2023 submittal. In addition, we have attached Letters of Support for the Washington State Department of Ecology, SFY2023 Grant submittal which included this project.

## Project Budget and Schedule

This project is expected to begin in January 2024 and continue through the end of February 2025, when the final report and presentations have been delivered. The complete schedule is shown in Table 1. The budget for this project is \$233,798. The detailed budget is shown in Table 2.

**Table 1. Schedule**

Task	CONSULTANT HOURS	OPTI HOURS	Total Hours	Start	End	Duration (days)
Task PM Project Management and Administration	City of Tacoma In-Kind Hours			1/2/2024	2/17/2025	412
Task 1 - Flett Creek Drainage Basin Stormwater System Model	599	16	615	1/2/2024	6/6/2024	155
Task 2 – CMAC - Smart Control System	20	318	338	6/6/2024	10/12/2024	128
Task 3 - Systems Integration, Site Retrofit Feasibility, Cost-Benefit, Reporting	40	365	405	10/12/2024	2/17/2025	128
<b>Summary</b>	<b>659</b>	<b>699</b>	<b>1358</b>	<b>1/2/2024</b>	<b>2/17/2025</b>	<b>412</b>

### Schedule Assumptions

- Schedule developed on major task level for planning purposes only
- Schedule developed assuming linear progression through tasks
- Sub-tasks between The Consultant and Opti assumed to progress concurrently. This may not be applicable to all subtasks and may impact schedule
- Time to account for reviews, schedule and coordination conflicts, holidays, or other milestones not incorporated as part of the draft schedule development.

### Project Assumptions

- Mike+ Model can be converted to EPA SWMM 5.1
- SWMM model required for CMAC simulation
- Site feasibility limited to 4 sites
- Desktop analyses based on existing information

<b>Table 2. City of Tacoma Pond Optimization Project Budget and Scope</b>				
<b>Task Number</b>	<b>Task Name</b>	<b>Responsible</b>	<b>HRS</b>	<b>Budget</b>
<b>Task PM -Project Management and Administration (City of Tacoma In-kind)</b>				<b>In-Kind</b>
PM.1	Project Administration/Management	City		
PM.2	Communication Plan	City		
<b>Task 1 - Flett Creek Drainage Basin Stormwater System Model</b>			<b>638</b>	<b>\$100,894</b>
1.1	Project Administration/Management	Consultant	10	\$2,310
1.2	Baseline model & Scenario development	Consultant	553	\$83,478
1.3	Data Review	Consultant	34	\$6,802
1.4	4 Meetings with City Personnel to Discuss City's Needs and Request Data	Consultant	18	\$3,594
1.5	Develop Meeting Agendas and Notes for Each Meeting	Consultant	3	\$630
1.6	Data Request	Consultant	10	\$2,040
1.7	Simulate Baseline Conditions (2 simulations)	Consultant	10	\$2,040
<b>Task 2 - Continuous Monitoring and Adaptive Controls - Smart Control System</b>			<b>338</b>	<b>\$69,030</b>
2.1	Project Administration/Management	Opti	50	\$5,890
2.2	Mike+ Model Review and Conversion to EPA SWMM			\$14,880
2.2.1	Review of Existing Information and Models	Opti/Consultant	40	\$9,600
2.2.2	Model Conversion	Opti	22	\$5,280
2.3	Opti CMAC Configuration Builder			\$18,608
2.3.2	Configuration - Wapato Lake	Opti	23	\$4,652
2.3.3	Configuration - S. 80th Street Holding Basin	Opti	23	\$4,652
2.3.4	Configuration - Hosmer Holding Basin	Opti	23	\$4,652
2.3.5	Configuration - Wards Lake	Opti	23	\$4,652
2.4	CMAC Simulations			\$29,652
2.4.1	Run the Model - Continuous Simulation #1	Opti	40	\$8,688
2.4.2	Run the Model - Continuous Simulation #2	Opti	40	\$8,688
2.4.3	Run the Model Simulation - Storm #1 (up to 3 times)	Opti	18	\$4,092
2.4.4	Run the Model Simulation - Storm #2 (up to 3 times)	Opti	18	\$4,092
2.4.5	Run the Model Simulation - Storm #3 (up to 3 times)	Opti	18	\$4,092
<b>Task 3 - Systems Integration, Site Retrofit Feasibility, Cost-Benefit, Reporting</b>			<b>405</b>	<b>\$63,874</b>
3.1	SCADA and CMAC Integration Feasibility Assessment			\$7,206
3.1.1	Integration Feasibility	Opti	22	\$4,380
3.1.2	Cybersecurity and IT	Opti	13	\$2,826
3.2	Site Retrofit Feasibility			\$21,864
3.2.1	Existing Conditions Review	Opti/Consultant	144	\$18,852
3.2.2	Develop conceptual hardware layout	Opti/Consultant	24	\$3,012
3.3	Cost-Benefit Analysis			\$9,200
3.3.1	Cost-benefit comparison analysis	Opti	64	\$9,200
3.4	Pond Optimization Report			\$25,604
3.4.1	Draft Pond Optimization Report	Opti/Consultant	78	\$14,148
3.4.2	Final Pond Optimization Report	Opti/Consultant	30	\$5,728
3.4.3	Revised Final Pond Optimization Report	Opti/Consultant	30	\$5,728
<b>Project Total</b>				<b>\$233,798</b>
			<b>Total</b>	<b>1381</b>
				<b>\$233,798</b>



