Redmond NPDES Annual Report Covering 2017

Response to Appendix 3 questions

Number	Permit Section	Question/Answer
1	S5.A.2	Attach updated annual Stormwater Management Program Plan (SWMP Plan). (S5.A.2) ***Saved Document Name: Attachment 1_2017 SWMP_1_03152018093321***
2	S9.D.5	Attach a copy of any annexations, incorporations or boundary changes resulting in an increase or decrease in the Permittee's geographic area of permit coverage during the reporting period per S9.D.5. ***Saved Document Name: Attachment 2_City of Redmond A_2_03152018093321***
3	S5.A.3	Implemented an ongoing program to gather, track, and maintain information per S5.A.3, including costs or estimated costs of implementing the SWMP. ***Yes***
4	S5.A.5.b	Coordinated among departments within the jurisdiction to eliminate barriers to permit compliance. (S5.A.5.b) ***Yes***
5	S5.C.1.a.i and ii	Attach description of public education and outreach efforts conducted per S5.C.1.a.i and ii. ***Saved Document Name: Attachment 3_2017 Outreach Sum_5_03192018083109***
6	S5.C.1.b	Created stewardship opportunities (or partnered with others) to encourage resident participation in activities such as those described in S5.C.1.b. ***Yes***

Number	Permit Section	Question/Answer
7	S5.C.1.b	Used results of measuring the understanding and adoption of targeted behaviors among at least one audience in at least one subject area to direct education and outreach resources and evaluate changes in adoption of targeted behaviors. (Required no later than February 2, 2016, S5.C.1.b) ***Yes***
8	S5.C.2.a	Describe the opportunities created for the public to participate in the decision making processes involving the development, implementation and updates of the Permittee's SWMP. (S5.C.2.a) ***See Attachment 4_Public Engagement Opportunities***
9	S5.C.2.b	Posted the updated SWMP Plan and latest annual report on your website no later than May 31. (S5.C.2.b) ***Yes***
9b	S5.C.2.b	List the website address. ***http://www.redmond.gov/Environment/StormwaterUtility/NPDES***
10	S5.C.3.a.i - vi	Maintained a map of the MS4 including the requirements listed in S5.C.3.a.i.-vi. ***Yes***
11	S5.C.3.b.v	Implemented a compliance strategy, including informal compliance actions as well as enforcement provisions of the regulatory mechanism described in S5.C.3.b. (S5.C.3.b.v) ***Yes***
12	S5.C.3.b.vi	Updated, if necessary, the regulatory mechanism to effectively prohibit illicit discharges into the MS4 per S5.C.3.b.vi. (Required no later than February 2, 2018) ***Yes***
12b		Cite the Prohibited Discharges code reference ***Redmond Municipal Code (RMC) 13.06***

Number	Permit Section	Question/Answer
13	S5.C.3.c.i	Implemented procedures for conducting illicit discharge investigations in accordance with S5.C.3.c.i. ***Yes***
13b	S5.C.3.c.i	Cite methodology ***Herrera Environmental Consultants, Inc. 2013. Illicit Connections and Illicit Discharge Field Screening and Source Tracing Guidance Manual.***
14	S5.C.3.c.i	Percentage of MS4 coverage area screened in reporting year per S5.C.3.c.i. (Required to screen 40% of MS4 no later than December 31, 2017 (except no later than June 30, 2018 for the City of Aberdeen) and 12% on average each year thereafter. (S5.C.3) ***27%***
15	S5.C.3.c.ii	List the hotline telephone number for public reporting of spills and other illicit discharges. (S5.C.3.c.ii) ***425-556-2868***
15b	S5.C.3.c.ii	Number of hotline calls received. ***31***
16	S5.C.3.c.iii	Implemented an ongoing illicit discharge training program for all municipal field staff per S5.C.3.c.iii. ***Yes***
17	S5.C.3.c.iv	Informed public employees, businesses, and the general public of hazards associated with illicit discharges and improper disposal of waste. (S5.C.3.c.iv) ***Yes***
17b	S5.C.3.c.iv	Describe the information sharing actions. (S5.C.3.c.iv) ***In 2017, the City of Redmond developed and distributed informational materials concerning fleet vehicle washing and commercial pressure washing. Information was provided to business both as City's Hazardous Materials Technical Assistance Program, and during IDDE interventions.***

Number	Permit Section	Question/Answer
18	S5.C.3.d	Implemented an ongoing program to characterize, trace, and eliminate illicit discharges into the MS4 per S5.C.3.d. ***Yes***
19	S5.C.3.d.iv	Number of illicit discharges, including illicit connections, eliminated during the reporting year. (S5.C.3.d.iv) ***182***
20	S5.C.3.d.iv	Attach a summary of actions taken to characterize, trace and eliminate each illicit discharge found by or reported to the permittee. For each illicit discharge, include a description of actions according to required timeline per S5.C.3.d.iv ***Saved Document Name: Attachment 5_IDDE Summary_20_03212018074840***
21	S5.C.3.e	Municipal illicit discharge detection staff are trained to conduct illicit discharge detection and elimination activities as described in S5.C.3.e. ***Yes***
22	S5.C.4.a	Implemented an ordinance or other enforceable mechanism to address runoff from new development, redevelopment and construction sites per the requirements of S5.C.4.a. ***Yes***
23b	S5.C.4.a.i-iii	Cite code reference for revised ordinance or other enforceable mechanism to address runoff from new development, redevelopment and construction sites. ***Redmond Municipal Code (RMC) 15.24***
24	S5.C.4.a.i	Number of exceptions granted to the minimum requirements in Appendix 1. (S5.C.4.a.i., and Section 6 of Appendix 1) ***0***
25	S5.C.4.a.i	Number of variances granted to the minimum requirements in Appendix 1. (S5.C.4.a.i., and Section 6 of Appendix 1) ***0***

Number	Permit Section	Question/Answer
26	S5.C.4.b.i	Reviewed Stormwater Site Plans for all proposed development activities that meet the thresholds adopted pursuant to S5.C.4.a.i. (S5.C.4.b.i) ***Yes***
26b	S5.C.4.b.i	Number of site plans reviewed during the reporting period. ***21***
27	S5.C.4.b.ii	Inspected, prior to clearing and construction, permitted development sites that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7 Determining Construction Site Sediment Damage Potential, or alternatively, inspected all construction sites meeting the minimum thresholds adopted pursuant to S5.C.4.a.i. (S5.C.4.b.ii) ***Yes***
27b	S5.C.4.b.ii	Number of construction sites inspected per S5.C.4.b.ii. ***21***
28	S5.C.4.b.iii	Inspected permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls. (S5.C.4.b.iii) ***Yes***
28b	S5.C.4.b.iii	Number of construction sites inspected per S5.C.4.b.iii. ***652***
29	S5.C.4.b.ii, iii and	Number of enforcement actions taken during the reporting period (based on construction phase inspections at new development and redevelopment projects). (S5.C.4.b.ii, iii and v) ***24***
30	S5.C.4.b.iv	Inspected all permitted development sites that meet the thresholds in S5.C.4.a.i upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities. (S5.C.4.b.iv) ***Yes***

Number	Permit Section	Question/Answer
31	S5.C.4.b.ii-iv	Achieved at least 80% of scheduled construction-related inspections. (S5.C.4.b.ii-iv) ***Yes***
32	S5.C.4.b.iv	Verified a maintenance plan is completed and responsibility for maintenance is assigned for projects. (S5.C.4.b.iv) ***Yes***
33	S5.C.4.c	Implemented provisions to verify adequate long-term operation and maintenance (O&M) of stormwater treatment and flow control BMPs/facilities that are permitted and constructed pursuant to S5.C.4. a and b. (S5.C.4.c) ***Yes***
35	S5.C.4.c.iii	Annually inspected stormwater treatment and flow control BMPs/facilities per S5.C.4.c.iii. ***Yes***
35b	S5.C.4.c.iii	If using reduced inspection frequency for the first time during this permit cycle, attach documentation per S5.C.4.c.iii ***Not Applicable***
36	S5.C.4.c.iv	Inspected new residential stormwater treatment and flow control BMPs/facilities and catch basins every 6 months per S5.C.4.c.iv to identify maintenance needs and enforce compliance with maintenance standards. ***Yes***
37	S5.C.4.c.v	Achieved at least 80% of scheduled inspections to verify adequate long-term O&M. (S5.C4.c.v) ***Yes***
38	S4.C.4.c.vi	Verified that maintenance was performed per the schedule in S5.C.4.c.vi when an inspection identified an exceedance of the maintenance standard. ***Yes***
38b	S5.C.4.c.vi	Attach documentation of any maintenance delays. (S5.C.4.c.vi)

Number	Permit Section	Question/Answer
		Not Applicable
39	S5.C.4.d	Provided copies of the Notice of Intent for Construction Activity and Notice of Intent for Industrial Activity to representatives of proposed new development and redevelopment. (S5.C.4.d) ***Yes***
40	S5.C.4.e	All staff responsible for implementing the program to control stormwater runoff from new development, redevelopment, and construction sites, including permitting, plan review, construction site inspections, and enforcement are trained to conduct these activities. (S5.C.4.e) ***Yes***
42	S5.C.4.g	Participated and cooperated with the watershed-scale stormwater planning process led by a Phase I county. (S5.C.4.g) ***Yes***
43	S5.C.5.a	Updated and implemented maintenance standards as protective, or more protective, of facility function as those specified in Chapter 4 of Volume V of the Stormwater Management Manual for Western Washington (as amended 2014). (Required no later than December 31, 2016, except no later than June 30, 2017 for Permittees in Lewis and Cowlitz counties, and no later than June 30, 2018 for the City of Aberdeen, S5.C.5.a). ***Yes***
44	S5.C.5.a	Applied a maintenance standard that is not specified in the Stormwater Management Manual for Western Washington. ***No***
45	S5.C.5.a.ii	Performed timely maintenance per S5.C.5.a.ii. ***Yes***
46	S5.C.5.b	Annually inspected all municipally owned or operated permanent stormwater treatment and flow control BMPs/facilities. (S5.C.5.b) ***Yes***

Number	Permit Section	Question/Answer
46b	S5.C.5.b	Number of known municipally owned or operated stormwater treatment and flow control BMPs/facilities. (S5.C.5.b) ***414***
46c	S5.C.5.b	Number of facilities inspected during the reporting period. (S5.C.5.b) ***414***
46d	S5.C.5.b	Number of facilities for which maintenance was performed during the reporting period. (S5.C.5.b) ***81***
47	S5.C.5.b	If using reduced inspection frequency for the first time during this permit cycle, attach documentation per S5.C.5.b. ***Not Applicable***
48	S5.C.5.c	Conducted spot checks and inspections (if necessary) of potentially damaged stormwater facilities after major storms as per S5.C.5.c. ***Yes***
49	S5.C.5.d	Inspected all municipally owned or operated catch basins and inlets as per S5.C.5.d, or used an alternative approach. (Required once no later than August 1, 2017 and every two years thereafter, except once no later than June 30, 2018 and every two years thereafter for the City of Aberdeen) ***Yes***
49b	S5.C.5.d	Number of known catch basins. ***11180***
49c	S5.C.5.d	Number of catch basins inspected during the reporting period. ***2988***
49d	S5.C.5.d	Number of catch basins cleaned during the reporting period. ***626***
50	S5.C.5.d.i-ii	Attach documentation of alternative catch basin cleaning approach, if used. (S5.C.5.d.i or ii)

Number	Permit Section	Question/Answer
		Not Applicable
51	S5.C.5.f	Implemented practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the Permittee, and road maintenance activities under the functional control of the Permittee. (S5.C.5.f) ***Yes***
52	S5.C.5.g	Implemented an ongoing training program for Permittee employees whose primary construction, operations or maintenance job functions may impact stormwater quality. (S5.C.5.g.) ***Yes***
53	S5.C.5.h	Implemented a Stormwater Pollution Prevention Plan for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit that are not required to have coverage under an NPDES permit that covers stormwater discharges associated with the activity. (S5.C.5.h) ***Yes***
54	S7.A	Complied with the Total Maximum Daily Load (TMDL)-specific requirements identified in Appendix 2. (S7.A) ***Not Applicable***
55	S7.A	For TMDLs listed in Appendix 2: Attach a summary of relevant SWMP and Appendix 2 activities to address the applicable TMDL parameter(s). (S7.A) ***Not Applicable***
56	S8.A	Attach a description of any stormwater monitoring or stormwater-related studies as described in S8.A. ***Saved Document Name: Attachment 6_Stormwater Relate_56_03212018083108***
57	S8.B.1	Participated in cost-sharing for the regional stormwater monitoring program (RSMP) for status and trends monitoring. (S8.B.1) ***No***

Number	Permit Section	Question/Answer
57B	S8.B.2	If choosing to conduct individual status and trends monitoring, attach an annual stormwater monitoring report in accordance with S8.B.2. (Required to submit reports beginning March 31, 2016) ***Saved Document Name: Attachment 7_Stream_Monitoring_57B_03152018012129***
58	S8.C.1	Participated in cost-sharing for the regional stormwater monitoring program (RSMP) for effectiveness studies. (S8.C.1) (Required to begin no later than August 15, 2014) ***Yes***
59	S8.D.1	Contributed to the RSMP for source identification and diagnostic monitoring information repository in accordance with S8.D.1. (Required to begin no later than August 15, 2014) ***Yes***
60	G3	Notified Ecology in accordance with G3 of any discharge into or from the Permittees MS4 which could constitute a threat to human health, welfare or the environment. (G3) ***Yes***
61	G3	Number of G3 notifications provided to Ecology. ***39***
62	G3.A	Took appropriate action to correct or minimize the threat to human health, welfare, and/or the environment per G3.A. ***Yes***
63	S4.F.1	Notified Ecology within 30 days of becoming aware that a discharge from the Permittee's MS4 caused or contributed to a known or likely violation of water quality standards in the receiving water. (S4.F.1) ***Not Applicable***
64	S4.F.3.a	If requested, submitted an Adaptive Management Response report in accordance with S4.F.3.a. ***Not Applicable***

Number	Permit Section	Question/Answer
65	S4.F.3.d	Attach a summary of the status of implementation of any actions taken pursuant to S4.F.3 and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d) ***Not Applicable***
66	G20	Notified Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20) ***Yes***
67	G20	Number of non-compliance notifications (G20) provided in reporting year. ***1***
67b	G20	List the permit conditions described in non-compliance notification(s). ***The City discovered that 48 catch basins had not been cleaned with the 6-month timeframe as required by S5.C5.a.ii due to an accounting error. The City has addressed this accounting error.***

Attachments:

Attachment 1_2017 SWMP_1_03152018093321
Attachment 2_City of Redmond A_2_03152018093321
Attachment 3_2017 Outreach Sum_5_03192018083109
Attachment 4_Public Engagement Opportunities_03202
Attachment 5_IDDE Summary_20_03212018074840
Attachment 6_Stormwater Relate_56_03212018083108
Attachment 7_Stream_Monitoring_57B_03152018012129

City of Redmond

NPDES Annual Report Covering 2017

Attachment 1:
Stormwater Management Program Plan

The City of Redmond

Stormwater Management Program (SWMP) Plan

Prepared by Peter Holte
City of Redmond
Department of Public Works
Division of Natural Resources

March 23, 2017

CityofRedmond
WASHINGTON

INTRODUCTION

General Information about this Document

This document is the City of Redmond's Stormwater Management Program (SWMP) Plan. It has been created to comply with requirements found in the Western Washington Phase II Municipal Stormwater Permit (NPDES Permit), which is part of the Federal Clean Water Act. The NPDES Permit requires that the City of Redmond produce a Stormwater Management Program Plan (SWMP Plan), and update it regularly, to reflect Redmond's actions and planned actions in meeting permit requirements.

The first NPDES Permit was issued to the City of Redmond by the State of Washington Department of Ecology in 2007 and revised in 2009. A new, one-year permit was issued to the City of Redmond on August 1, 2012. The 2012 re-issued permit extends the terms and conditions for the previously issued 2007 – 2012 NPDES permit for a period spanning between August 1, 2012 to July 31, 2013. A new, 5-year NPDES Permit took effect on August 1, 2013. This new 5-year permit will stay in effect until July 31, 2018.

Section S5.2.A requires that the City detail "activities for the upcoming calendar year" in order to meet the NPDES permit requirements. In many cases, requirements in the 2013-2018 NPDES permit do not take effect immediately. The City will meet new requirements as they take effect.

