

Agreement
Between King County and the City of Redmond
for Services Related to Monticello Creek Watershed-Wide Retrofit Siting

This Agreement ("Agreement") is made and entered into by King County, Washington, as represented by its Department of Natural Resources and Parks, Water and Land Resources Division, hereinafter referred to as "WLRD" and the City of Redmond, hereinafter referred to as "City," or "Redmond," collectively referred to as the "Parties," in order for WLRD to provide services in support of the Monticello Creek Watershed-wide Retrofit Siting project ("Project").

The Parties mutually agree as follows:

I. Purpose

The purpose of this Agreement is to provide a mechanism whereby WLRD will provide services, as described in Exhibit One, attached to this Agreement and incorporated herein and made a part hereof, to support completion of the Project, and the City will reimburse WLRD for a portion of the costs. As King County and the City have a portion of the Monticello Creek watershed within their respective jurisdictions (23% King County, 77% Redmond) the parties have agreed to share the cost of King County's services according to those percentages; therefore, the City will pay the costs of services provided under this Agreement up to \$110,840 and King County will be responsible for covering the remaining costs.

II. Management of Technical Services Provision

- A. The provision of services under this Agreement will be managed for King County by Jeff Burkey, or other staff as designated by King County, and for Redmond by Andy Rheume, or other staff as may be designated by Redmond ("Project Administrators").
- B. In the event that a dispute arises under this Agreement, it shall be resolved by the Project Administrators. If the dispute cannot be resolved by the Project Administrators, it shall be referred for resolution to the Division Director of King County WLRD and the City of Redmond, Natural Resources Manager, Department of Public Works. This dispute resolution provision shall not be construed as prohibiting either Party from seeking enforcement of the terms of this Agreement, or relief or remedy from a breach of the terms of this Agreement, in law or in equity.

III. Responsibilities

- A. WLRD will provide services as described in Exhibit One.
- B. Redmond will provide funding, as stated in Section I. and Section IV., to pay a portion of WLRD's costs to provide services.
- C. The Parties represent that funding necessary for activities under this Agreement have been appropriated and are available. To the extent that such service provision requires future appropriations beyond current appropriation authority, each of the Parties' obligations are contingent upon the appropriation of sufficient funds by that Party's legislative authority to complete the activities described herein. If no such appropriation is made for either Party, this Agreement will terminate at the close of the appropriation year for which the last appropriation that funds these activities was made.

IV. Costs and Billing

- A. Per Exhibit One, WLRD's estimated costs to provide services under this Agreement is \$143,948. As stated in Agreement Section I., Redmond will pay WLRD's actual costs to provide services, including full cost recovery of staff time, up to \$110,840.
- B. WLRD will invoice Redmond for services on a quarterly basis. The invoice shall be accompanied by a summary of activities conducted under this Agreement and associated costs.
- C. Payment to WLRD will be made by Redmond within forty-five (45) days of receipt of invoices.

V. Ownership of Deliverables

- A. All deliverables generated directly as a result of this Agreement will be co-owned by WLRD and Redmond.
- B. Each party is responsible for the proper use and distribution of the deliverables directly generated under the terms of this Agreement, in accordance with the terms of this Agreement.

VI. Duration, Termination, and Amendment

- A. This Agreement shall become effective upon its signature, and will expire on June 30, 2017 unless terminated sooner or extended as provided herein.
- B. This Agreement may be terminated by either Party upon 30 days written notice
- C. This Agreement may be amended only by written agreement of the Parties.
- D. This Agreement is not assignable by either Party, either in whole or in part.
- E. This Agreement is a complete expression of the intent of the Parties and any oral or written representations or understandings not incorporated herein are excluded. The parties recognize that time is of the essence in the performance of the provisions of this Agreement. Waiver of any default shall not be deemed to be waiver of any subsequent default. Waiver of breach of any provision of this Agreement shall not be deemed to be a waiver of any other or subsequent breach and shall not be construed to be a modification of the terms of the Agreement unless stated to be such through written approval by the parties which shall be attached to the original Agreement.