# GRANT APPROVAL FORM

Please refer to the guidelines and instructions on Pages 2 and 3 before completing this form.

## PRIOR TO GRANT APPLICATION: COMPLETE THIS SECTION AND SUBMIT TO CITY MANAGER'S OFFICE AND FINANCE ACCOUNTING.

FORMAL TITLE OF GRANT: City of Tacoma Phase 2 Watershed Prioritization Planning Project

FEDERAL CFDA (IF APPLICABLE): \_\_\_\_\_

AGENCY APPLYING TO: Washington State Dept. of Ecology

PROGRAM BEGIN DATE: July 1, 2024

APPLICATION DUE DATE: OCTOBER 12, 2022

PROGRAM END DATE: JUNE 30, 2029

PROJECT SUMMARY (BRIEF DESCRIPTION): The City of Tacoma Phase 2 Watershed Prioritization Planning Project would continue to build upon the watershed planning work conducted in Phase 1 under the Watershed Prioritization Project Ecology Grant issued in SFY2021. In Phase 1, the City developed a watershed management tool to identify and prioritize areas within the City that are most in need of stormwater improvements and identify stormwater solutions, including BMP and retrofit options, based on the watershed conditions, cost verses benefit, and community needs. Phase 2 would fill in the gaps of this modeling effort identified during Phase 1 and develop engagement materials for the plan implementation. The gaps identified include: expanding tool to include receiving waters that cross city boundaries, quantifying urban tree benefits, and active optimization controls of stormwater systems to improve flood control and water quality benefits.

RESTRICTIONS/CONDITIONS OF FUNDING: 0% match from Tacoma's surface water utility rates

PARTNERS ON THIS GRANT (PIERCE COUNTY, STATE, FEDERAL, NON PROFIT, ETC.): \_\_\_\_\_

GRANT AMOUNT APPLYING FOR \$ \$500,000

CITY MATCH \$ 0

IS THE CITY MATCH EARMARKED IN THE CURRENT BUDGET?

FEDERAL \$ 0

YES  NO **N/A NO MATCH**

STATE \$ 500,000

WOULD THE CITY MATCH NEED TO BE INCLUDED IN FUTURE BUDGETS?

OTHER \$ \_\_\_\_\_

YES  NO **N/A NO MATCH**

GRANT TYPE:  CAPITAL  
 OPERATING

LEAD DEPARTMENT: Environmental Services PROGRAM MANAGER NAME: Laura Nokes PHONE NUMBER: 442-0046

FINANCE: FUND ACCOUNTANT NAME: Louis Nguyen PHONE NUMBER: 502-8150

BUDGET OFFICE: BUDGET ANALYST NAME: Nick Anderson PHONE NUMBER: 591-5847

DocuSigned by:

FOR Geoffrey M. Smyth P.E. 09/30/2022

DocuSigned by:

Elizabeth A. Pauli 10/04/2022

DIRECTOR OR DIVISION MANAGER

DATE

CITY MANAGER

DATE

## AWARD DETERMINATION: COMPLETE AND SUBMIT THIS SECTION TO FINANCE ACCOUNTING.

GRANT STATUS:  DENIED  AWARDED DATE OF AWARD: \_\_\_\_\_ GRANT NUMBER: \_\_\_\_\_

AWARD AMOUNT: \$ \_\_\_\_\_ MATCH AMOUNT: \$ \_\_\_\_\_

GRANT BEGIN DATE: \_\_\_\_\_ GRANT END DATE: \_\_\_\_\_ DEADLINE FOR REIMBURSABLES: \_\_\_\_\_

IS THIS GRANT RENEWABLE?  YES  NO MULTI YEAR? \_\_\_\_\_

PLEASE ANSWER ALL QUESTIONS: (PLEASE REFER TO THE PAGE 3 OF THIS DOCUMENT TO DETERMINE RESOLUTION/ORDINANCE NECESSITY)

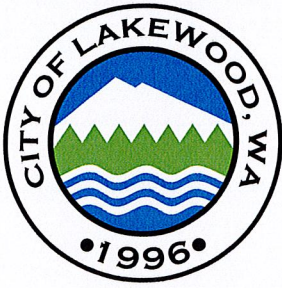
1. HAVE APPROPRIATIONS, INCLUDING MATCHES, FOR THIS GRANT BEEN INCLUDED IN THE CURRENT BIENNIAL BUDGET?  YES  NO

2. DOES THE RECEIVING DEPARTMENT NEED AN IMMEDIATE APPROPRIATION?  YES  NO

3. WILL THE CITY BE MATCHING FUNDS OR SERVICES IN EXCESS OF \$200,000?  YES  NO

4. DOES THE GRANT REQUIRE SEPARATE COUNCIL ACTION BY GRANTOR?  YES  NO

5. IF THERE ARE PROJECT FTE'S, HOW MANY ARE ANTICIPATED?



October 4, 2022

Jason Whalen  
Mayor

Mary Moss  
Deputy Mayor

Michael D. Brandstetter  
Councilmember

Don Anderson  
Councilmember

Patti Belle  
Councilmember

Linda Farmer  
Councilmember

Paul Bocchi  
Councilmember

John J. Caulfield  
City Manager

Attention: Department of Ecology Water Quality Combined Funding Grant Program SFY2024

Re: Support for Tacoma's Grants for Phase 2 Watershed Prioritization Planning Project (WQC-2024-TacoES-00162) and Stormwater Sediment Monitoring for Watershed Prioritization and Planning (WQC-2024-TacoES-00163)

Dear Selection Team,

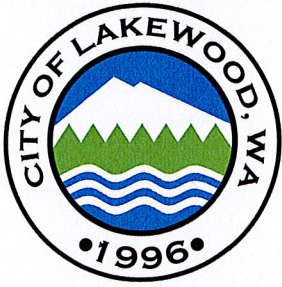
I am writing in support of two City of Tacoma Environmental Services Department's grant applications from the Water Quality Combined Funding Program for continuing efforts with improving water quality in urban watersheds. The outputs from these grants will provide information to others in the region on tools and sampling approaches for effective stormwater management in watersheds throughout Puget Sound and beyond.

I understand the first grant would expand on the Watershed Prioritization Tool (WPT) developed under a previous grant (SFY2021 Grant). The WPT is an open source, GIS model that identifies and prioritizes areas within the City that are most in need of stormwater improvements and identifies stormwater solutions such as BMP and retrofit options, based on factors including watershed conditions, cost vs. benefit, and community needs. Phase 2 would expand the WPT to include:

1. The addition of two BMPs to the model: 1) urban trees and forests and 2) smart storm pond control systems.
2. Evaluating shared receiving waters that cross jurisdictional boundaries.

The Phase 2 WPT project would demonstrate to other agencies in Western Washington how the tool could be used to:

- Answer important watershed planning questions related to shared receiving waters,
- Track water quality and flow control benefits of standard stormwater BMPs compared to active control retrofits for storm ponds and enhanced urban tree canopy, and
- Provide a cost benefit analysis to allow jurisdictions to compare the total expected cost of each option with its expected benefit.



Department of Ecology  
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The second grant would build upon this work by developing and testing sediment trap monitoring approaches to inform the Watershed Prioritization Tool. Stormwater sediment trap monitoring will be used in areas identified by the WPT as having predicted higher pollutant loadings to ground truth findings and to focus source control activities, enhanced maintenance, or stormwater treatment retrofits. Additionally, the sediment traps will be used to develop methods to measure effectiveness of these stormwater management actions.