This document is organized according to the five NPDES Permit SWMP elements. Excluding this introduction section, the five elements are the sections of this SWMP: 1) Education and Outreach, 2) Public Involvement and Participation, 3) Illicit Discharge Detection and Elimination, 4) Controlling Runoff from Development and Redevelopment projects, and 5) Municipal Operations and Maintenance. Within each section, requirements of the permit are individually detailed (i.e. S5.C.3.b). To review the permit language in comparison to what Redmond has designed in response, one can access the permit at the following Washington Department of Ecology website:

http://www.ecy.wa.gov/programs/wq/stormwater/municipal/phaseIIww/wwphiipermit.html

The City's SWMP Plan aims to reduce the discharge of pollutants into receiving waters within Redmond to the maximum extent practicable (MEP), to apply all known and reasonable technologies (AKART) to address stormwater pollutants, and protect receiving waters from degradation. These goals will be accomplished by the implementation of all aspects of this SWMP Plan and through action taken by the City that are not required by NPDES and thus not detailed in this Plan. The City intentionally exceeds some NPDES Permit requirements to better protect water resources and to keep those resources safe for human contact and able to sustain aquatic ecosystems/species.

PUBLIC EDUCATION AND OUTREACH

The City of Redmond's Natural Resources Division of Public Works provides and participates in a variety of education and outreach efforts focused on environmental stewardship, including stormwater management.

S5.C.1.a.i and ii Targeted Stormwater Outreach

In 2017, the City of Redmond will take the following actions to provide targeted stormwater-related outreach programs to the public:

1. Continue to coordinate with other permitted jurisdictions in Western Washington to create an outreach group called Stormwater Outreach for Regional Municipalities (STORM). Again leveraging resources with other permittees in the North King County Stormwater Outreach Group (The SOGgies) to fund a newspaper insert in the Seattle Times, as part of the Time's Education in the Classroom program. The insert will go out in all copies of a regular weekday edition of the paper. The insert will promote stormwater education outreach by detailing how rainfall runoff becomes polluted, providing simple actions people can take to reduce stormwater pollution, and promoting the Puget Sound Starts Here brand.

2. Continue to provide classroom environmental educational programs to schools in Redmond via a partnership with the Cascade Water Alliance and/or the environmental education non-profit organization, Nature Vision.

3. Take part in the STORM Don't Drip and Drive Campaign social marketing campaign.

4. Conduct outreach to junior high school and high school students: a) detailing the stormwater pollution issues associated with charity carwash fundraisers, and b) encouraging student organizations to engage in alternative fundraising activities.

S5.C.1.b Creating Stewardship Opportunities

In 2016, the City will provide stewardship opportunities via the G*reen Redmond Partnership*, a volunteer stewardship program in partnership with the non-profit land conservation organization, *Forterra*.

S5.C.1.c Measuring Outreach Effectiveness

For a number of years the City hired a consultant to conduct Charity Carwash Program drive-through (windshield) monitoring in Redmond six weekends a year and provide outreach at the junior and senior high schools. In 2016, as required by the NPDES permit, Redmond used information gathered by this consultant, and similar programs in neighboring jurisdictions to evaluate the effectiveness of this program. This analysis revealed that awareness of issues related to car washing are increasing, and that catchbasin inserts the City has provided are problematic for a number of technical and logistical reasons. In 2017, based on this evaluation, the City has determined that the program should phase-out loaning the charity car washing

catchbasin inserts, and continue to provide outreach to junior high school and high school students. This outreach will a) detail the stormwater pollution issues associated with charity car wash fund raisers, and b) encourage student organizations to engage in alternative fundraising activities.

PUBLIC INVOLVEMENT AND PARTICIPATION

The City of Redmond is committed to ongoing opportunities for public input into the development of this plan and for public input into initiatives designed to improve water quality.

S5.C.2.a and S5.C.2.b Involving the Public in the SWMP

In 2016, the City invited the public to review and comment on the City's Stormwater Management Program Plan (SWMP Plan) via an advertisement on the City's web home page. The City welcomes comments from the public at any time throughout the year, and provides a contact number for residents to call with questions throughout the year from the City's SWMP webpage: http://www.redmond.gov/Environment/StormwaterUtility/NPDES/. In 2017, the City will again invite public input using the same means detailed above.

The City further involves the public in our stormwater management related decisions by engaging people during the planning and construction of stormwater infrastructure projects, and during stormwater-related policy revisions. In 2016, Public Works Department staff took part in training seminars to improve our public involvement methodologies. This training emphasized involvement with stakeholders early-on in construction planning and policy revision processes, and stressed the importance of continuing to listen to stakeholders throughout these processes. In 2016, the City also contracted with EnviroIssues, a private contractor, to further assist staff with public involvement such as the low impact development code revisions.

In 2017, the City will continue to learn, refine, and expand its use of these new engagement practices. Such actions will include on-going consultation and advisement with stakeholders regarding the implementation of watershed restoration planning in Redmond's priority watersheds, and policy recommendations for on-site stormwater management in Redmond's most dense urban areas.

ILLICIT DISCHARGE DETECTION AND ELIMINATION

The Illicit Discharge Detection and Elimination (IDDE) program is designed to prevent contamination of groundwater and surface water by monitoring, tracking, and removing non-stormwater discharges into the stormwater drainage system.

S5.C.3.a Municipal Stormwater Drainage System Map

In 2017, the City will continue to maintain an up-to date stormwater conveyance map in an enterprise geospatial database. Updating and managing geospatial data is done according to documented procedures and quality control standards. Global information system (GIS) data includes attributes that describe ownership, water quality facility design details, flow control facility design details, conveyance design information, and spatial data. GIS data is managed with ESRI software and database management system solutions. Both private and public stormwater system data is managed geospatially. The GIS stormwater data includes all nominal diameter pipes, not just 24 inch or larger. Land use and drainage area delineations for each outfall have been developed and are updated regularly.

S5.C.3.b Water Pollution Prevention Ordinance/Municipal Code 13.06

The City of Redmond Municipal Code 13.06 authorizes the IDDE program and meets the requirements specified in the NPDES. In the vast majority of cases, the City works to enforce this code by using education and technical assistance to seek voluntary compliance. The City will escalate its response as necessary to ensure compliance; first by supplying violators with a warning letter that clearly details what is needed to comply with Municipal Code 13.06 and the consequences of refusal to comply. If further actions are needed, the City has the power to bring violators before the City's hearing examiner.

S.5.C.3.c Ongoing IDDE Program to detect non-stormwater discharges and Illicit Connections

The City is required to screen 40% of the City's stormwater system for illicit connections by December 31, 2017. The City has achieved compliance with this requirement. In 2014, City's stormwater maintenance crew began using required stormwater facility inspections as an opportunity to conduct vision inspection procedures for signs of illicit connections. This visual inspection protocol is noted as an acceptable screening practice in *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessment, Center for Watershed Protection, October 2004.* These inspections are recorded as part of the Stormwater Crew's catch basin inspection records. The stormwater crew will notify the City's IDDE coordinator if potential pollution issues are identified.

A portion of the 40% of the City's stormwater system may also be fulfilled by using a camera cart to video sections of the City's stormwater system. This method is also identified as an acceptable screening practice in the document noted in the previous paragraph. The percentage of this requirement that will be fulfilled by this requirement has not yet been determined.

S.5.C.3.d Implement an ongoing program designed to address illicit discharges

The City currently has an ongoing, fully funded, IDDE program. The City responds to and investigates, calls regarding environmental concerns such as illegal dumping, spills, illicit discharges, and illicit connections. Documentation of IDDE procedures are detailed in the City*'s Illicit Discharge Detection and Elimination (IDDE) Program Manual: City Policies and Procedures (2011).*

The City operates a telephone hotline that allows citizens to report illicit discharges or illicit dumping within city limits: (425)556-2868. The hotline is covered 24 hours a day, seven days a week. During regular business hours, calls are received and followed up on by the Natural Resources Division of Public Works. Off hour calls are managed by Redmond's police dispatch and standby maintenance crew. The hotline has been publicized by the City's website, magnets distributed at community events, Redmond's television channel (RCTV), and most outreach materials created by the City typically include the hotline number. All calls are tracked and followed up on.

Additionally, targeted outreach materials have been developed and deployed to the public for restaurant related non stormwater discharges, car washing, and general awareness of stormwater and prohibited discharges.

In 2017, these activities will continue.

S.5.C.3.e IDDE Staff Training

Scott McQuary, the City of Redmond Pollution Prevention Program Administrator (including IDDE program) and Joe Capis, Private Drainage Inspector, attended King County's IC/IDDE training to comply with Section S5.C.3.f.i of the Phase II Municipal Stormwater Permit in 2009. In 2017, IDDE staff will look for and participate in opportunities to remain up-to-date on new spill response and illicit discharge detection procedures by participating in webinars, training workshops, conferences and other capacity building activities, if and when such activities become available.

S.5.C.3.f Program Recordkeeping

The City currently tracks each type of IDDE incidence that rises to the level of a G3 notification. Records include a copy of the G3 notification, the City's response to the incident, the timing of the response and how those incidences are resolved. As previously mentioned, the City also maintains records of visual inspections of catch basins and other stormwater facilities in order to meet the 40% screening requirement.

CONTROLING RUNOFF FROM NEW DEVELOPMENT, REDEVELOPMENT AND CONSTRUCTION SITES

How development and redevelopment occur within Redmond can have a significant impact on the health of City waterways. The City reviews development plans, inspects development sites during construction, and monitors private stormwater system infrastructure bi-annually to ensure facilities are maintained. In addition, the City has begun taking actions to incorporate new alternative stormwater management practices--a.k.a. Low Impact Development (LID)--into its code and operating procedures as required by the NPDES permit.

S5.C.4.a Apply Stormwater Management Standards to Development, Redevelopment, and Construction Sites

Redmond Municipal Code (RMC) 15.24 codifies stormwater management in Redmond, and includes code for construction, and stormwater infrastructure design. In 2016, RMC 15.24 was updated and then adopted by City Council December 6, 2016. This code authorizes the City to enforce provisions required by this section of the permit, and the minimum requirements in the permit's Appendix 1.

The City also revised its Stormwater Technical Notebook, a document to detail the required construction practices to protect waterways and to convey construction standards for new or retrofitted stormwater infrastructure. The revised Notebook was adopted on December 28, 2016, and aligns with the Department of Ecology's 2012 Stormwater Management Manual for Western Washington (SWMMWW),as amended in 2014.

In meeting the Appendix 1 Minimum Requirement #5, the City has chosen to allow developers the use of pervious pavements or a functional equivalent designed to provide the same rate of stormwater infiltration. The City requires that development projects wishing to use this functionally equivalent design supply a hydrologic modeling-based justification detailing equivalency. The City justifies this design via a Technical Memo using analysis based on the Western Washington Hydrology Model (WWHM).

In 2017, the City will conduct a Business Case Analysis, examining stormwater infiltration strategies in the City's densest urban locations. This analysis will inform the City's approach to on-site stormwater management in these areas.

In the Downtown Redmond and the Overlake Neighborhood, the City will use regional facilities to meet Minimum Requirement #5: On-site Stormwater Management and Minimum Requirement #6: Runoff Treatment in the permit's *Appendix 1*. In 2015, a regional stormwater vault in the Overlake Neighborhood, and a regional water quality treatment facility in Downtown Redmond will be fully operational. More information regarding Redmond's use of regional facilities, including a copy of Ecology's *Letter of Support* for this approach, is available on the City's website:
http://www.redmond.gov/Environment/StormwaterUtility/RegionalFacilities.

Section 7 of Appendix 1 allows permittees to seek approval from Ecology to tailor certain development and redevelopment stormwater requirements. The City used

this provision to gain approval for an alternative method of achieving compliance with Minimum Requirement #5: On-site Stormwater Management, Minimum Requirement #6: Runoff Treatment, and Minimum Requirement #7: Flow Control in permit's *Appendix 1*. *The City of Redmond Watershed Management Plan* provides the details of this alternative approach.

For 2017, the City continues to implement the *Watershed Management Plan* by continuing planning efforts for additional stormwater detention facilities in Tosh Creek Watershed. In addition, the City received another National Estuaries Program grant for Monticello Creek Watershed and is continuing to formulate a watershed restoration implementation strategy for that area. More information regarding the *Watershed Plan*, including Ecology's *Letter of Approval* for this approach, is available on the City's website: https://www.redmond.gov/Environment/StreamsHabitat/lakesriversstreams/WatershedManagement.

S5.C.4.b Review and Inspect Development/Redevelopment Projects

The City has a permitting process with civil/site plan review and approval process, inspection, and enforcement to meet standards established by S5.C.4b for all new and redeveloped sites that meet the thresholds details in Appendix 1 of the NPDES permit (see Figures 3.2 and 3.3. on pages 9 and 10 of Appendix 1). This oversight occurs in phases: prior to construction during the plan acceptance process, before the site is cleared during an initial site construction best management practices (BMP) implementation inspection, during construction via construction site inspections, and post construction as part of the stormwater infrastructure acceptance inspection.

Plans are reviewed by licensed engineers or qualified engineering firms for compliance with Redmond's standards. Public projects that are in the right-of-way, do not typically trigger local permits; however, public projects are subject to and abide by Appendix 1 of the NPDES permit.

The City's stormwater engineers review projects that trigger temporary erosion and sediment control (TESC) plans, wet weather plans, or stormwater pollution prevention plans (SWPPP). Once the City has accepted a plan to control erosion, runoff and other potential construction impacts, and prior to extensive clearing and construction, City staff inspects the site to ensure that the proper TESC measures have been selected, properly placed, and installed correctly.

During construction, the City conducts frequent inspections at the worksite--typically more than once a week when utilities are being constructed, and after major rain events--to ensure proper implementation and maintenance of TESC best management practices. Redmond inspectors have the authority to enforce Redmond Municipal Code (RMC) 13.06 and RMC 15.24, using corrective action notices and stop work orders, to insure the protection of receiving waters from construction impacts.

After construction, the City again inspects stormwater structures at a project site. If the maintenance thresholds have been triggered, the City requires that needed maintenance take place. If the maintenance thresholds have not been reached, or once maintenance has been completed, the City then accepts the project.

S5.C.4.c Post Construction Operation and Maintenance

The City has provisions to verify adequate long-term operation and maintenance (O&M) of post-construction stormwater facilities and BMPs. RMC 13.06 requires inspection and maintenance of private stormwater facilities, and all stormwater structures (including pipes and catch basins), in accordance or excess of requirements established by the NPDES Permit. RMC 13.06 also establishes enforcement authority and procedures. In 2016, Redmond adopted maintenance standards equivalent to or more protective than those established in the 2012 *Stormwater Management Manual for Western Washington* (Volume V, Chapter 4). In 2017; the City is now using these standards.

The City has records of our private stormwater inspection program dating back to 1990. These records enable the City to use a reduced frequency inspection of stormwater infrastructure as allowed by the permit in S5.C.4.c.iii. Based on an analysis of these program records, the City inspects private stormwater treatment and flow facilities every other year on a rotating basis, splitting drainages between even and odd numbered years. In 2017, the City will inspect stormwater facilities in the following basins: Marymoor, North Star, Education Hill, Westside, Lake Sammamish and as well as coalescing plate vaults and media cartridges vaults. For additional information regarding why and how the City uses reduced frequency inspections, contact Peter Holte, 425-556-2822.

When maintenance needs are identified, City staff notifies the property owners. The property owners provide the City with receipts and other documentation as proof that the work has been completed. In some cases, the private stormwater facilities inspection coordinator will revisit the site to ensure that necessary maintenance has occurred.

As mentioned previously, all stormwater infrastructure, including runoff treatment and flow control facilities, are inspected post construction one year after acceptance, to release warranty bonds. Once this occurs, sites are added to the long term private system inspection program and typically get inspected within one year from the warranty bond release.

During heavy house construction, single-family home inspectors inspect the stormwater drainage system that can potentially be impacted by the home construction activity. This occurs every six months during heavy home construction. If facilities and stormwater conveyance require cleaning during home construction, responsible parties are required to perform maintenance/cleaning.

S5.C.4.d Notice of Intent (NOI)

The City makes the application for NOIs for coverage under the NPDES Construction Stormwater General Permit and the NPDES General Industrial Stormwater Permit available to the development proponents. Copies of the application are also available at Redmond City Hall, in the Development Services Center. This activity is on-going in 2017.

S5.C.4.e Staff Training

All staff responsible for plan review of stormwater runoff controls are licensed professional engineers or qualified consultants. Follow-up training is provided as needed to address changes in standards, procedures, techniques, and staffing. City staff members responsible for inspection of stormwater infrastructure are adequately

trained to do so. All staff responsible for managing construction TESC measures are Certified Erosion and Sediment Control Lead (CESCL) trained. Additional Public Works construction staff and maintenance technicians may also receive their first CESCL certification if it is determined it will ensure that the City's inspection requirements are being met. The City will continue to document and maintain records of training provided and the staff trained.