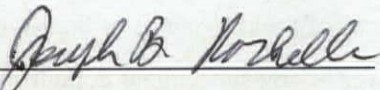
VII. Indemnification and Hold Harmless

King County shall protect, defend, indemnify, and save harmless Redmond, its officers, officials, and employees, while acting within the scope of their employment, from any and all costs, claims, judgments, and/or awards of damages, arising out of or in any way resulting from King County's own negligent acts or omissions, or the negligent acts or omissions of King County's officials, officers, or employees in connection with activities conducted under this Agreement. Redmond shall protect, defend, indemnify, and save harmless King County, its officers, officials, and employees, while acting within the scope of their employment, from any and all costs, claims, judgments, and/or awards of damages, arising out of or in any way resulting from Redmond's own negligent acts or omissions, or the negligent acts or omissions of Redmond's officials, officers or employees in connection with activities conducted under this Agreement. Each Party agrees that its obligations under this Section VII. extend to any claim, demand, and/or cause of action brought by, or on behalf of, any of its employees or agents. For this purpose, each Party, by mutual negotiation, hereby waives, with respect to the other Party only, any immunity that would otherwise be available against such claims under the Industrial Insurance provisions of Title 51 RCW. In the event that either Party incurs any judgment, award, and/or cost arising therefrom, including attorney's fees, to enforce the provisions of this

Section, all such fees, expenses, and costs shall be recoverable from the responsible Party to the extent of that Party's culpability. The indemnification provided for in this Section VII. shall survive the termination of this Agreement.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement on the 26th day of August, 2015.

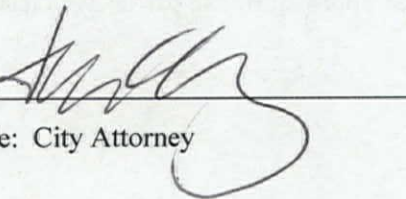
Approved as to Form

By: 
Title: Deputy Prosecuting Attorney

King County:

By:  7/29/15
Title: King County Executive

Approved as to Form

By: 
Title: City Attorney

City of Redmond:

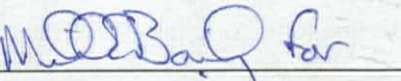
By:  for
Title: City of Redmond Mayor

Exhibit One
Scope of Work
Support for National Estuary Program (NEP) Watershed Protection & Restoration Grant
for Stormwater Retrofit Planning and Pre-design

Background

In 2014, Washington State Department of Ecology awarded to the City of Redmond a National Estuary Program (NEP) Watershed Protection & Restoration Grant for Stormwater Retrofit Planning. The project to be conducted under the grant is the Monticello Creek Watershed-wide Retrofit Siting, which will implement Redmond's Citywide Watershed Management Plan that prioritizes and establishes actions to protect and restore water bodies. Monticello Creek has been selected by the City to be one of the first creeks restored.

Work is scheduled to be complete by June 1st, 2017.

The following tasks will be performed by King County.

TASK 1 - PROJECT ADMINISTRATION/MANAGEMENT:

Description:

Administer the project. Responsibilities will include, but not be limited to: maintenance of project records; submittal of payment vouchers to Redmond. King County will provide progress reports to Redmond quarterly with payment requests that include by task the amount being billed, total billed to date, and amount remaining in each task. King County will keep compliance with applicable procurement and contracting requirements of the NEP grant agreement between the City and Washington State Department of Ecology, and this interagency agreement. King County will produce a QAPP for modeling as required by the NEP. King County will submit the draft QAPP to Redmond to manage review and comments from Ecology and Redmond, King County will address comments and finalize the QAPP.

Deliverables:

1. King County will write the QAPP and manage one round of review/comments by Ecology's grant manager and Redmond's project manager, if required.
2. Quarterly progress reports
3. Quarterly payment requests with all backup required by applicable state and federal grant requirements
4. Redmond will provide and update a project schedule and budget.