Implementation of this approach to using sediment trap monitoring as a tool to advise prioritization of stormwater management efforts will help other jurisdictions in the region in their watershed planning efforts and assist in making cost effective stormwater management decisions.

Sincerely,

Paul A. Bucich, P.E.  
Public Works Engineering Director/City Engineer

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

October 6, 2022

Attention: Department of Ecology Water Quality Combined Funding Grant Program SFY2024

Subject: Support for Tacoma's Grants for Phase 2 Watershed Prioritization Planning Project (WQC-2024-TacoES-00162) and Stormwater Sediment Monitoring for Watershed Prioritization and Planning (WQC-2024-TacoES-00163)

Dear Selection Team:

I am writing in support of two City of Tacoma Environmental Services Department's grant applications from the Water Quality Combined Funding Program for continuing efforts with improving water quality in urban watersheds. The outputs from these grants will provide information to others in the region on tools and sampling approaches for effective stormwater management in watersheds throughout Puget Sound and beyond.

I understand the first grant would expand on the Watershed Prioritization Tool (WPT) developed under a previous grant (SFY2021 Grant). The WPT is an open source, GIS model that identifies and prioritizes areas within the City that are most in need of stormwater improvements and identifies stormwater solutions such as BMP and retrofit options, based on factors including watershed conditions, cost vs. benefit, and community needs. Phase 2 would expand the WPT to include:

1. The addition of two BMPs to the model: 1) urban trees and forests and 2) smart storm pond control systems.
2. Evaluating shared receiving waters that cross jurisdictional boundaries.

The Phase 2 WPT project would demonstrate to other agencies in Western Washington how the tool could be used to:

- Answer important watershed planning questions related to shared receiving waters,
- Track water quality and flow control benefits of standard stormwater BMPs compared to active control retrofits for storm ponds and enhanced urban tree canopy, and
- Provide a cost benefit analysis to allow jurisdictions to compare the total expected cost of each option with its expected benefit.

The second grant would build upon this work by developing and testing sediment trap monitoring approaches to inform the Watershed Prioritization Tool. Stormwater sediment trap monitoring will be used in areas identified by the WPT as having predicted higher pollutant loadings to ground truth findings and to focus source control activities, enhanced maintenance, or stormwater treatment



retrofits. Additionally, the sediment traps will be used to develop methods to measure effectiveness of these stormwater management actions.

Implementation of this approach to using sediment trap monitoring as a tool to advise prioritization of stormwater management efforts will help other jurisdictions in the region in their watershed planning efforts and assist in making cost effective stormwater management decisions.

Sincerely,

A handwritten signature in black ink, appearing to read "Tom Kantz", with a stylized flourish at the end.

Tom Kantz  
Acting Floodplain & Watershed Services Manager  
Pierce County Department of Planning & Public Works | Surface Water Management  
[tom.kantz@piercecountywa.gov](mailto:tom.kantz@piercecountywa.gov)

October 7, 2022



Attention: Department of Ecology Water Quality Combined Funding Grant Program SFY2024

Re: Support for Tacoma's Grants for Phase 2 Watershed Prioritization Planning Project (WQC-2024-TacoES-00162) and Stormwater Sediment Monitoring for Watershed Prioritization and Planning (WQC-2024-TacoES-00163)

Dear Selection Team,

I am writing on behalf of the Puyallup and Chambers Watersheds Salmon Recovery Lead Entity's Citizen Advisory Committee to express our strong support of two City of Tacoma Environmental Services Department's grant applications from the Water Quality Combined Funding Program for continuing efforts with improving water quality in urban watersheds. The outputs from these grants will provide information to others in the region on tools and sampling approaches for effective stormwater management in watersheds throughout Puget Sound and beyond. This work will help implement one of our salmon recovery strategies to improve water quality.

I understand the first grant would expand on the Watershed Prioritization Tool (WPT) developed under a previous grant (SFY2021 Grant). The WPT is an open source, GIS model that identifies and prioritizes areas within the City that are most in need of stormwater improvements and identifies stormwater solutions such as BMP and retrofit options, based on factors including watershed conditions, cost vs. benefit, and community needs. Phase 2 would expand the WPT to include:

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Implementation of this approach to using sediment trap monitoring as a tool to advise prioritization of stormwater management efforts will help other jurisdictions in the region in their watershed planning efforts and assist in making cost effective stormwater management decisions.