S5.C.4.f Low Impact development code-related requirements

In 2016, the City completed the permit's requirement to review, revise, and alter City codes, standards, and procedures with the goal of making low impact development (LID) the "preferred and commonly-used approach to site development." The City completed the required "LID integration" report and submitted it as part of the annual report covering permit activities for 2016.

In 2017, and onward, the City will continue to conduct the work necessary to ensure LID practices are fully integrated in Redmond's stormwater management practices and operations.

S5.C.4.g Watershed-scale stormwater planning

The City of Redmond is continuing conversations with King County to support the county's watershed planning process in the Bear Creek Watershed. The City has actively taken part in stakeholder engagement activities. In 2017, the City will continue fully participate in the County's efforts to implement this permit requirement.

POLLUTION PREVENTION AND OPERATION AND MAINTENANCE FOR MUNICIPAL OPERATIONS

The City of Redmond has taken many steps to insure operation and maintenance activities are done in a manner that protect and reduce potential impacts to stormwater drainage and receiving waters.

S5.C.5.a Maintenance Standards

The City adheres to and has adopted maintenance standards in Chapter 4 of Volume V of the *2005 Stormwater Management Manual for Western Washington*. In some instances, as with the trigger to clean catch basins, the City exceeds maintenance requirements. In 2016, the City adopted the new standards within the 2012 Stormwater Management Manual for Western Washington.

S5.C.5.b Annual Inspection of Flow Control and Runoff Treatment Facilities

The City currently inspects and maintains flow control and runoff treatment facilities owned and operated by the City to ensure they are maintained in accordance with City standards. Control structures related to ponds and bioswales are inspected annually. The stormwater crew uses a GIS database to inspect, identify maintenance needs, and detail what facilities have been maintained. Cleaning and maintenance occurs within the timeframe prescribed by the NPDES Permit. New stormwater treatment and flow control facilities are added to the inspection list when the City takes them into ownership.

In some cases, the stormwater crew relays maintenance issues to City stormwater engineers so they can assess if the issue can be addressed for less than $25,000. If the remedy exceeds $25,000, it is considered a capital improvement project and is placed on a list of prioritized capital stormwater facility needs.

S5.C.5.c Major Storm Event Inspections

The City typically inspects the stormwater system during and after large storm events. In 2017, as per NPDES requirements, the City's stormwater crew and City engineers will inspect the stormwater system should we have an event that is equal to or greater than the 10-year 24-hour storm (2.8 inches of rainfall in 24 hours).

S5.C.5.d Catch Basin Inspections

Currently the City has opted to inspect and clean all municipally operated catch basin once by August 1, 2017, and every two years thereafter. The City is on track to complete all necessary inspections and maintenance by this deadline. The City may use a different alternative in another part of the City in future years. The City is choosing to clean all catch basins which have 50% of the catch basin's storage capacity filled. This exceeds the City's formal standard of 60%. Maintenance and cleaning of catch basins occurs within 6 months of the inspections as required by the permit.

S5.C.5.f Reduction of Municipal Operations Stormwater Impacts

Redmond has developed and adopted procedures for all items listed in the permit requiring documentation of practices/procedures. Locally developed standard operating procedures (SOPs) are equivalent or more protective of receiving waters than those in Volume V of the 2005 Ecology S*tormwater Management Manual for Western Washington*. Procedures and associated policies have been developed and provided to maintenance staff and maintenance staff supervisors/management in Public works and Parks and Recreation; training has also been provided. In 2017, the City is using its Asset Management Development Process to redouble its efforts, conducting a review to ensure that the correct maintenance standard is used at the associated Stormwater Treatment and Detention Facility.

In the last two years the City's Public Works Maintenance Operation Center has hired a number of new supervisors. The City will schedule a regular; routinely review of stormwater-related SOPs. This schedule will similar to that of other Maintenance Operation Center SOPs—for example, health and safety SOPs.

S5.C.5.g O&M Employee Training

The City maintains a training program for all operations field staff on procedures necessary to protect stormwater drainage and receiving waters. The training also included Redmond specific information on water quality and IDDE awareness as discussed in the IDDE section of this plan. All maintenance staff have been trained and plans have been established to train new maintenance employees, including limited duration employees. In 2017, the City is evaluating at what interval to repeat this training.

S5.C.5.h Stormwater Pollution Prevention Plan (SWPPP) for Redmond's Maintenance and Operations Center

The City developed a SWPPP for its Maintenance and Operations Center. The plan was developed using a consulting firm (Brown and Caldwell) with experience developing SWPPPs for industrial sites. The City's SWPPP details a stormwater and BMP monitoring program, spill response protocol, structural (with implementation dates) and operational BMPs, site maps, contaminant inventory, and a schedule to annually review the SWPPP.

The Current SWPPP has been updated to reflect new construction at the Public Works and Parks Maintenance and Operation Center (MOC). As required by the SWPPP, MOC staff will continue to conduct monitoring in accordance with the schedules provided in the SWPPP.

S5.C.5.i Record Maintenance

The City maintains records of inspection, maintenance, and repair to City operated stormwater facilities as detailed in each section of S5.C.5.

MONITORING AND ASSESSMENT

For a number of years, the City of Redmond has monitored both water quality in lakes, rivers and streams, and the effectiveness of best management practices to protect water quality. The 2013-2018 permit now requires all permittees to either pay into a regional monitoring program or conduct water quality monitoring as defined by the permit. The following details how the City will meet permit requirements related to: a) status and trends monitoring, b) effectiveness studies, and c) source identification and diagnostic monitoring.

S8. A. Annual Reporting

In 2017, the City will provide a description of studies of monitoring and stormwater related activities conducted by or on behalf of the City as part of this annual report.

S8.B Status and Trends Monitoring

The City of Redmond has chosen to conduct its own status and trend monitoring, as is allowed by the permit. The City has fulfilled its obligations to meet this requirement as detailed in the permit. For information on the monitoring reports generated by this effort, please contact Peter Holte, 425-556-2822.

S8.C Effectiveness Studies

The City has chosen to buy into the Regional Stormwater Management Program (RSMP) effectiveness study in order to meet this requirement. In 2017, the cost to City of Redmond to buy into this program is $21, 899.00.

S8.D Source Identification and Diagnostic Monitoring

The City is required to pay into the RSMP source identification and diagnostic monitoring program. In 2017, the cost to City of Redmond to buy into this program is $2,013.00.

City of Redmond

NPDES Annual Report Covering 2017

Attachment 2:
2017 City of Redmond Annexations

NON-CODE

CITY OF REDMOND
ORDINANCE NO. 2890

AN ORDINANCE OF THE CITY OF REDMOND, WASHINGTON, ANNEXING 54 ACRES OF UNINCORPORATED KING COUNTY GENERALLY BOUNDED ON THE WEST BY 132ND AVENUE NE AND ON THE NORTH, EAST AND SOUTH BY THE CITY LIMITS OF REDMOND, AND LOCATED BETWEEN NE 100TH STREET AND NE 108TH STREET, AND REQUIRING THE PROPERTY TO BE ASSESSED AND TAXED AT THE SAME RATE AND ON THE SAME BASIS AS OTHER PROPERTY WITHIN THE CITY, FILE NO. L2017-00486

WHEREAS, the portion of unincorporated King County that is generally bounded on the west by 132nd Avenue NE and on the north, east and south by the City limits of Redmond, and is also located between NE 100th Street and NE 108th Street, is one of Redmond's Potential Annexation Areas as identified by King County Countywide Planning Policies; and

WHEREAS, the portion of unincorporated King County described above lies within the Redmond's Willows/Rose Hill Neighborhood as identified in Redmond's Comprehensive Plan; and

WHEREAS, on November 9, 2015, the City of Redmond received a complete Notice of Intent requesting annexation of the portion of unincorporated land described above; and

WHEREAS, the Notice of Intent was signed by owners of property representing 50.5 percent in taxable assessed valuation for the area to be annexed; and

WHEREAS, on January 5, 2016, the Redmond City Council approved a motion to accept the Notice of Intent to Annex and authorized the circulation of a direct petition to annex the area hereafter referred to as the NE Rose Hill Annexation; and

WHEREAS, the King County Assessor's Office certified the sufficiency of the direct petition on March 7, 2017; and

WHEREAS, effective March 27, 2017, Redmond staff provided Notice of Intention to annex the area legally described on the petition, the NE Rose Hill Annexation, to the Washington State Boundary Review Board (BRB) for King County; and

WHEREAS, on May 11, 2017, the BRB deemed the action approved (BRB File No. 2380); and

WHEREAS, it is the long-standing policy of the City of Redmond to support the annexation of land in its Potential Annexation Areas; and

WHEREAS, annexing the property of the NE Rose Hill Annexation advances City policy and responds to property owner requests; and

WHEREAS, Redmond City Council adopted the Willows/Rose Hill Neighborhood Plan and the zoning of the land therein in 2002 after significant property owner and resident participation in the development of the Plan and zoning; and

WHEREAS, the City Council held a public hearing on the proposed annexation on June 20, 2017, and at the conclusion of

said hearing, determined that the property should be annexed, subject to defined conditions.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF REDMOND, WASHINGTON, DOES ORDAIN AS FOLLOWS:

Section 1. Annexation. That certain 54 acres of unincorporated King County that is generally bounded on the west by 132nd Avenue NE and on the north, east and south by the city limits of Redmond, and is also located between NE 100th Street and NE 108th Street, and depicted on the map attached hereto as Exhibit 2 and legally described on the attached Exhibit 1, both of which exhibits are incorporated herein by this reference as if set forth in full, is hereby annexed to and made a part of the City of Redmond.

Section 2. Zoning. Zoning for the NE Rose Hill Annexation shall be in conformance with the Comprehensive Plan and adopted pre-annexation zoning, which is RIN (Residential Innovative, four to five dwellings per gross acre) and R-1 (Single Family Constrained, one dwelling per gross acre, depending on location.

Section 3. Indebtedness. Pursuant to the terms of the annexation petition, all property within the territory annexed shall be assessed and taxed at the same rate and on the same basis as other property within the City, including assessments

for taxes and payment of any bonds issued or debts contracted prior to or existing as of the date of annexation.

Section 4. Waiver of Vested Development Rights. Pursuant to the terms of the annexation petition, the property owner waives any and all vested development rights under King County regulations and the property proposed for annexation shall be subject to the Redmond Zoning Code and the subsequent proceeding pursuant thereto.

Section 5. Duties of Planning Staff. Planning staff are hereby directed to file a certified copy of this ordinance, together with the attached Exhibits 1 and 2, with the King County Council. In addition, the Planning staff are directed to file the annexation certificate provided for in RCW 35A.14.700 with the Office of Financial Management within thirty (30) days of the effective date of the annexation.

Section 6. Effective Date. This ordinance shall take effect and be in full force five days after passage and publication of an approved summary thereof consisting of the title, or as otherwise provided by law.

ADOPTED by the Redmond City Council this 20th day of June, 2017.

CITY OF REDMOND

JOHN MARCHIONE, MAYOR

ATTEST:

Cheryl Xanthos for

MICHELLE M. HART, MMC, CITY CLERK (SEAL)

APPROVED AS TO FORM:

JAMES HANEY, CITY ATTORNEY

FILED WITH THE CITY CLERK:	June 6, 2017
PASSED BY THE CITY COUNCIL:	June 20, 2017
SIGNED BY THE MAYOR:	June 23, 2017
PUBLISHED:	June 26, 2017
EFFECTIVE DATE:	July 1, 2017
ORDINANCE NO. 2890	

YES: BIRNEY, CARSON, MARGESON, MYERS, PAHDYE, SHUTZ, STILIN

LEGAL DESCRIPTION
CITY OF REDMOND ANNEXATION AREA

ALL OF THAT PORTION OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON, LYING NORTHERLY OF THE NORTHERLY RIGHT OF WAY LINE OF N.E. 104TH STREET (FORMERLY HELENA AVENUE), AND LYING EASTERLY OF THE EASTERLY RIGHT OF WAY LINE OF 132ND AVENUE N.E. (FORMERLY MOORE STREET); AND ALL OF BLOCK 158, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 31, RECORDED IN VOLUME 25 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON, LYING WITHIN THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON.

EXCEPTING THEREFROM:

LOTS 3 THROUGH 5, INCLUSIVE, BLOCK 157, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 31, RECORDED IN VOLUME 25 OF PLATS, PAGE 26, RECORDS OF KING COUNTY, WASHINGTON;

ALSO EXCEPTING THEREFROM:

THAT PORTION OF THE 134TH AVENUE N.E. RIGHT OF WAY (FORMERLY VINE STREET), LYING SOUTHERLY OF THE WESTERLY PROLONGATION OF THE NORTHERLY BOUNDARY OF SAID LOT 3, BLOCK 157, AND LYING NORTHERLY OF THE WESTERLY PROLONGATION OF THE SOUTHERLY BOUNDARY OF SAID LOT 5, BLOCK 157.

ALSO EXCEPTING THEREFROM:

THAT PORTION OF THE 136TH AVENUE N.E. RIGHT OF WAY (FORMERLY SPRUCE STREET), LYING SOUTHERLY OF THE EASTERLY PROLONGATION OF THE NORTHERLY BOUNDARY OF SAID LOT 3, BLOCK 157, AND LYING NORTHERLY OF THE EASTERLY PROLONGATION OF THE SOUTHERLY BOUNDARY OF SAID LOT 5, BLOCK 157.

ALSO EXCEPTING THEREFROM:

PARCEL C OF THE ST. GEORGE COPTIC ORTHODOX CHURCH BOUNDARY LINE ADJUSTMENT, CITY OF REDMOND FILE NO. L110282, RECORDED UNDER KING COUNTY RECORDING NUMBER 20111027900001, RECORDS OF KING COUNTY, WASHINGTON;

ALSO EXCEPTING THEREFROM:

THAT PORTION OF SAID BLOCK 158, BURKE & FARRAR'S KIRKLAND ADDITION TO THE CITY OF SEATTLE, DIVISION NO. 31, CONVEYED TO THE CITY OF KIRKLAND, WASHINGTON, BY STATUTORY WARRANTY DEED RECORDED UNDER KING COUNTY RECORDING NUMBER 20120831002139.

TOGETHER WITH:

THE WEST ONE-HALF OF THE SOUTH 10 ACRES OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON.

TOGETHER WITH:

THAT PORTION OF THE N.E. 104TH STREET (FORMERLY VILLARD AVENUE) RIGHT OF WAY, WITHIN THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON, SAID PORTION LYING EASTERLY OF THE EASTERLY RIGHT OF WAY LINE OF 132ND AVENUE N.E. (FORMERLY MOORE STREET), AND WESTERLY OF THE WESTERLY RIGHT OF WAY LINE OF 134TH AVENUE N.E. RIGHT OF WAY (FORMERLY VINE STREET).