Completion Timeframe: November 2016

TASK 2 – MODEL DEVELOPMENT AND CALIBRATION

A series of maps will be prepared documenting watershed conditions through the Bear Creek Watershed Planning project. These maps will focus on the types of information necessary for construction of a continuous rainfall/runoff hydrologic and water quality model of the watershed. Maps to be developed will include, at a minimum:

- Soil types will be based on GIS data available from United States Geological Survey (USGS), Natural Resources Conservation Service (NRCS), University of Washington, Snohomish County, and King County.
- Two sources of mapping data applicable for this watershed planning effort include University of Washington (2010¹), and National Land Cover Database (2011²).
- Impervious land cover mapping data (2009³) is available to provide guidance during the determination of fractions of impervious surface for a given land use category.
- Slope of landscape will be generated from LiDAR based digital ground model elevations.
- Stormwater system mapping (conveyance and flow/runoff treatment facilities).
- Areas appropriate for special attention in regard to hydrologic and water quality impacts.

In general, drainage areas will be segmented by outfall to Monticello Creek. Catchment sizes may be bigger or smaller depending on storm network mapping and identified significant hydraulic controls (e.g., stormwater detention ponds). Identified stormwater facilities will be individually evaluated for explicit integration into the model.

The relationship between land use and land cover, soil types, slope, stormwater management, weather, and stream flow and water quality in the watershed area will be modeled using Hydrologic Simulation Program – Fortran (HSPF). The model will be calibrated at a minimum for stream flow, temperature, dissolved copper, dissolved zinc, and fecal coliform bacteria.

Calibration will occur at the downstream end of the culvert underneath Avondale Way, where King County has been collecting hydrologic and water quality data since June 2014. Statistics characterizing model accuracy will be applied using: root-mean-square-error, Pearson correlations, coefficient of determination, relative percent differences, and mean and absolute errors. Metrics used for these statistics may include: annual and seasonal volumes, monthly, daily, and hourly simulated flow rates.

Simulated average hourly water quality concentrations will be compared to instantaneous observed concentrations. Further guidance during water quality calibration will be simulating annual loading rates and comparing those to results (where applicable) from other studies in the region, then secondarily to studies conducted nationally.

Multiple flow metrics derived from the model output will be used to estimate the hydrologic limitations to benthic index of biologic integrity (BIBI). Metrics used may be based on recent studies conducted in

¹ University of Washington. 20XX. Central Puget Sound 2010 Land Cover Classification. TBD [Puget Sound Regional Synthesis Model (PRISM)]?. University of Washington.

² Homer, C.H., Fry, J.A., and Barnes C.A., 2012, The National Land Cover Database, U.S. Geological Survey Fact Sheet 2012-3020, 4 p.

³ King County, 20110101, 2009 Impervious and Impacted Surface of King County Washington: King County, King County, WA.

the region by King County (2012)⁴ and Horner (2013)⁵. The anticipated three metrics used to project BIBI scores are: high pulse counts, high pulse range, and PEAK:BASE, as developed in the Horner (2013) study. Two of the three metrics (high pulse counts and high pulse range) had the highest correlations among eight significant relationships defined in DeGasperi et al. (2009)⁶. Evaluating the watershed model accuracy simulating BIBI scores, projected BIBI scores will be based on the best fit of the regressions defined by Horner (2013). The upper 90th percentile confidence limits will be used when evaluating strategies (Task 4). Other metrics and statistics that are evaluated in King County's Bear Creek Watershed-Scale Stormwater Management Plan may be used in this plan in addition to or in substitution of metrics mentioned above, but as approved by City of Redmond designee.

Data available as part of this watershed plan, will span approximately between June 2014 and October 2015.

Deliverables:

1. Calibrated HSPF model
2. Calibrated SUSTAIN model

Completion Timeframe: April 2016

TASK 3 – HISTORIC AND FUTURE CONDITIONS MODELING

Description:

Using the calibrated hydrologic and water quality watershed model, and relationships between flow metrics and BIBI, watershed condition will be assessed under a minimum of two scenarios:

- idealized fully-forested conditions intended to be representative of undisturbed historic conditions; and,
- full build-out under existing or proposed comprehensive land use management plan(s) for the watershed.
 - Simulated future projections will include a baseline condition assuming no retrofits will occur to existing stormwater infrastructure projected to remain unchanged in the future.

Hydrologic response units (HRUs) defining types of land cover (e.g., impervious surfaces, grass, forest, etc.) for a given land use (e.g., low/medium/high density residential, commercial/industrial, etc.) will be based on previous studies conducted in the region (e.g., King County 2012⁴, King County 2013⁷).