Sincerely,

A handwritten signature in blue ink that reads "Lisa Spurrier". The signature is written in a cursive style with a long, sweeping underline.

Lisa Spurrier, Coordinator  
Puyallup and Chambers Watersheds Salmon Recovery Lead Entity

October 5, 2022



Attention: Department of Ecology Water Quality Combined Funding  
Grant Program SFY2024

Re: Support for Tacoma's Grants for Phase 2 Watershed Prioritization Planning Project (WQC-2024-TacoES-00162) and Stormwater Sediment Monitoring for Watershed Prioritization and Planning (WQC-2024-TacoES-00163)

Dear Grant Review Committee,

I am writing in support of two City of Tacoma Environmental Services Department's grant applications from the Water Quality Combined Funding Program for continuing efforts with improving water quality in urban watersheds. The outputs from these grants will provide information to others in the region on tools and sampling approaches for effective stormwater management in watersheds throughout Puget Sound and beyond.

The first grant would expand on the Watershed Prioritization Tool (WPT) developed under a previous grant (SFY2021 Grant). The WPT is an open source, GIS model that identifies and prioritizes areas within the City that are most in need of stormwater improvements and identifies stormwater solutions such as BMP and retrofit options, based on factors including watershed conditions, cost vs. benefit, and community needs. Phase 2 would expand the WPT to include:

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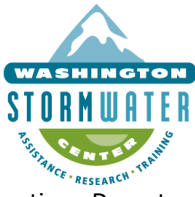
The Puyallup River Watershed Council initiated and has sponsored the Puyallup White River Local Integrating Organization (PWR LIO) since its formation in 2018. The PWR LIO created an Ecosystem Recovery Plan for WRIA 10 and the northern part of WRIA 12 (Tacoma is in both) through extensive community engagement, completing the plan in the fall of 2021, and they have just published a new interactive web mapping tool and website based on the ERP, available at: [www.puyalupwatershed.org](http://www.puyalupwatershed.org). Stormwater and Water Quality is one of eight focus areas in the ERP.

These two grant proposals are aligned with the goals in the ERP and therefore we believe they will advance ecosystem recovery. While the first grant is focused on Tacoma, located at the mouth of the Puyallup River and Commencement Bay estuary, the second grant will help show how this work can be applied elsewhere in this watershed and beyond. As the Chair of the PWR LIO I encourage the Dept. of Ecology to award and fully fund both grant proposals.

Sincerely,

A handwritten signature in blue ink that reads "Krystal Kyer" with a horizontal line extending to the right.

Krystal L. Kyer  
Chair, Puyallup White River Local Integrating Organization



Attention: Department of Ecology Water Quality Combined Funding Grant Program SFY2024

Re: Support for Tacoma's Grants for Phase 2 Watershed Prioritization Planning Project (WQC-2024-TacoES-00162) and Stormwater Sediment Monitoring for Watershed Prioritization and Planning (WQC-2024-TacoES-00163)

**Dear Selection Team,**

This letter expresses the Washington Stormwater Center's (Center) support for the City of Tacoma Environmental Services Department's grant applications from the Water Quality Combined Funding Program for continuing efforts to improve water quality in urban watersheds. The outputs from these grants will inform others in the region about tools and sampling approaches for effective stormwater management in watersheds throughout Puget Sound and beyond.

We understand the first grant would expand on the Watershed Prioritization Tool (WPT) developed under a previous grant (SFY2021 Grant). The WPT is an open source GIS model that identifies and prioritizes areas within the City that are most in need of stormwater improvements and identifies stormwater solutions, such as BMP and retrofit options, based on factors including watershed conditions, cost vs. benefit, and community needs. Phase 2 would expand the WPT to include:

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Implementing this approach to using sediment trap monitoring as a tool to advise prioritization of stormwater management efforts will help other jurisdictions in the region in their watershed planning efforts and assist in making cost-effective stormwater management decisions.

Sincerely,

If you have any questions regarding this letter, please contact me at 360-271-8032.

*Laurie Larson-Pugh*

*Lisa Rozmyn*

*John D. Stark*

Municipal Program Manager

Assistant Director

Director