TOGETHER WITH:

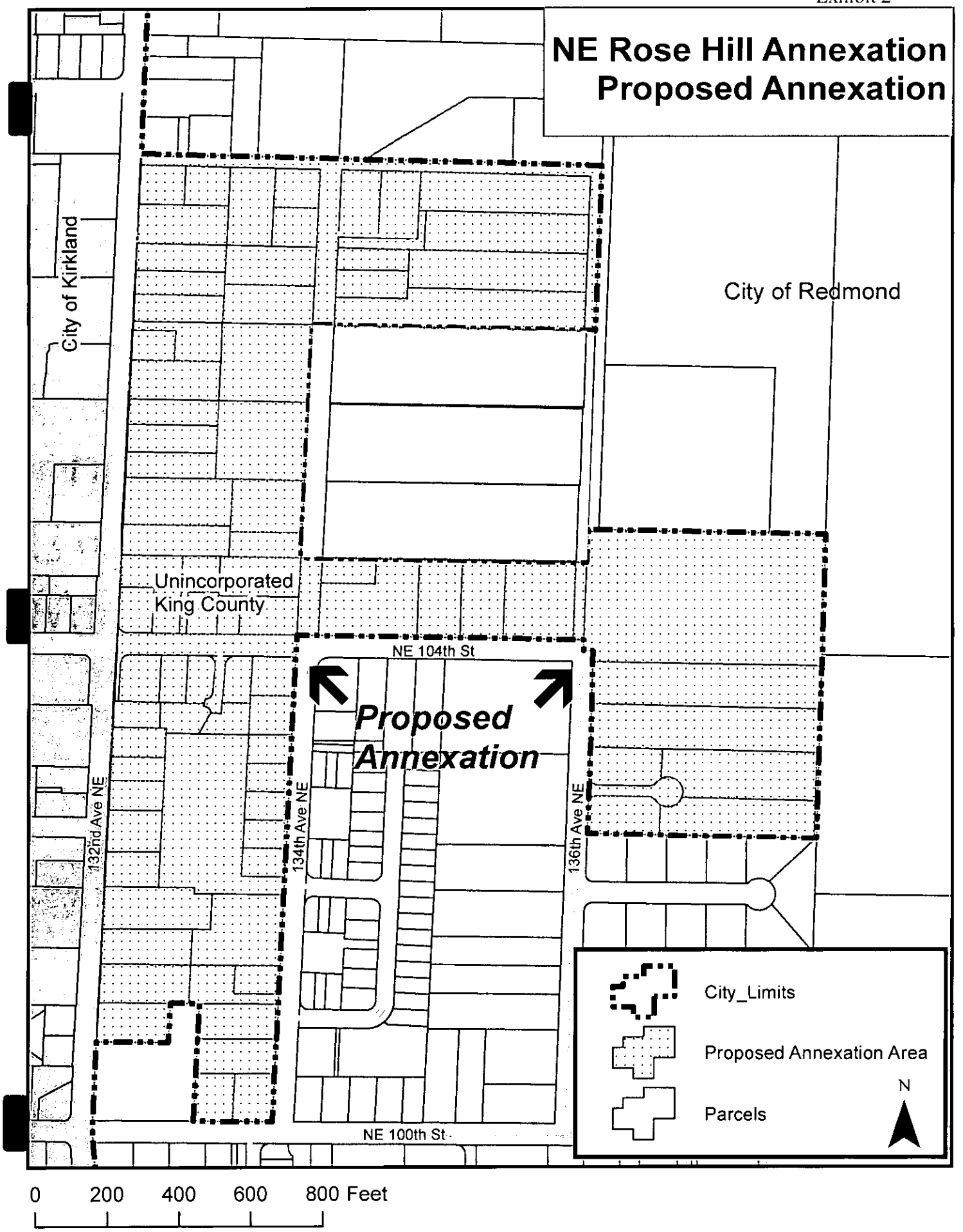
ALL OF THAT PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 26 NORTH, RANGE 5 EAST, WILLAMETTE MERIDIAN, KING COUNTY, WASHINGTON, LYING NORTHERLY OF THE SOUTHERLY BOUNDARY OF THE PLAT OF LANGLEY RANCH, RECORDED IN VOLUME 170 OF PLATS, PAGES 60 THROUGH 62, RECORDS OF KING COUNTY, WASHINGTON, AND EASTERLY OF THE 136TH AVENUE N.E. (FORMERLY SPRUCE STREET) RIGHT OF WAY;

THE PERIMETER OF THE ABOVE DESCRIBED AREA MEASURES 12,297.72+- FEET. THE PERIMETER OF THE ABOVE DESCRIBED AREA WHICH IS CONTIGUOUS WITH THE CORPORATE LIMITS OF THE CITY OF KIRKLAND MEASURES 2,450.18 +- FEET.

May 25, 2017

PAUL T. RICE
STATE OF WASHINGTON
40101
REGISTERED
PROFESSIONAL LAND SURVEYOR

Exhibit 2


NE Rose Hill Annexation
Proposed Annexation
City of Kirkland
City of Redmond
Unincorporated
King County
NE 104th St
Proposed
Annexation
132nd Ave NE
134th Ave NE
136th Ave NE
NE 100th St
City_Limits
Proposed Annexation Area
Parcels
N
0
200
400
600
800 Feet

City of Redmond

NPDES Annual Report Covering 2017

Attachment 3:

2017 Outreach Summary

The City of Redmond took the following actions to meet NPDES provisions S5.C.1.a.i and ii**:**

1. The City leveraged participation in Stormwater Outreach for Regional Municipalities (STORM) to promote the Puget Sound Starts Here campaign, including collaborating on a *Seattle Times* "Newspapers in Education" insert focused on BMPs related to vehicle maintenance (e.g. car washing, vehicle leaks).

2. The City also participated with other STORM members in purchasing Puget Sound Starts Here beverage coasters, including 1,250 designated for Redmond food service businesses to raise awareness about BMPs.

3. Redmond continued to promote the Don't Drip and Drive campaign by advertising the program and the three participating shops in the city for free leak tests.

4. Conducted outreach to junior high school and high school students, along with other charity groups: a) detailing the stormwater pollution issues associated with charity carwash fundraisers, and b) encouraging student organizations to engage in alternative fundraising activities. A letter was also distributed to all coaches in the Lake Washington School District advising that charity car washes are discouraged and offering alternatives.

City of Redmond

NPDES Annual Report Covering 2017

Attachment 4:

Opportunities for Public Engagement

In 2017 to meet NPDES permit requirements S5.C.2.a and S5.C.2.b the City:

• Advertised the opportunity to comment on the *City of Redmond 2017 Stormwater Management Program (SWMP)* Plan by placing an internet banner ad on the City's home page. The ad ran for 3 weeks in March and April of 2017, and invited the public to review and comment on the City's SWMP Plan.

• Placed an invitation to comments on the SWMP in the City's newletter, *Focus on Redmond*. The newsletter is mailed out to all Redmond residents.

In addition, the NPDES website invites the public to make comments on the City's SWMP at any time throughout the year. As a matter of practice, the City involves the public in our stormwater management related decisions by engaging people during the planning and construction of stormwater infrastructure projects, and during stormwater-related planning and policy revisions.

City of Redmond

NPDES Annual Report Covering 2017

Attachment 5:

2017 IDDE REPORT

2. Unique Identifier	3. Date incident initially reported	6. Frequency	7. Threat Determination and G3 Notification:	7a. Immediate Response?	7b. G3 Notification?	8. Investigated within 7 days per program procedures?	8a. If suspected illicit connection, investigated within 21 days?	8b. Final resolution of illicit connection within 6 months?	9. How did you learn about the problem?	9a. ERTS Number	10. Source Tracing Methods:	11. Indicator Testing:	12. Pollutant(s) Identified:	13. Source or Cause:	13a. Commercial [Commercial]	14. Correction/Elimination Method:	14a. Enforcement [Enforcement]	15. Final Resolution Date	15a. Final Resolution Date	16. Field notes, explanations, and other comments:	17. Other helpful or relevant information
20170105_1	1/5/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	669894	visual recon		sediment/ soil	public entity	N/A	other (explain)	N/A	1/6/2017	N/A	N/A	Public Works field staff reported elevated turbidity in a Redmond Creek to IDDE. Source identified as neighboring jurisdiction water main break.
20170106_1	1/6/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	public entity	N/A	other (explain)	N/A	1/6/2017	N/A	N/A	Signal maintenance field employees notified IDDE of a bucket truck hydraulic hose failure. The failure resulted in a couple of gallons of fluid spilled on the ground. IDDE responded and confirmed no impact to storm drains, applied loose absorbent, and had a City sweeper truck immediately collect the deployed absorbent. No further action.
20170109_1	1/9/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	669945	visual recon		sediment/ soil	public entity	N/A	other (explain)	N/A	1/9/2017	N/A	N/A	PW staff reported elevated turbidity in a Redmond Creek to IDDE. Source identified as a City of Redmond water main break. Repairs made.
20170109_2	1/9/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	commerci al	retail	education/techn ical assistance	verbal notice	1/9/2017	N/A	N/A	Redmond field staff alerted IDDE to a sheen in an O'Reilly's customer parking lot. The manager was notified and he contacted the property management to clean the sheen with absorbent. Outreach was provided explaining the need to clean up sheens quickly.
20170110_1	1/10/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	670055	visual recon		sewage/s eptage	commerci al	resta urant	other (explain)	N/A	1/10/201 7	N/A	N/A	Local restaurant had a grease interceptor blockage problem that created a backup inside the building. Redmond IDDE was notified by FOG inspector and observed grease floating in one storm drain control structure. The restaurant contracted vender cleaned the grease and impacted landscaping and storm system.
20170111_1	1/11/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollutio n hotline		N/A		vehicle fluids	vehicle	N/A	other (explain)	N/A	1/11/201 7	N/A	N/A	Waste Management called Hotline to report tranny fluid spill. Cleaned up by contracted vender (Whirlwind). No storm drainage impact. No further action.

20170112_1	1/12/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		other (explain)	other (explain)	N/A	other (explain)	N/A	1/13/2017	N/A	N/A	Citizen called PW general phone number to report large amount of salt on residential streets in their neighborhood. IDDE investigated and confirmed what appeared to be large quantities of rock salt on a number streets on hills. A City sweeper was called to collect the salt. Additional conversations indicated that what may have been a landscaping company crew was seen dumping the salt out of the back of a truck during some of the recent frigid and icy weather.
20170117_1	1/17/2017	other (explain)	Yes	Yes	Yes	Yes	N/A	N/A	business inspection	670093	visual recon		sediment/ soil	industrial	N/A	add or improve source control BMP	written warning	2/17/2017	N/A	N/A	Utility contractor maintenance yard had sheen and turbid water discharging to private storm system. Required cleanup and BMP improvements.
20170119_1	1/19/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	referred by adjacent MS4		visual recon		none found	public entity	N/A	N/A	N/A	1/19/2017	N/A	N/A	Bellevue IDDE notified Redmond IDDE of water main break that may have impacted a Redmond stream. No evidence of the break was observed in the stream. Rainfall was causing increased flow and slightly elevated turbidity, which would be expected. No further action.
20170120_1	1/20/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	construction	N/A	other (explain)	verbal notice	1/20/2017	N/A	N/A	Field staff (Construction Inspector) reported drill rig hydraulic line failure to IDDE. Investigation confirmed spill within footprint of construction site. Cleanup oversight by Inspector. Absorbents deployed and clean up company removed impacted soil.
20170124_1	1/24/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		other (explain)	vehicle	N/A	no action needed	N/A	1/24/2017	N/A	N/A	Industrial facility reported an car caught fire in employee parking lot. Fire Dept. responded extinguishing the fire. It was reported that the fire fighting effluent was cleaned from the parking lot and one private catch basin by a vacuum truck to mitigate any potential contamination.
20170125_1	1/25/2017	intermittent	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		soap/detergent	commercial	other (explain)	education/technical assistance, behaviour modification	verbal notice	1/25/2017	N/A	N/A	Private Stormwater Inspector observed fleet washing taking place during routine inspections and instructed the RP to ceases and explained code prohibitions regarding the activity.
20170131_1	1/31/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		food waste/oil	commercial	restaurant	education/technical assistance, behaviour modification	penalty or fine	2/1/2017	N/A	N/A	Wastewater FOG inspector reported food waste spillage behind restaurant. IDDE verified and required property management to clean the area before impacting private storm drains. Management had crew clean up but failed to pass along direct instructions to not pressure wash into storm drains, which they did. IDDE then required vactoring of impacted storm drains.
20170131_2	1/31/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	business inspection		visual recon		other (explain)	commercial	other (explain)	add or improve source control BMP	verbal notice	1/31/2017	N/A	N/A	Source Control inspection identified that the business was washing hand chalk off of climbing equipment inside next to their loading dock rollup door. The wash water was exiting under the door outside into loading dock storm water conveyance system. LSC inspectors required the business to cease the illicit discharge and utilize the sanitary sewer inside the facility.

20170201_1	2/1/2017	other (explain)	No	Yes	No	Yes	Yes	N/A	other public report		dye testing		none found	other (explain)	N/A	no action needed	N/A	2/2/2017	N/A	N/A	PW CIP reported a complaint about a sewer odor and possible cross connection issue at a Sleep Train store next to an extensive City ROW Project. Wastewater maintenance and IDDE personnel investigated. Wastewater confirmed the bathrooms had been non-compliantly connected to the building's old grease interceptor when the building was converted from a restaurant to it's current configuration and that was the likely cause of the odor problem. No cross connection issue identified. No further action.
20170203_1	2/3/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	industrial	N/A	other (explain)	N/A	2/3/2017	N/A	N/A	City inspector observed Genie employees cleaning up a spill at their facility and reported it to Redmond IDDE. IDDE called Genie to inquire about incident details. Genie explained that the source was a delivery truck that had leaked less than a gallon and that employees had deployed absorbents and cleaned up the spill without any discharge to a storm drain. Genie under separate ISGP. Clean up actions confirmed, no further action.
20170208_1	2/8/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other public report		N/A		soap/detergent	commercial	mobile business	add or improve source control BMP	penalty or fine	2/8/2017	N/A	N/A	An anonymous employee reported that Cole's Truck Washing at the Redmond FedEx facility was washing fleet vehicles outdoors and not reclaiming wastewater. FedEx management notified and required to vactor impacted storm drains. The facility has designated indoor areas to perform fleet washing.
20170209_1	2/9/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	670595	visual recon		vehicle fluids	residential	N/A	other (explain)	penalty or fine	2/10/2017	N/A	N/A	Stormwater flooded a residential garage and as a result 4 quarts of oil from an oil pan spilled and mixed with the water and entered the City's MS4. This property is at a low point in the street and the driveway area drain was not draining. The oil was floating on top of the water in his garage and the driveway ponding in front of his house. Absorbents were deployed and IDDE created a water berm under drain to contain the floating oil. The homeowner hired contractors to clean up the 100+ gal of contaminated water.
20170213_1	2/13/2013	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	construction	N/A	other (explain)	N/A	2/13/2017	N/A	N/A	Redmond field staff notified IDDE that a construction project self-reported a hydraulic spill. IDDE investigated and found that a heavy equipment trailer's hydraulic system had blown a line in the City ROW. The project site superintendent and employees deployed loose absorbent and pads, and cleaned up the spill without any impact to the MS4. No further action.
20170213_2	2/13/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	commercial	retail	add or improve source control BMP	verbal notice	2/14/2017	N/A	N/A	Redmond IDDE incidental observation of non-compliant materials storage outside of an auto sales business. Cans of paint, paint thinner, and other liquids were stored on bare ground under a slight overhang in back of the building. The business owner was required to properly cover and contain the materials.

20170213_3	2/13/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		vehicle fluids	residential	N/A	add or improve source control BMP	verbal notice	3/13/2017	N/A	N/A	Observed individual working on a number of vehicles in ROW with significant staining and stain trails in the immediate area and underneath the vehicles being worked on. No free standing vehicle fluids on the ground. Spoke w/ resident and informed him of the regulations regarding keeping stormwater pollutant free and requested cardboard be used to mitigate potential leaks while the vehicles were immediately repaired. Future vehicle repairs not allowed in City ROW. BMPs can address immediate concerns but working on vehicles in City ROW is a violation.
20170215_1	2/15/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	pollution hotline	670745	visual recon		other (explain)	industrial	N/A	add or improve source control BMP	penalty or fine	2/22/2017	N/A	N/A	Genie Industries (ISGP oversight) called Hotline to report that a garbage compactor hydraulic power unit had leaked its 20 gallon reservoir into a facility loading dock area and stormwater conveyance system. Rainfall was complicating containment efforts. IDDE responded and confirmed booms, pads, and other efforts were being made to contain and clean up the spill. A Certified Cleaning Services pumper arrived to collect waste washwater and skim ponds and structures of oil. Ecology spill responders arrived to document cleanup efforts.
20170216_1	2/16/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		sediment/ soil	construction	N/A	add or improve source control BMP	verbal notice	2/18/2017	N/A	N/A	Residents notified IDDE via email of a single family construction site dewatering turbid water from a foundation excavation hole into the City ROW and MS4. IDDE investigated and determined that the dewatering was a direct discharge but was flowing under the construction entrance quarry spalls and the exiting the site into the ROW. IDDE communicated the required BMP improvements and warned of potential enforcement action if discharge continued. Subsequent site visit verified compliance. No further action.
20170221_1	2/21/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	670891	visual recon		other (explain)	commercial	mobile business	other (explain)	penalty or fine	2/21/2017	N/A	N/A	IDDE was alerted to a spill in the City ROW of five 20-gallon buckets of roofing adhesive that had fallen off an unsecured pallet on a flatbed truck. Police, Fire WSP, DOE all responded to the incident that closed a major road through downtown Redmond. The adhesive mostly solidified to some degree and did not enter any storm conveyance. The responsible party contracted Clean Harbors for the environmental cleanup that was required.