⁴ King County. 2012. Stormwater Retrofit Analysis for Juanita Creek Basin in the Lake Washington Watershed. Ecology Grant: G0800618. Prepared by Jeff Burkey, Mark Wilgus P.E., and Hans Berge. King County Department of Natural Resources and Parks. Water and Land Resources Division. Seattle, Washington.

⁵ Horner, R.R. 2013. Development of a Stormwater Retrofit Plan for Water Resources Inventory Area 9: Flow and Water Quality Indicators and Targets. King County Water and Land Resources Division, Seattle, Washington.

⁶ DeGasperi, C.L., H.B. Berge, K. R. Whiting, J. J. Burkey, J. L. Cassin, and R. R. Fuerstenberg, 2009. Linking Hydrologic Alteration to Biological Impairment in Urbanizing Streams of the Puget Lowland, Washington, USA. *Journal of the American Water Resources Association* 45(2):512-533.

⁷ King County Science and Technical Support Section. 2013. Watershed Model Development for Water Resource Inventory Area (WRIA) 9 Stormwater Retrofit Planning Project. Prepared by Jeff Burkey, Science and Technical

Rainfall runoff, water temperature, and pollutant loading rates resultant from the watershed model calibration process (Task 2) will be used as a basis for historical and future land use modeling scenarios.

Stream flow, dissolved copper, dissolved zinc, temperature, and fecal coliform results will be compared to Washington State water quality standards, where possible. Estimations of theoretical maximum BIBI scores will be presented using the 90th percentile confidence interval as defined in Task 2. This method presumes no other limiting factors are present and BIBI can reach its maximum potential supported by improvements to stream hydrology.

Completion Timeframe: May 2016

Deliverables:

1. Modeling results that will be used in Task 4.
2. Technical memorandum summarizing model development and results.

TASK 4 - EVALUATION OF STORMWATER MANAGEMENT STRATEGIES:

Description:

Stormwater management strategies will be assessed if water quality standards are modeled to not be met under future conditions in Task 3. The stormwater management strategies will be assessed relative to their modeled ability to allow for future water quality standards to be met, using the same hydrologic metrics, water quality parameters, and BIBI scores as used in Task 2.

Stormwater management strategies will be assessed using a combination of modeling techniques. Strategies will be assessed relative to how well they are projected to restore stream flow and water quality to being supportive of beneficial uses. The calibrated watershed HSPF model and the USEPA's System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN) will both be used to assess effectiveness of stormwater management strategies. Stormwater strategies to be assessed will include:

- changes to development-related codes, rules, standards, and plans,
- changes to the creek channel, and,
- potential future structural stormwater control retrofits.

Examples of sources expected to be used to help define effectiveness for individual types of stormwater facilities include: Stormwater Management Manual for Western Washington (2012), King County Stormwater Management Manual (2009), outcomes from Stormwater Retrofit Analysis and Recommendations for Juanita Creek (2012), outcomes from Stormwater retrofit planning project for Green River Watershed (2013, 2014), Western Washington Continuous Simulation Hydrology Model (2012), and other case studies applying SUSTAIN to watersheds in the Puget Lowlands (e.g., case study⁸ done in City of Federal Way jurisdiction).

Completion Timeframe: July 2016

Support Section in Water and Land Resources Division, Department of Natural Resources and Parks. Seattle, Washington.

⁸ <https://fortress.wa.gov/ecy/publications/SummaryPages/1303009.html>

Deliverables:

Up to six scenario runs using HSPF and SUSTAIN

Final selected alternative set of measures provided to Redmond for development of project specific designs.

Costs

Task	King County Total Cost (\$)
1. Project Administration, Management, and QAPP	\$36,864
2. Model Development & Calibration	\$73,347
3. Historic and Future Condition Modeling	\$11,567
4. Evaluation of Stormwater Management Strategies	\$22,170
Total	\$143,948

Monticello Creek watershed is 23% in unincorporated King County, and 77% within Redmond City limits. King County has agreed to split the total project cost based on the percentage of land in each jurisdiction. Redmond will incur cost for staff time and contracts for work outside of King County's scope of work. As such, **the maximum cost of this interagency agreement for the City of Redmond is not to exceed \$110,840.**