20170223_1	2/7/2017	one-time spill	Yes	Yes	Yes	No (explain)	N/A	N/A	staff referral	670993	visual recon		food waste/oil	commercial	restaurant	add or improve source control BMP	penalty or fine	2/27/2017	N/A	N/A	Used cooking oil spilled on ground and into private storm drains likely impacting Redmond MS4 water quality. IDDE was alerted informally of this potential problem on 2/7 but due to prioritization of other incidents IDDE did not investigate and confirm this stormwater compliance issue until 2/23. Once confirmed property Management was notified and the cooking oil vender, General Biodiesel sent a truck to pump the container. Wallace Properties had to coordinate with Waste Management and the vactor company to clean the area and impacted storm system per requirements. Sadly, partial cleanup revealed that the container itself was leaking and had to be replaced along with another round of cleaning. The private storm system required substantial cleaning.
20170223_2	2/23/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		sediment/ soil	commercial	mobile business	education/technical assistance	verbal notice	2/23/2017	N/A	N/A	Redmond IDDE personnel observed pressure wash business cleaning sidewalk, curb, and potentially parking lot areas w/o required silt sock BMP. Explained the requirement and issued verbal warning. Contractor had just finished the job.
20170223_3	2/23/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	business inspection,		visual recon		not identified	public entity	N/A	other (explain)	verbal notice	N/A	N/A	N/A	Concern exists at Lake Washington school district maintenance facility. Small buses that won't fit into existing wash rack are washed in front of it into a storm drain. The situation is said to be temporary and the storm drain has a sump pump that pumps the washwater to the wash rack sewer drains. This situation is periodically reviewed and re-inspected due to the concern that not all wash water is captured and delivered to the sanitary system.
20170224_1	2/24/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	construction	N/A	add or improve source control BMP	written warning	2/24/2017	N/A	N/A	IDDE was alerted to a City construction project erosion control concern by LSC field staff. A slope sloughed off a bit down to a grated catch basin and was likely allowing some sediment to impact that drain. Field staff contacted project management and relayed the concern. Project construction personnel addressed the BMP issue. No further IDDE action taken.
20170303_1	3/3/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	commercial	retail	add or improve source control BMP	verbal notice	3/13/2017	N/A	N/A	LSC technical visit inspection observed a significant sheen in the parking lot of a car parts store and notified IDDE via the Hotline. IDDE investigated and found a number of sheen areas of varying sizes and locations within the customer parking lot, heavy rainfall was mobilizing sheens toward the private catch basin. Store management was required to deploy absorbent material to mitigate the sheen. Written inspection requirements stated that every day the store must check for drips and sheen in the parking lot and clean it up if observed.

20170303_2	3/3/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671144	visual recon		vehicle fluids	public entity	N/A	behaviour modification	N/A	3/3/2017	N/A	N/A	Operations staff reported from the City Maintenance and Operations Yard that a trailer generator spilled diesel onto the ground and a residual amount had entered the MS4. Absorbent materials were deployed and placed within the impacted structure. It was determined that the generator engine had been accidently topped off with fuel prior to mechanics running ("exercising") it to keep it prepared for emergencies. The high fuel level in the tank combined with vibration and/or heat caused the fuel to expand and overflow onto the ground. The modified SOP for exercising emergency generators is to ensure they are filled to no more than ¾ full.
20170306_1	3/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		food waste/oil	commercial	N/A	other (explain)	written warning	4/18/2017	N/A	N/A	IDDE incidental observation at a grocery store of a cooking oil container with the potential to tip over onto paved surface. Earlier issues with spilled cooking oil had prompted the grocery to take IDDE's advice of placing the container on an available vegetated area to avoid stormwater contamination due to employee incompetence or lack of due diligence to dispose of oil without spilling. The issue now was that one side of the container wheels were sinking into the ground causing the container to tip. In addition, a problematic trash compactor had a plugged sanitary drain under it that needed to be cleared. The grocery complied with IDDE requests to address both issues by clearing the sewer drain and by first placing bricks under the container wheels, and later having the wheels removed from the container, allowing it to sit flat on the ground.
20170307_1	3/7/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671246	visual recon		vehicle fluids	other (explain)	N/A	other (explain)	N/A	3/7/2017	N/A	N/A	Redmond Parks Dept. field employee notified IDDE of a sheen concern in a City park parking lot. Investigation confirmed significant sheen in parking lot and impacting MS4. Source of sheen was never confirmed. Redmond hired contractor to clean storm conveyance, deployed sweeper and absorbent materials.
20170307_2	3/7/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671248	visual recon		vehicle fluids	vehicle	N/A	mobile business	penalty or fine	3/7/2017	N/A	N/A	Redmond field employees notified IDDE of a sheen concern at a business park parking lot area. IDDE Investigation confirmed significant sheen in parking lot and likely impacting the MS4. Source of sheen was later determined to have been a mobile food truck that had leaked diesel fuel on the ground but was not present at the time of discovery and response. Redmond IDDE contacted property management to explain the situation and required them to hire a contractor to clean the impacted parking lot and storm conveyance. IDDE deployed absorbent materials and provided technical assistance to building engineers, property management, and the contracted vender during cleanup, assuring adequate mitigation was attained. IDDE was informed later that the mobile food truck admitted culpability and paid for the cleanup.

20170308_1	3/8/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	commercial	N/A	mobile business	verbal notice	3/9/2017	N/A	N/A	Redmond field employees notified IDDE of a residential landscaping project with deficient erosion control BMPs. Response personnel investigated and explained stormwater code and required BMPs. The company took necessary steps to enter into compliance. No further action.
20170308_2	3/8/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	ERTS#:	671252	No (explain)		No (explain)	No (explain)	N/A	no action needed	N/A	3/22/2017	N/A	N/A	ERTS issue from Ecology passed on to Redmond personnel regarding silt deposition in a condo marina. Resident does not agree that dredging costs should be passed on in part to the condo residents, believing Microsoft or the City is to responsible. No IDDE concern, issue forwarded to PW Engineering for follow up.
20170309_1	3/9/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	referred by adjacent MS4		visual recon		none found	other (explain)	N/A	no action needed	N/A	3/9/2017	N/A	N/A	Field staff from neighboring jurisdiction reported a short plat project in Redmond sweeping debris into a MS4 structure in the Redmond ROW. IDDE investigated and observed no construction activity at the project and no evidence of debris in the structure. No further action.
20170309_2	3/9/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		cement/concrete	commercial	mobile business	other (explain)	penalty or fine	3/9/2017	N/A	N/A	Redmond field staff notified IDDE of a cement spill in the ROW. A full cement truck was making a delivery to a project when cement spilled out the roller going up a steeply inclined City street to get there. Many City field personnel responded to shovel the product up in buckets and get it back into the roller tank. A lane had to be closed and flagged, and a contracted sweeper made passes to try and clean the roadway. It was raining at the time. No impact to stormwater conveyance.
20170310_1	3/10/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	commercial	mobile business	other (explain)	N/A	3/10/2017	N/A	N/A	Genie Industries notified Hotline to report sheen drops in their facility and in City ROW. Suspected a small delivery truck but could not identify the source. Genie cleaned the sheen on their property, Redmond crews did not observe sheen drips in the location specified as the pavement had dried out from previous precipitation. No further action.
20170310_2	3/10/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671366	visual recon		sewage/septage	public entity	N/A	other (explain)	N/A	3/10/2017	N/A	N/A	Redmond field personnel called IDDE to report an overnight after-hours standby response to a SSO from a Redmond sanitary sewer manhole and impacted the MS4. IDDE requested the incident responder notify Ecology to submit the G3 notification. He indicated that maybe 1000 gal of wastewater entered the storm system. City responders cleared the wastewater blockage and checked downstream confirming that contamination had not made it the downstream outfall and receiving water. Redmond personnel vactored the impacted structures.
20170314_1	3/14/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	3/14/2017	N/A	N/A	Genie Industries notified Hotline of sheen at their facility and in adjacent ROW. Responder investigated and found drip sheens in a side street and that Genie personnel had begun cleanup at their facility. The responder applied absorbent in the side street and called in City sweeper for cleanup. Leaking vehicle not identified. No further action.

20170314_2	3/14/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671576	visual recon		other (explain)	public entity	N/A	other (explain)	N/A	3/14/2017	N/A	N/A	Broken service line on 3-14-17 at 3:30 PM at 15334 NE 96th Pl. Estimated 200 gpm of municipal water for 15 minutes, and flushing hydrant afterward for about the same. Total about 6,000 gallons. All of the water landed on asphalt and then discharging to the MS4.
20170315_1	3/15/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		other (explain)	construction	N/A	other (explain)	N/A	3/16/2017	N/A	N/A	Redmond private construction inspector called IDDE to report a water main break at the Ravello project. Incident oversight and response handled by the City construction inspectors. Repairs made, no further action.
20170320_1	3/20/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	other (explain)	N/A	education/technical assistance	verbal notice	3/22/2017	N/A	N/A	Indian Festival. Colored corn starch all over concrete walkways the day after the festival. On 3/20/2017 water bags were put on top of 3 catch basins to keep water & color out. Event sponsor tried to wash to grass area with garden hose on 3/21/2017. Professional pressure washer came in and finish job on 3/22/2017. No further action.
20170320_2	3/20/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other (explain)	671623	visual recon		other (explain)	commercial	other (explain)	other (explain)	penalty or fine	3/21/2017	N/A	N/A	While following up with a different compliance issue IDDE observed that a grocery store compactor's hydraulic power unit was being worked on and was dismantled. Also observed were that the hydraulic connector hoses were lying on top of a nearby storm drain grate. Trails of oil were around and on the grate and there was some residual sheen inside the structure. IDDE notified the store director and regional facilities manager of the issue, requiring that they vactor the impacted structures and self-report to Ecology.
20170322_1	3/22/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	construction	N/A	other (explain)	N/A	3/22/2017	N/A	N/A	Parks Dept. personnel notified IDDE of a diesel smell in a City park parking lot. Investigation found that a backhoe operator working on a City project had filled the fuel tank and had not tightened the cap fully, then while parked on a down slope at the park the fuel leaked out. A City project engineer had noticed the smell and instructed the contractor to address the issue. The contractor utilized his spill kit absorbents to contain the spill and clean it up. No impact to storm drains. No further action.
20170323_1	3/23/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	671713	visual recon		sediment/soil	public entity	N/A	other (explain)	N/A	3/23/2017	N/A	N/A	Water Dept. field personnel responded to a public water service break that released approximately 135,000 gallons into the MS4. Appropriate repairs were made to address the problem. No further action.
20170329_1	3/29/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		soap/detergent	construction	N/A	education/technical assistance	verbal notice	3/29/2017	N/A	N/A	A field LSC employee witnessed a construction project flagger putting soap on the roadway. They were using the soap to break down the oil drips and sweeping the area. It was explained that there was potential for oil and soap to enter storm system. The flagger was instructed to use loose absorbent and pads for cleanup of oil drips and that soap could result in enforcement action. Ideally vehicles and equipment would have any drip sources repaired. The City project inspector was notified of the incident. No further action.

20170401_1	4/1/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other public report	671909	visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	4/1/2017	N/A	N/A	After-hours/weekend responder notified of U-Haul truck transmission fluid leak in private parking lot. After assessment Responder advised property owner to apply and recover absorbent. Responder observed some residual fluid had entered a storm drain and attempted recovery using a towel on the sidewall drips. The responder notified Ecology even though there was some question as to whether the incident met the G3 reporting requirement threshold. No further action.
20170414_1	4/14/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		other (explain)	commercial	other (explain)	education/technical assistance	verbal notice	4/14/2017	N/A	N/A	City staff observed a hotel draining water into a private catch basin via a rubber hose and notified IDDE to investigate. IDDE spoke with hotel management and learned that the hose was draining the hotel pool down some for maintenance purposes. The hotel was educated on the code requirement of sanitary sewer as 1st disposal option, infiltration as 2nd, and de-chlorination/pH adjust for stormwater discharge if 1st two options are not feasible. No further action.
20170414_2	4/14/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/soil	commercial	other (explain)	other (explain)	N/A	4/14/2017	N/A	N/A	City field staff notified IDDE of turbidity discharging off of a multi-tenant, multi-business type private property that has no storm system but is mostly covered with gravel. Heavy rain was apparently generating a high volume of runoff that was excessively turbid. IDDE responder arrived later, after rainfall had subsided, and did not observe the turbid runoff condition that was reported. No further action.
20170417_1	4/17/2017	intermittent	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		sewage/septage	sanitary overflow	N/A	add or improve source control BMP	verbal notice	4/26/2017	N/A	N/A	A call to the Hotline alerted IDDE to a sewer overflow concern at the UPS facility. Investigation revealed that UPS employees were flushing items that the associated grinder pump could not handle, resulting in the pump shutting down and sewage overflowing. IDDE explained the stormwater code compliance issues and the requirement to adequately address the issue. UPS management implemented a number of BMPs and had the grinder pump serviced and cleaned. No further action.
20170418_1	4/18/2017	intermittent	No	Yes	No	Yes	N/A	N/A	catch basin or manhole inspection		visual recon		soap/detergent	commercial	mobile business	behaviour modification	verbal notice	4/18/2017	N/A	N/A	Redmond private stormwater inspector during a routine inspection observed a heating and air company washing their fleet vehicles off into the storm system. The inspector provided education and outreach informing the company of the stormwater code prohibiting the activity and forwarded the incident to IDDE for documentation and future follow up if necessary. No further action at this time as the company agreed to comply.
20170418_1	4/18/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	4/18/2017	N/A	N/A	Anonymous caller to the Hotline alerted IDDE to a sheen in a City ROW. IDDE and Public Works field personnel investigated and were unable to identify the source. Absorbents were deployed and then recovered by a City sweeper. No further action.

20170419_1	4/19/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	4/19/2017	N/A	N/A	IDDE incidental observation of a sheen in the City ROW. No source identified. Requested assistance from operations personnel which applied absorbent and collected with a sweeper. No further action.
20170420_1	4/20/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	pollution hotline	672389	visual recon		sewage/septage	commercial	retail	other (explain)	penalty or fine	4/21/2017	N/A	N/A	A caller to the Hotline that wished to remain anonymous (later found to be the property owner) reported a sewer overflow concern at a mixed commercial (coffee shop, salon, real estate, etc.) and multi-family building. IDDE responded and found that a grinder pump serving the commercial tenant units had stopped operating. Wastewater was flowing into the private conveyance, and from there into Redmond, then Kirkland MS4. Initially reluctant to quickly address the problem, when IDDE notified Ecology of the lack of urgency, Ecology was able convince the property owner that it was in his best interest to make necessary repairs ASAP, and contract for the immediate cleanup of the impacted storm system. Private contractors repaired the grinder pump and cleaned the private storm system, Kirkland cleaned the public system and looked to recover costs incurred for the responsible party.
20170421_1	4/21/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other field screening		visual recon		other (explain)	construction	mobile business	other (explain)	N/A	4/21/2017	N/A	N/A	IDDE incidental observation of an orange stain in the City ROW and down the gutter to the MS4. Source likely utility contractors working in the area dewatering utility vaults and one may have had rusty water inside. IDDE contacted the Redmond ROW inspector to pass along to any contractors the potential for a water quality violation and to point out that it would be probably be complaint to infiltrate rusty water if a suitable location were found. No further action.
20170424_1	4/24/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		other (explain)		none found	source not identified	N/A	no action needed	N/A	4/24/2017	N/A	N/A	A resident called the Hotline to report a granite cutter allowing soapy water to flow into a private condo storm system. IDDE investigate but could find neither the mobile business nor evidence of an illicit discharge. It was later determined that IDDE had checked the wrong street. Clarification with the caller also revealed that they thought the resident the mobile business was working at may have washed something in the driveway and it had flowed under the contractor's van, making it look like it was coming from them. No further action.

20170424_2	4/24/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	catch basin or manhole inspection		visual recon		not identified	commercial	fueling	other (explain)	N/A	5/9/2017	N/A	N/A	Stormwater inspection smelled gasoline in control structure and reported to IDDE. IDDE investigated and smelled very faint odor. Met with station management about the issue and identified storm system map may be an issue but not necessarily a contributing factor to the gas smell issue. Subsequent site visits did not detect odor, may have been a small spill on dispenser pad that was then tracked out to where it may have residually entered private storm system.
20170426_1	4/26/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		none found	other (explain)	N/A	other (explain)	N/A	4/26/2017	N/A	N/A	Field staff observed a mop bucket and a wet stain around a water damage restoration business's fleet van. The concern was that the company was dumping or draining non-stormwater into a storm drain. IDDE investigated but was unable to confirm any discharge or dumping had occurred. IDDE spoke with company management about washing fleet vehicles or discharging wastewater into storm conveyance. No further action.
20170426_2	4/26/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	not identified	N/A	other (explain)	N/A	4/27/2017	N/A	N/A	IDDE observed a sheen in the loading dock area of City Hall where Waste Management trucks collect recycling and solid waste. Absorbents were deployed and Waste Management notified. Waste Management sent a contractor to clean the area but was not convinced that it was one of their vehicles that caused the sheen. No further action.
20170427_1	4/27/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	multifamily	N/A	add or improve source control BMP	verbal notice	4/27/2017	N/A	N/A	A multifamily facility observed pressure washing without required BMP's. IDDE asked them to stop until BMPs were in place. Spoke to the property management to provide additional education and outreach. No further action.
20170428_1	4/28/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	construction	N/A	other (explain)	verbal notice	4/28/2017	N/A	N/A	City construction inspector called Hotline to report a backhoe hydraulic line failure caused a discharge of five gallons onto soil. IDDE investigated and found the contaminated material piled onto plastic sheeting but not covered, with no impact to stormwater conveyance. Asked superintendent to cover and properly dispose of contaminated soil. Compliance oversight under the construction inspection division of the Planning Dept. No further action.
20170428_2	4/28/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		none found	commercial	mobile business	education/technical assistance	N/A	4/28/2017	N/A	N/A	IDDE notified of someone pumping something into the MS4 along a busy street. IDDE investigated and found that communication utility contractors had just pumped down a manhole vault of non-turbid, accumulated stormwater. I explained Redmond's code that if vault water was not clean or uncontaminated they would have to haul off for disposal. I also explained that any pumping into storm drains could attract attention and a compliance check. Infiltrating the water could be an alternative if that option was available. No further action.

20170501_1	5/1/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other field screening		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	5/1/2017	N/A	N/A	IDDE incidentally observed a trail of vehicle fluids in the public ROW near and into City Hall's parking lot. May have been oil but had a reddish tint like transmission fluid. Source was not identified. Public Works personnel applied absorbent and a sweeper collected it. No further action.
20170501_2	5/1/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		not identified	source not identified	N/A	other (explain)	N/A	5/1/2017	N/A	N/A	City field employee observed a person on a bridge dumping something from a bucket into Bear Creek and reported it to IDDE. Investigation found nothing. The person that reported the concern later mentioned details that suggest it may have been someone sampling water quality as there may have been a government green vehicle nearby with exempt plates. No further action.
20170502_1	5/2/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		other (explain)	construction	N/A	add or improve source control BMP	verbal notice	5/3/2017	N/A	N/A	City field employee reported to IDDE a construction contractor cutting stone façade pieces within a new MS4 bio-swale at a recently constructed short plat of new homes. The sediment laden wastewater was discharging from the cutting table into a bio-swale and impacted a little way down system. The contractors were also observed cutting stones on the roof, allowing the washwater to flow down the roof drains. IDDE notified them of the code violation and required them to clean the system and implement proper wastewater handling BMPs.
20170503_1	5/3/2017	intermittent	No	Yes	Yes	Yes	N/A	N/A	other (explain)	672747	visual recon		vehicle fluids	commercial	fueling	add or improve source control BMP	verbal notice	5/3/2017	N/A	N/A	IDDE follow up check at a private cardlock fuel station found diesel sheen from the fuel pad entering the storm system. Notified the company of the issue and explained that they needed to report the spill to Ecology and clean it up. Company sent out their maintenance crew to wash down the sheen and recover the wastewater. This site is an ongoing stormwater problem as it was constructed long ago without a canopy to keep stormwater from contacting overtopping and drips. IDDE periodically reviews BMPs for this site.
20170504_1	5/4/2017	one-time spill	No	Yes	No	Referred (explain)	N/A	N/A	ERTS#:	672781	other (explain)		other (explain)	public entity	N/A	no action needed	N/A	5/4/2017	N/A	N/A	Redmond IDDE received an ERTS report related to a discharge of reclaimed water at a Redmond located golf course. King County vehicle was transporting it when it spilled from the vehicle onto soil. IDDE forwarded the issue to Redmond Wastewater Engineering. No further action.
20170505_1	5/5/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	commercial	mobile business	add or improve source control BMP	penalty or fine	5/8/2017	N/A	N/A	Field employee reported track out associated with a residential landscaping project. IDDE investigated and confirmed the issue. The landscaper was required to hire a sweeper and install standard silt sock BMPs.
20170508_1	5/8/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	commercial	other (explain)	other (explain)	N/A	5/8/2017	N/A	N/A	Waste Management notified the Hotline of a hydraulic fluid spill from one of their trucks. They applied and collected absorbent materials to mitigate the small patches of impacted ROW. No further action.

20170509_1	5/9/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other public report	673078	visual recon		cement/concrete	commercial	mobile business	education/technical assistance	written warning	5/26/2017	N/A	N/A	Notification via the City's online complaint form concerning a single family residential property replacing a concrete driveway. Visual indicators show that waste wash water entered the MS4. Groundwater base flow had swept away any evidence inside storm drains or pipes. The residence is undergoing some interior improvements and is not occupied. No one was onsite to discuss the code compliance concerns. IDDE later made contact with the contractor explaining code requirements and providing BMP information
20170510_1	5/10/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral	672938	visual recon		vehicle fluids	public entity	N/A	other (explain)	N/A	5/10/2017	N/A	N/A	Field staff reported a vehicle fluid spill in the City ROW. A Metro bus had lost coolant onto the roadway before breaking down on the side of the road. Metro mechanics and spill responders were on scene quickly. City personnel assisted with applying absorbents, traffic control, and using a sweeper to collect the absorbent. No impact to MS4.
20170515_1	5/15/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		food waste/oil	commercial	retail	add or improve source control BMP	verbal notice	8/30/2017	N/A	N/A	Field staff reported cooking oil container at grocery store with drips onto the ground. IDDE investigated and had management clean up the spillage and place the container on an available vegetated area. No further action.
20170518_1	5/18/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		paint	other (explain)	N/A	other (explain)	N/A	5/18/2017	N/A	N/A	Field staff reported that an operations mower had hit a can of latex paint while cutting the grass in a vegetated area next to the City ROW. The can may have fallen off a vehicle and into the grass at some point. When the mower hit the can the contents splattered the sidewalk with some drips landing on a MS4 storm drain grate. It was determined that there was no discharge to storm. No further action.
20170518_2	5/18/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		cement/concrete	commercial	mobile business	education/technical assistance	penalty or fine	5/19/2017	N/A	N/A	Notification via Redmond's online complaint form concerning a utility contractor replacing concrete sidewalk panels and allowing concrete washwater to flow down street gutter to MS4. IDDE investigated and observed the new panels but no evidence of concrete washwater into the MS4. Precipitation overnight may have eliminated visual residue of the discharge. Contact was made with the utility company management and the stormwater code was explained to ensure that it was understood that concrete was a prohibited discharge. No further action.
20170522_1	5/22/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	5/22/2017	N/A	N/A	PW Staff reported apparent oil spill in ROW, later found that RP (white dump truck) had stopped in a private parking lot where vehicle fluid puddled to a greater extent. Private facility management deployed absorbent after RP left the scene. PW deployed absorbent in ROW and used sweeper for public and private impacted areas. Sunny weather allowed cleanup without discharge to MS4.
20170530_1	5/30/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	5/30/2017	N/A	N/A	WM called hotline to report collection truck hydraulic line spill. Route manager responded, assessed, and cleaned up with absorbent. No impact to storm, no further action.

20170601_1	6/1/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	ERTS#:	673440	visual recon		other (explain)	public entity	N/A	other (explain)	N/A	6/1/2017	N/A	N/A	Redmond IDDE received an ERTS report related to a discharge of reclaimed water in Redmond along the Sammamish River. A King County pump station reported that a sampling valve was left open and about 8,600 gallons of reclaimed water discharged to a wetland. IDDE forwarded the issue to Redmond Wastewater Engineering. No further action.
20170606_1	6/6/2017	intermittent	No	Yes	No	Yes			other public report		visual recon		sewage/septage	commercial	mobile business	other (explain)	penalty or fine	7/10/2017	N/A	N/A	Facility property manager contacted City IDDE program directly to report a concern related to a mobile food vender truck emptying the onboard grey water tank onto pavement and then discharging into the private storm system. After investigation and verification of contaminated storm drains, multiple attempts to catch the vender dumping, the truck owner/operator was observed in the act resulting in the requirement to contract a vactor company to clean the impacted system. Education/outreach info provided and Health Dept. permit regulations were emphasized as well as the potential for future cleaning requirements and escalating enforcement
20170609_1	6/9/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	6/9/2017	N/A	N/A	Field staff notified IDDE of a diesel spill trail at Redmond Town Center. IDDE investigated and confirmed the spill trail. Landscape workers in the area described seeing a white, unmarked ambulance parked at the location where the spill trail appeared to start. No such vehicle was located. Redmond Town Center property management, hotel management, and City staff worked together to apply absorbents and sweep them up before rainfall began. No impact to storm. No further action.
20170609_2	6/9/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	673653	visual recon		sediment/soil	public entity	N/A	other (explain)	N/A	6/9/2017	N/A	N/A	Field staff notified IDDE of a water main break at the Sound Transit E360 project that caused a significant turbid water discharge to private and public stormwater conveyance. IDDE followed up after repairs had been made. Project management had contracted a vactor company to clean impacted storm drains. IDDE notified the adjacent MS4 jurisdiction of the potential impact to their system. Compliance oversight to remain with Redmond Planning Inspectors. No Further action.
20170612_1	6/12/2017	intermittent	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		food waste/oil	commercial	restaurant	education/technical assistance	verbal notice	8/8/2017	N/A	N/A	While investigating a separate issue at this location IDDE personnel observed cooking oil container spillage and grease hood oil spill on roof of building. Addressed multiple concerns at this multi-food service tenant location, some of which are chronic BMP issues that require frequent inspections to verify compliance. Significant grease hood oil spill on roof was addressed fairly quickly.

20170613_1	6/13/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		paint	public entity	N/A	other (explain)	N/A	6/13/2017	N/A	N/A	Field staff notified IDDE of yellow paint in a gutter related to recent City curb repainting project. IDDE investigated and found that Street Operations had painted the curb when everything was dry but that adjacent private irrigation must have kicked on and washed some of the paint and it collected in the street gutter. Absorbent was deployed and IDDE swept and collected it for disposal. No further action.
20170614_1	6/14/2014	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		paint	public entity	N/A	no action needed	N/A	6/14/2014	N/A	N/A	Field staff reported to IDDE yellow curb paint chips on the ground next to a public sidewalk. There were no chips where they would discharge to a storm drain. IDDE determined paint chips minor and no threat to the MS4. No further action.
20170616_1	6/16/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	673811	visual recon		sediment/ soil	construction	N/A	other (explain)	verbal notice	6/16/2017	N/A	N/A	A Construction Inspector notified IDDE of a water line break at a CSWGP private construction project. Highly turbid water discharged to stormwater conveyance. IDDE requested the Inspector tell project management self-report their exceedance to Ecology per their permit requirement and clean impacted conveyance. No further action.
20170619_1	6/19/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	catch basin or manhole inspection		visual recon		food waste/oil	source not identified	N/A	other (explain)	penalty or fine	6/22/2017	N/A	N/A	Redmond Private stormwater inspector during an inspection observed cooking oil dumped into a private storm drain. No source was identified and it may have been a case of dumping overnight. Property management was notified and a vactor was contracted to clean the impacted structure. No further action.
20170619_2	6/19/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	673866	visual recon		sediment/ soil	public entity	N/A	other (explain)	N/A	6/19/2017	N/A	N/A	A 6-inch water main was clipped during a project causing municipal water to discharge to the MS4 for about 40 minutes. Redmond field personnel reported the incident to the Hotline and the contractor notified Ecology. Repairs were made, no further action.
20170619_3	6/19/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	referred by adjacent MS4	674010	visual recon		other (explain)	other (explain)	N/A	other (explain)	N/A	6/26/2017	N/A	N/A	A concern was relayed to IDDE concerning an annual water balloon fight between power boats that takes place in Lake Sammamish. The concern was high volumes of broken balloons ending up in the lake environment, taking a lengthy time to biodegrade. The launch point for this event was a condo complex with a boat dock in Redmond. IDDE notified King County Marine Patrol and other agencies seeking information on the environmental compliance aspect of this activity. Eventually it was determined that KC Marine Patrol would no longer allow the event to discharge balloons into lake Sammamish. No further action.

20170622_1	6/22/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	commercial	retail	add or improve source control BMP	verbal notice	6/22/2017	N/A	N/A	While following up on an unrelated issue, IDDE observed spilled mop water in a low spot next to a private catch basin. The mop water puddle was outside the back door of a small ethnic grocery store. IDDE alerted store management to the situation explaining the code violation. Employees mopped up the liquid and disposed of it in the perfectly usable mop sink just inside the back door. IDDE and property management later visited the store together and an outreach sign specific to appropriate disposal of mop water was posted on the back door of the store.
20170622_2	6/22/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	commercial	mobile business	education/technical assistance	verbal notice	6/22/2017	N/A	N/A	Mobile pressure wash company observed cleaning without required BMPs to filter for turbidity and sediment. Provided outreach explaining Redmond code requirements. Confirmed silt sock use.
20170626_1	6/26/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	674014	visual recon		paint	construction	N/A	other (explain)	penalty or fine	7/5/2017	N/A	N/A	Field staff notified IDDE about a white plume entering into a MS4 stormwater pond. IDDE investigated and traced what turned out to be white paint, a short distance up system to a multifamily construction project. Painting subcontractor either spilled or washed latex paint into newly constructed condo storm system, which into discharged into the associated newly constructed MS4. Public Works storm maintenance crew observed small plume developing in MS4 pond, visually traced the discharge, then notified the IDDE responder. Responder verified illicit discharge then notified project developer of requirement to vactor impacted storm system. Ventilation Power Cleaning was onsite the same day to clean system.

20170628_1	6/28/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	commercial	mobile business	education/technical assistance	verbal notice	6/28/2017	N/A	N/A	Redmond LSC staff observed a pressure washing company pressure washing areas of a private parking lot and the wash water was not being collected. LSC spoke with Clean and Bright Windows about their pressure washing activities. Clean and Bright explained they were only pressure washing the curbs and lines in the parking lot in preparation for restriping, not the actual parking lot surface. They were also pressure washing the sidewalks. They were informed that they could not pressure wash a pollution generating surface like the parking lot unless all of the wash water was collected. There was no catch basin filtration in the drain the pressure wash water was entering. There was a small amount of debris and turbidity mobilized by the pressure washing activities. Clean and Bright said they had a sock back at the office. LSC also informed Clean and Bright no hot water, or chemicals were allowed to be used unless all of the waste water was collected and not allowed to enter the stormwater system. Clean and Bright asked if they could use a biodegradable cleaner. LSC informed them no chemicals or cleaners could be discharged to the stormwater system, even if they were biodegradable.
20170630_1	6/30/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	source not identified	N/A	problem not abated (explain)	N/A	7/3/2017	N/A	N/A	City contracted environmental consultants observed grey tinged turbid in a creek that they were sampling during a rain event. The concern was not passed along to IDDE for several weeks. When IDDE investigated there was no observation of the concerns that were reported. The Hotline number was passed along to the consultant with the request to immediately report issues in order to facilitate timely investigation.
20170630_2	6/30/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		vehicle fluids	commercial	other (explain)	other (explain)	N/A	6/30/2017	N/A	N/A	Waste Management notified IDDE via email of a hydraulic fluid spill from one of their trucks behind a grocery store. Their contractor applied and collected absorbent materials to mitigate the spill. No discharge to stormwater conveyance. The individual was directed to contact Redmond's Spill Hotline in the future for spill reporting purposes. No further action.
20170711_1	7/11/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	ERTS#:	674250	visual recon		vehicle fluids	industrial	N/A	other (explain)	N/A	7/11/2017	N/A	N/A	Redmond IDDE alerted by Ecology to a diesel spill at a utility yard. Follow up inspection of the spill location confirmed cleanup had occurred without impact to storm and measures taken to avoid a similar recurrence. A mobile refueling tank in the back of truck had leaked over the weekend.

20170712_1	7/12/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		other (explain)	commercial	mobile business	other (explain)	verbal notice	7/12/2017	N/A	N/A	Concerned citizen called Hotline to report that he witnessed someone dumping something into a storm drain at a business. IDDE investigated and confirmed the illicit discharge. An employee for a paint company had rinsed out a bucket of pre-texture for drywall. The liquid was contained within the one catch basin impacted by the illicit discharge. The business owner was required to clean out the storm drain. No discharge to the MS4.
20170712_2	7/12/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	catch basin or manhole inspection		visual recon		soap/detergent	public entity	N/A	education/technical assistance	N/A	10/6/2017	N/A	N/A	Stormwater inspection at Fire station observed soap suds in storm drain. Issue forwarded to Redmond IDDE. Investigation found that the suds were the result of fire hose cleaning and not vehicle washing as 1st believed. Fire Dept. leadership was notified that hose washwater must discharge to the sanitary sewer system.
20170716_1	7/16/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other (explain)	674464	visual recon		other (explain)	commercial	N/A	mobile business	penalty or fine	7/19/2017	N/A	N/A	IDDE learned that the City campus parking garage was going to be pressure washed. IDDE reminded the 3rd party property management company that parking area pressure wash water could not discharge to the storm system. A post cleaning inspection revealed that the parking area wash water had been discharged to the MS4. IDDE required the property management to clean the impacted storm system and reported the G3 to Ecology.
20170718_1	7/18/2017	one-time spill	Yes	Yes	No	Yes	N/A	N/A	other public report	674466	visual recon		cement/concrete	commercial	mobile business	education/technical assistance	verbal notice	7/19/2017	N/A	N/A	A Redmond resident notified IDDE via the available online reporting form about a concrete contractor that had washed concrete waste into City ROW and MS4 after pouring single family residence backyard patio. Contacted contractor and required street gutters and storm drains to be cleaned without additional discharge to MS4.
20170718_2	7/18/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	674428	visual recon		paint	commercial	mobile business	education/technical assistance	verbal notice	7/18/2017	N/A	N/A	Redmond stormwater inspector drove by as residential paint contractor was dealing with a spilled paint brush wash bucket in City ROW. Some paint brush was water had entered the MS4. The stormwater inspector required the paint contractor to clean the impacted storm drain.
20170719_1	7/19/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		food waste/oil	commercial	N/A	restaurant	verbal notice	7/19/2017	N/A	N/A	A local restaurant owner called the Public Works general line to report something dumped on the sidewalk outside of his establishment. The issue was forwarded to IDDE for investigation. IDDE observed that it was related to cooking grease or lard and directed the restaurant owner to go ahead and mop it up without flushing to storm drains. No further action.
20170724_1	7/24/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	7/24/2017	N/A	N/A	Field personnel notified IDDE and requested vehicle accident follow up as there was a report of a roll over with some fluids leaked. IDDE responded and was prepared to assist with absorbent material. The tow truck/wrecker was able to handle the leaked fluids with his own onboard absorbents as the vehicle was up righted and placed on the tow truck. A City sweeper then made a number of passes and pick up the absorbent. No further action.

20170725_1	7/25/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other agency referral	674657	visual recon		cement/concrete	commercial	mobile business	add or improve source control BMP	penalty or fine	8/15/2017	N/A	N/A	Resident observed what appeared to be dried concrete wash water into the MS4 from a single family private home project while walking dog. Resident contacted Redmond Code Enforcement which then referred them to Redmond IDDE (desk phone). Redmond IDDE immediately investigated and spoke with concrete contractor workers associated with the project. Some confusion existed as it appeared that their project may not have been the sole source of concrete into the MS4. Outreach and education on concrete wash water BMPs and Redmond stormwater code provided. Currently working to confirm contractor was sole source of concrete and the follow up by issuing MS4 cleanup requirements.
20170801_1	8/1/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		cement/concrete	industrial	N/A	behaviour modification	verbal notice	8/2/2017	N/A	N/A	Redmond field employees reported white dusty track out from a business and notified IDDE. Investigation found that a concrete testing company with deficient operational BMPs was causing an excessive amount of concrete dust to be deposited outside of their facility. No track out to City ROW observed, only within their loading dock and parking areas. The facility storm conveyance infiltrates. IDDE required cleanup, BMP improvements, and attempted to explain the long term negative impact concrete dust would likely have on the ability of their storm conveyance to operate as designed.
20170802_1	8/2/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		none found	other (explain)	N/A	other (explain)	N/A	8/10/2017	N/A	N/A	City contracted environmental consultants observed sections of 2 inch black water line/hose in the bottom of a steep ravine in a creek while performing habitat assessment. The concern was forwarded to IDDE for investigation whether it might be for discharging of non-stormwater. IDDE investigated up and down the stream segment and found several different sections of the same 2 inch line not visibly connected or draining anything. No further action.
20170802_2	8/2/2017	other (explain)	No	Yes	No	No	N/A	N/A	other (explain)		visual recon		none found	source not identified	N/A	other (explain)	N/A	8/15/2017	N/A	N/A	City contracted environmental consultants observed elevated turbidity in a local creek and forwarded to IDDE a number of days after actually observing the concern. IDDE investigated sections along the length of the creek and found no elevated turbidity but noted a number of construction sites that could potentially contribute to sediment loading if BMPs not in place or properly managed. No further action.
20170803_1	8/3/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	674828	visual recon		other (explain)	other (explain)	restaurant	other (explain)	penalty or fine	8/7/2017	N/A	N/A	Private Stormwater Inspector observed pressure washing at commercial building while driving by and alerted IDDE. IDDE arrived an hour later and documented that the facility's dumpster enclosure had been pressure washed into the private storm conveyance, which in turn had discharged into 2 MS4 structures. Contact was made with property management and vactor cleaning of impacted storm drains is scheduled. Awaiting info about tenant contracted pressure washer in order to provide education and outreach as appropriate

20170807_1	8/7/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	business inspection	675072	visual recon		sewage/septage	other (explain)	N/A	add or improve source control BMP	N/A	11/3/2017	N/A	N/A	LSC on a site visit observed a non-standard employee break room sink with an exterior water hose line supplying water. Wastewater drainage line from sink either plugged or misconnected. Wastewater from sink area ended up on the ground and flowing over paved surface into MS4 storm drain. Sink usage was restricted until facility made the necessary repairs to prevent sink wastewater discharge to storm. LSC addressed code compliance issue.
20170809_1	8/9/2017	other (explain)	No	No	No	Yes	N/A	N/A	staff referral		visual recon		allowable discharge	other (explain)	N/A	other (explain)	N/A	8/11/2017	N/A	N/A	Illicit discharge concern at a multitenant facility was forwarded to IDDE by LSC personnel. The impervious areas had some dried drainage stains on them that had the appearance of potential illicit dumping. Investigation showed that the irrigation system would overflow onto the paved area and since there had been no recent rainfall the staining was very prominent. No evidence of dumping was found, no further action.
20170811_1	8/11/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	ERTS#:	675022	visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	8/11/2017	N/A	N/A	A metro bus had a coolant system failure causing a spill onto the ROW and into the MS4. Metro transit reported the incident to Ecology which then issued the ERTS to Redmond IDDE. Metro had a crew on site to repair the bus, control traffic, apply absorbent, and then vactor the impacted MS4. No further action.
20170818_1	8/18/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		dumping/ trash	commercial	other (explain)	other (explain)	N/A	8/18/2017	N/A	N/A	A Redmond resident and employee reported chunks of Styrofoam blowing out the back of a Waste Management truck in her neighborhood in the morning. The issue was forwarded to IDDE. IDDE located the area and found Styrofoam pieces of vary sizes. The recoverable pieces were collected for disposal and Waste Management was alerted to the issue and said they would look into who the truck/operator was and how to prevent future occurrences.
20170826_1	8/26/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	pollution hotline	675446	visual recon		sewage/septage	residential	N/A	other (explain)	verbal notice	10/19/2017	N/A	N/A	Public Works afterhours personnel responded to a citizen's concern over a residential SSO. The responders observed that wastewater had seeped up from the ground, overflowed a City sidewalk and entered the MS4. Responders were unable to make contact with the resident but cleaned the impacted MS4, ground, and sidewalk. IDDE was alerted and follow up included contacting the homeowner (out of the country at the time of the SSO) requiring a plumber be hired to ensure the side sewer was functioning properly and no blockages existed.

20170829_1	8/29/2017	intermittent	No	Yes	No	Yes	N/A	N/A	other (explain)		dye testing		food waste/oil	commercial	restaurant	education/technical assistance	penalty or fine	8/31/2017	N/A	N/A	While following up on recent IDDE issues at a multitenant facility IDDE observed food waste contamination within the private stormwater conveyance system. IDDE required property management to vactor the contaminated structures. Dye testing was also performed to better understand the roof and footing drain connections. Afterwards, each food service establishment and grocery store in the complex was jointly visited by IDDE and management to verify utility sink availability and discus stormwater code compliance.
20170830_1	8/30/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		sewage/septage	sanitary overflow	restaurant	other (explain)	N/A	8/31/2017	N/A	N/A	After-hours Standby response to a business SSO. Wastewater trickling out of a private sewer cleanout. Plumber had difficulty clearing any blockage at the time but some flow restored. Issue forwarded to IDDE for follow up the next day. IDDE investigated and found minimal indication of any discharge to the private storm system. Property management contracted additional plumbing inspection and repair and eventually removing a massive root ball that was creating the blockage issue. No further action.
20170831_1	8/31/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	675496	visual recon		sediment/soil	public entity	N/A	other (explain)	N/A	9/1/2017	N/A	N/A	Water main break called in by homeowner at 9:00pm on 8/31/17. Homeowner reports first seeing water running at about 10:00am earlier that morning. Water ran down asphalt lined trench-line into a City of Redmond catch basin. De-chlorination tablets used at catch basin upon immediately upon response, and ongoing. Minimal sediment washed into the stormwater system due to the asphalt trench. Redmond Water Division stopped the flow and repaired the water main at 10:00am on 9/1/17. The Water Supervisor estimated the flow rate at 150gpm for 24 hours (216,000 gal of water.)
20170903_1	9/3/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		other (explain)	public entity	N/A	other (explain)	N/A	9/3/2017	N/A	N/A	Viewpoint point park sprinkler problem reported via hotline and webmaster-forwarded sprinkler problem on to primary standby/parks-mike brown.
20170907_1	9/7/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		other (explain)	public entity	N/A	other (explain)	N/A	9/7/2017	N/A	N/A	Water Ops reported a water main break. 18 homes without water service. Repairs are being made as quickly as possible. No info provided as to any impact to MS4. No further action.
20170908_1	9/8/2017	other (explain)	No	Yes	No	Yes			staff referral		visual recon		other (explain)	other (explain)	N/A	other (explain)	N/A	9/8/2017	N/A	N/A	Vehicle accident reported by Police to PW. RPD CAD Call log #: A17090743. No spill/illicit discharge. Traffic control during wreck removal process. IDDE responded to the vehicle accident involving a roof tar tanker truck and trailer. The vehicle had lost brakes down an off-ramp slope and bailed into a wooded area. There was concern that there was stormwater conveyance structures in the vicinity and the truck may have leaked some product. Investigation confirmed no release and the vehicle was removed and hauled away without incident. No further action.

20170908_2	9/8/2017	One-time spill	No	No	No	Yes			ERTS#:	675645	other (explain)		other (explain)	construction	N/A	no action needed	no action needed	9/8/2017	N/A	N/A	Found out about incident via ERTS notification from Ecy, water meter break discharging 500 gallons of municipal water into storm conveyance
20170911_1	9/11/2017	intermittent	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		food waste/oil	commercial	restaurant	education/technical assistance	penalty or fine	9/14/2017	N/A	N/A	While following up on recent IDDE issues at a multitenant facility IDDE observed food waste contamination within the private stormwater conveyance system. IDDE required property management to clean the contaminated structures. Issues remain an ongoing problem at this location.
20170911_2	9/11/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	business inspection	675717	visual recon		other (explain)	industrial	N/A	add or improve source control BMP	penalty or fine	9/18/2017	N/A	N/A	A facility under ISGP oversight was inspected by LSC and was found to have had a hydraulic oil spill from an indoor generator several weeks ago. IDDE was notified and investigated. The oil had flowed under an exterior door to pavement and into the facilities stormwater system. There was staining on the asphalt pavement and residual sheen inside the storm manhole. IDDE instructed facility management to self-report the incident to Ecology even though weeks had elapsed, and required the impacted asphalt and storm system to be cleaned thoroughly. IDDE requested the facility install secondary containment in the generator room to minimize the risk of similar incidents in the future.
20170911_3	9/11/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other agency referral		visual recon		food waste/oil	commercial	restaurant	no action needed	N/A	9/12/2017	N/A	N/A	A voice message to IDDE personnel office phone from someone self-described as working with "food safety" in Snohomish County expressed concern about this food establishment dumping used cooking oil into the multi-tenant location's stormwater conveyance system. The storm system was inspected the following day and no signs of oil dumping were observed. Calls to the phone number given by the concerned party seeking additional info were unsuccessful. No further action.
20170918_1	9/18/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	vehicle	N/A	education/technical assistance	verbal notice	9/18/2017	N/A	N/A	Concerned citizen reported a group of "homeless" people parked in the City ROW next to her workplace and was concerned about one of their vehicles leaking oil among other things. The oil leak concern was forwarded to IDDE for follow up. IDDE was assessing the downstream MS4 for any signs of oil when a number of police arrived to interact with the multiple individuals with multiple vehicles parked in the business park area of Redmond. Police ascertained that the group would be leaving by the end of the day. I did observe some oil drips under one of the vehicles and requested that owner place cardboard under the engine to capture any leaks. No further action.

20170920_1	9/20/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		sediment/ soil	none found	N/A	problem not abated (explain)	N/A	9/22/2017	N/A	N/A	City contracted environmental consultants observed high turbidity in a stormwater pond and reported it to IDDE via their project manager. Investigation confirmed high turbidity and two adjacent construction projects. Storm conveyance from the much larger of the two projects to the pond was completely devoid of turbid water. That and other factors led IDDE to believe that project was not the source. The other project had no storm conveyance connection to the pond and would have had to pump directly over ground to it to dewater any turbid water. There was no evidence of this occurring. Subsequent inspections observed no additional turbidity inputs. Source of initial turbidity not identified, no further action.
20170921_1	9/21/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		vehicle fluids	commercial	fueling	behaviour modification	written warning	9/29/2017	N/A	N/A	A former Redmond field employee called IDDE to report a sheen issue at the Redmond Costco fuel station. A Costco employee was observed using absorbent pads to clean or soak up accumulated water in the fuel station's UST spill buckets. The person cleaning the spill buckets would place the used pads on the ground resulting a little sheen where each one was placed. IDDE contacted Costco management and they agreed to retrain their employees on how to clean the fuel port spill buckets.
20170925_1	9/25/2017	other (explain)	Yes	Yes	No	Yes	N/A	N/A	ERTS#:	676065	visual recon		other (explain)	industrial	N/A	add or improve source control BMP	penalty or fine	10/2/2017	N/A	N/A	An ERTS was forwarded to IDDE that involved the EPA receiving a tip that seemed related to a recent hydraulic fluid spill at a facility under ISGP oversight. IDDE investigated and found the facility's storm manhole that was previously impacted was re-contaminated with residual emulsified petroleum. There was some concern on the part of IDDE that the previous fluid spill may have also entered into the roof drain downspout next to the building that would tie into the any footing drains and the into the manhole. IDDE requested the facility jet rod the roof drain line, otherwise each subsequent rain event could residually re-contaminate the storm system with oil. No further action.
20170925_1	9/25/2017	one-time spill	Yes	Yes	No	Yes	N/A	N/A	pollution hotline	676083	visual recon		vehicle fluids	commercial	other (explain)	other (explain)	penalty or fine	9/26/2017	N/A	N/A	Hotline call from local business alerted IDDE to a diesel spill at a multitenant facility. IDDE investigated and found that a delivery semi-truck and trailer had scrapped the side saddle fuel tank on the ground while entering the facility and the tank started to leak. The driver attempted to put down absorbents and rags etc. to keep the diesel from entering the storm drains but was not successful. IDDE provided technical assistance and worked with the trucking company responders to mitigate the spill. IDDE required the storm system to be vactored and the trucking company to self-report to Ecology.EMD incident number:173737

20170927_1	9/27/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	commercial	other (explain)	add or improve source control BMP	verbal notice	9/27/2017	N/A	N/A	While responding to a separate incident IDDE observed a seafood cold storage company that had deposited ice shavings on/near a storm drain. IDDE had discussed this activity in previous years and verified the company's capacity to melt this ice inside their facility. IDDE contacted management and reminded them of their potential fish contaminated ice melt into their storm system was a code violation. The management agreed and retrained their employees on stormwater BMPs. They are tenants in a facility under an ISGP and should be following the pollution prevention practices identified in the SWPPP.
20170927_2	9/27/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	industrial	N/A	add or improve source control BMP	verbal notice	10/11/2017	N/A	N/A	IDDE observed non-compliant product storage practices at an organic liquid fertilizer facility. Jointly inspected the facility with Redmond LSC/Wellhead Protection staff in order for company to implement required storage BMPs to minimize illicit discharge threat. SOPs were reviewed and implemented in accordance with Redmond code.
20170927_3	9/27/2017	one-time spill	No	Yes	No	Yes			other (explain)		visual recon		other (explain)	construction		other (explain)	verbal notice	9/27/2017			Development Inspector called IDDE Hotline to report contractor had damaged a sewer line at a private construction site and that wastewater was leaking into a construction related trench. No impact to storm and in WPZ 4. Repairs are underway.
20170927_4	9/27/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		paint	commercial	mobile business	add or improve source control BMP	verbal notice	9/28/2017	N/A	N/A	Incidental IDDE and LSC observation of outdoor storage of a pallet of paint cans and a rusted and leaking dumpster at a water damage restoration company business location. The City worked with company management to have them store the paint inside until proper disposal and contact Waste Management to have their dumpster replaced. No further action.
20171002_1	10/2/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		vehicle fluids	commercial	other (explain)	other (explain)	N/A	10/2/2017	N/A	N/A	IDDE was alerted via email of an incident at a facility under ISGP oversight that involved a forklift that leaked hydraulic fluid. The facility quickly applied absorbent and cleaned up the material. No further action.
20171002_2	10/2/2017	one-time spill	No	No	No	Yes	N/A	N/A	other public report		visual recon		other (explain)	commercial	other (explain)	behaviour modification	verbal notice	10/19/2017	N/A	N/A	A concerned citizen notified the City via Tweeter (not a conventional IDDE issue reporting option for Redmond) of a vehicle repair business washing a car at a multitenant facility and allowing the washwater to discharge to a storm drain. IDDE and LSC performed a joint site visit to explain the code requirements related to businesses washing vehicles. Outreach was provided and the business agreed to cease washing vehicles at their facility.
20171004_1	10/4/2017	intermittent	No	Yes	No	Yes	N/A	N/A	business inspection		visual recon		dumping/ trash	commercial	other (explain)	add or improve source control BMP	written warning	10/16/2017	N/A	N/A	LSC staff on a Technical Assistance site visit observed an IDDE related compactor leak issue. LSC followed up with the business under that program, requiring them to clean up the impacted impervious area next to the compactor and requiring repair of the unit. The business cleaned the area and are not using the unit pending replacement in 2018.

20171006_1	10/6/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	10/7/2017	N/A	N/A	A Parks Dept. employee reported to IDDE a broke down van in a park parking lot that had leaked what appeared to be motor oil on the pavement. IDDE investigated and confirmed the oil leak issue. The vehicle owner was not present, an IDDE business card was left on the vehicle explaining the situation and that the vehicle owner needed to deal with the vehicle without causing additional fluids to spill. City personnel proceeded to deploy absorbent and utilize a sweeper to collect it. The vehicle was gone the next day with no additional leaked fluid. No further action.
20171006_2	10/6/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		cement/concrete	construction	N/A	other (explain)	verbal notice	10/9/2017	N/A	N/A	A Parks Dept. employee reported to IDDE a spill of white substance in a City ROW. IDDE investigated and found that the substance was dried, kind of dusty concrete slurry associated with a nearby hotel construction project. IDDE spoke with the assistance project superintendent and he had a sweeper clean up what could be collected. No further action.
20171006_3	10/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	other (explain)	N/A	other (explain)	N/A	10/6/2017	N/A	N/A	During a separate incident response IDDE was alerted to an abandoned metal bucket of roof sealant that was left on Parks Dept. property. IDDE requested that the material be delivered to the City's operations facility where other materials are staged for eventual "hazmat" disposal. No further action.
20171009_1	10/9/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	commercial	mobile business	add or improve source control BMP	verbal notice	10/9/2017	N/A	N/A	During follow up on a separate incident IDDE observed commercial pressure washing taking place without required BMPs. Work was halted and company management contacted. Work resumed when BMPs were in place. No further action.
20171009_2	10/9/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		cement/concrete	commercial	mobile business	other (explain)	verbal notice	10/9/2017	N/A	N/A	During follow up on a separate issue IDDE observed a worker dumping discolored liquid from a bucker into a private storm drain. Investigation determined that concrete flat work was being performed for a tenant improvement project in an adjacent building. The contractor was alerted and stated that he didn't realize his employee was going to dump concrete sanding wastewater outdoors. IDDE required the impacted storm drain to be cleaned. No further action.
20171009_3	10/9/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		not identified	commercial	other (explain)	problem not abated (explain)	verbal notice	N/A	Ongoing	N/A	Unlabeled metal drum observed during investigation of separate IDDE incident. Some question as to what the drum contains, property lines, ownership, and responsibility. Compliance determination and responsibility is ongoing at this time.
20171009_4	10/9/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	676394	visual recon		sediment/soil	public entity	N/A	other (explain)	N/A	10/9/2017	N/A	N/A	A water main break occurred over a weekend causing street damage and discharge to the MS4. City personnel performed the necessary repairs, MS4 cleaning, and reported the incident to Ecology as required under section G3 of the NPDES permit. No further action.

20171010_1	10/10/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	10/10/2017	N/A	N/A	IDDE observed a trail stain in the ROW on the way to investigate a separate issue. Checked later as rain began and minimal sheen was produced by the trail stain. No further action.
20171010_2	10/10/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		soap/detergent	commercial	restaurant	education/technical assistance	verbal notice	10/10/2017	N/A	N/A	IDDE observed sudsy water on the pavement near the dumpster enclosure area of a restaurant. Manager contacted and notified of the code requirement prohibiting non-stormwater discharges to the ground or stormwater conveyances. Manager denied responsibility and showed functional mop sink for wash wastewater disposal. Manager stated would review CCTV footage when time allowed to determine potential responsible party and pass the info along.
20171012_1	10/12/2017	one-time spill	Yes	Yes	No	Yes	N/A	N/A	pollution hotline		other (explain)		other (explain)	industrial	N/A	other (explain)	N/A	11/6/2017	N/A	N/A	Industrial site under ISGP oversight undergoing construction project. Incorrect valve on temporary tank failed and caused a spill of 50% sulfuric acid onto exposed soil. No discharge to storm conveyance. Clean Harbors contracted for environmental cleanup. Company HSE personnel notified Redmond Hotline a day after the incident. Post incident meeting included Redmond Fire Dept. and a request for immediate 911 and Hotline call for future incidents.
20171012_2	10/12/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		none found	commercial	mobile business	education/technical assistance	N/A	10/18/2017	N/A	N/A	Field employee notified IDDE of residential landscaping project with deficient erosion BMPs. IDDE investigated and observed no turbid discharge associated with the project. At the time the field employee observed the potential non-compliance they had taken the initiative to explain the code requirements to the landscape contractor, when IDDE arrived the contractor was not present but no violations were observed. No further action.
20171019_1	10/19/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	vehicle	N/A	education/technical assistance	N/A	10/19/2017	N/A	N/A	Local business called hotline to report people living out of a car in their multi-tenant business park parking lot and that the car produced some sheen when it rained. The business was instructed to apply absorbents (but no degreaser) to contain the sheen and then collect them for disposal as well as work with property management and/or police to address people living out of the vehicle. IDDE did not observe the issue, stormwater conveyance infiltrates at the location.
20171025_1	10/25/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	ERTS#:	675287	visual recon		none found	other (explain)	N/A	other (explain)	N/A	10/25/2017	N/A	N/A	ERTS reported forwarded to Redmond IDDE for investigation. Forwarded to LSC for initial site visit which revealed no environmental compliance concerns. No further action.
20171102_1	11/2/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		none found	other (explain)	N/A	other (explain)	N/A	11/2/2017	N/A	N/A	Waste Management called Hotline to report what a driver believed to be paint spilled on a City street. IDDE investigation confirmed that the yellow substance was tree pollen. No further action.

20171106_1	11/6/2017	one-time spill	Yes	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		vehicle fluids	commercial	other (explain)	other (explain)	verbal notice	12/15/2017	N/A	N/A	Citizen called Hotline to report a diesel sheen on pavement at a building supply company's pickup/delivery yard. IDDE investigation revealed a "mobile" fueling station had been established at the facility. The fuel station consisted of a 748-gallon UST for diesel (Associated Petroleum Products), a cube tote for diesel exhaust fluid, and a 55 gallon drum of what appeared to be hydraulic fluid. The sheen on the pavement was barely visible but absorbents the company had available were required to be deployed. No impact to the private storm system, which discharged to an adjacent creek, not Redmond's MS4. A far as the fuel station, it was determined that Fire permits had not been obtained which would have allowed for appropriate review. The company ultimately decided to not to pursue the permits and removed the fuel station.
20171106_2	11/6/2017	intermittent	Yes	Yes	Yes	Yes	Yes	Yes	other (explain)	677752	dye testing		other (explain)	commercial	retail	other (explain)	written warning	N/A	Ongoing	N/A	During response and investigation of separate IDDE incident a floor drain in a drywall supply warehouse was identified as potentially an illicit connection. Investigation dye test confirmed illicit floor drain connection. Working with business to rectify the code violation.
20171106_3	11/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	business inspection		visual recon		cement/concrete	industrial	N/A	add or improve source control BMP	verbal notice	2/23/2018	N/A	N/A	LSC business inspection observed process water handling concerns at concrete testing business within a business park. Concrete process washwater would settle fines out in a trough in a loading dock with infiltration stormwater conveyance. The loading would periodically flood with rainwater and the trough would overflow as well. Employees would then use a pump to drain the loading dock into a nearby catch basin that also conveys stormwater to an infiltration gallery. LSC forwarded the issue to IDDE for follow-up. IDDE required the business to develop and follow an SOP that settled out the fines, neutralized the pH, and compliantly discharged to the facilities sanitary sewer system.
20171106_4	11/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		paint	commercial	other (explain)	education/technical assistance	verbal notice	11/6/2017	N/A	N/A	LSC staff observed buckets of paint stored outside of City Hall in the loading dock area and alerted IDDE. IDDE documented the issue and requested LSC contact building management to request that the material be properly stored or disposed of. No further action.

20171106_5	11/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		sediment/ soil	commercial	mobile business	add or improve source control BMP	verbal notice	11/6/2017	N/A	N/A	Stormwater maintenance field employees observed residential landscaping company with large dirt pile in City ROW with no required erosion BMPs in place. The field employees alerted the IDDE Hotline. IDDE personnel were tied up with the day's previous four IDDE issues and requested that the senior stormwater employee make contact to explain code requirements and applicable BMPs to the landscaper and potential consequences for non-compliance. By the time IDDE arrived just before dark the landscaper was not present but the exposed dirt pile had been removed and silt socks were in place. As requested, the landscaper obtained a City business license.
20171106_5	11/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	commercial	mobile business	add or improve source control BMP	verbal notice	11/6/2017	N/A	N/A	Field staff observated pressure washing without required BMPs and alerted IDDE. IDDE Instructed contractor to cease sidewalk cleaning until silt socks were in place. IDDE verified complaince later the same day.
20171109_1	11/9/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	commercial	N/A	other (explain)	N/A	11/9/2017	N/A	N/A	A local auto repair business called a Redmond LSC contact to report that a car towed into their lot was leaking antifreeze onto the pavement. LSC forwarded the issue to IDDE. Before IDDE could respond the auto repair company had deployed spill kit materials and verified no impact to storm drains. IDDE requested the business report spills to Redmond's Hotline in the future for spill and incidents that require a timely response. No further action.
20171113_1	11/13/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		dumping/ trash	commercial	other (explain)	other (explain)	N/A	11/13/2017	N/A	N/A	An employee that manages solid waste and food recycling observed a Waste Management truck leak a small amount of leachate out of the back of the vehicle onto the City Hall loading dock area during collection. The employee alerted IDDE and Waste Management personnel at the same time. IDDE investigated and found little if any evidence of the leak. Waste Management personnel stated that the vehicle had been flagged for inspection and repair. No further action.
20171113_2	11/13/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		dumping/ trash	construction	N/A	other (explain)	N/A	11/15/2017	N/A	N/A	Concerned resident called Hotline to report concerns related to a single-family house being demolished for a new house to be constructed. The caller's concern was that the workers were taking debris from the construction waste/demolition dumpster and burying it onsite. IDDE investigated initially to determine if compliant erosion BMPs were in place and no other stormwater concerns were present. After no IDDE concerns were identified the case was forwarded to Redmond's Planning/Development Inspectors for investigation and follow-up.
20171115_1	11/15/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other public report		visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	11/15/2017	N/A	N/A	Genie directly emailed Redmond IDDE and LSC personnel about a sheen from a supplier truck at their South Campus location. Genie employees deployed absorbents at their facility to clean the sheen and Redmond personnel responded to check on any ROW sheen cleanup needs. No further action.

20171115_2	11/15/2017	intermittent	Yes	Yes	Yes	Yes	N/A	N/A	other public report	677269	visual recon		vehicle fluids	commercial	fueling	other (explain)	penalty or fine	11/28/2017	N/A	N/A	Citizen called Public Works general inquiry phone number to report a sheen concern and the issue was forwarded to Redmond IDDE for follow up. Investigation revealed some sheen at the APP cardlock fueling facility with some petroleum (diesel) visible in both fuel pad storm drains that flow to the API O/W separator vault and also the facility's stormwater flow control manhole. Stormwater from the fuel dispensing pad area flows through the API vault and then into the stormwater control manhole. IDDE called the posted emergency phone number and explained the situation and requesting cleaning. APP stated that they would hire a contractor to suck up the sheen and clean the impacted areas. This site has chronic ongoing issues with customers overfilling or dripping diesel. The fueling area is not covered so rainfall mixes with spilled fuel and flows to the API vault and control structure. With no onsite attendant to clean up spills immediately sheens become regular illicit discharges.
20171116_1	11/16/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	other (explain)	677328	visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	11/16/2017	N/A	N/A	IDDE incidental observation of diesel sheen of unknown source in intersection. Raining at the time and the sheen was tracked in multiple directions for short distances. Rain caused some sheen to enter MS4. Public Works personnel applied absorbent and recovered with street sweeper while Police directed traffic. Sheen was not observed exiting into downstream ditch that discharges to small creek.
20171117_1	11/17/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		other (explain)	commercial	other (explain)	add or improve source control BMP	verbal notice	11/17/2017	N/A	N/A	IDDE incidental observation of kitty litter absorbent on what appeared to be a recent diesel fuel spill under a semi-trailer reefer unit fuel tank at a grocery store. IDDE spoke with the manager and he stated that cleanup would take place. IDDE checked the next day and found additional absorbent on the stain area under the fuel tank but it had not been swept up. As pending rainfall was a concern IDDE alerted the manager which had the absorbent swept and stated that they were working with the fuel delivery company to modify/improve refueling practices to prevent future drips onto the asphalt.

20171120_1	11/20/2017	intermittent	Yes	Yes	Yes	Yes	N/A	N/A	other (explain)	677552	visual recon		sediment/ soil	construction	N/A	add or improve source control BMP	stop work order	11/21/2017	N/A	N/A	On 11/20/2017 Redmond IDDE observed turbid water flowing down street gutter while driving. Unable to stop at that time IDDE returned about an hour later to investigate. While any turbid discharge had ceased there was still signs of the discharge in a downstream public stormwater pond. The quantity, nature of, and the source was not understood well enough at that time to notify Ecology under G3/NPDES. IDDE determined that a possible source was a nearby construction project. A quick inspection revealed deficient TESC BMPs and a posted Stop Work order issued by a Redmond Private Construction Inspector. Communication between the City Inspector and a representative of the construction company, People Infra LLC. The Stop Work order had been posted due to the failure to submit a required Wet Weather Plan for review and approval prior to commencing clearing and grading activities. Construction reps were actively working on BMPs at that time (covering piles, straw deployment, etc.) as allowed under the Stop Work Order. Later IDDE research concluded that this company, People Infra had been responsible for an egregious lack of TESC BMPs in 2016 at a single family residence project under the oversight of Redmond Building Inspectors (see ERTS# 662729). On 11/28/2017 IDDE observed and documented turbid discharge of greater than 999 NTUs leaving the site onto a neighboring property to the South and flowing down that driveway into Redmond's ROW and MS4. Some additional BMPs had been deployed but no one was onsite at the time. Heavy precipitation was occurring at the time. Escalation of enforcement/Notice and Order w/ penalty on the part of IDDE may be a consideration if concerns are not adequately addressed. It is possible that there is a pattern of willful negligence on the part of this construction company. The compliance oversight for this construction project has been forwarded to Development Services Construction Services.
20171120_2	11/20/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	677372	visual recon		other (explain)	public entity	N/A	other (explain)	N/A	11/20/2017	N/A	N/A	City maintenance crew performing asphalt repair patch had equipment malfunction causing asphalt release agent to leak onto the ground at job location. Spill cleaned up without discharge to storm drainage. After equipment brought back to City maintenance facility to await repairs it was later discovered that there had been some drips in the yard area causing sheen from the release agent. Cleanup was performed again with absorbent and sweeper truck but a small amount of release agent had entered a storm drain.

20171120_3	11/20/2017	other (explain)	Yes	Yes	Yes	Yes	N/A	N/A	staff referral	677364	visual recon		sediment/ soil	construction	N/A	no action needed	other (explain)	11/20/2017	N/A	N/A	City construction project to install stormwater bypass. Heavy rainfall occurring - City maintenance crew observed turbid water discharging from the project into MS4 roadside ditch and notified Redmond IDDE. Arrived and located discharge point. Measured 400 NTU, and a short time later (14:52) 277 NTU indicating improvement. Spoke w/ project Water Resource Analyst from Otak at that time and he indicated that there was a stormwater general construction permit for the project. It was passed along to him that the project or project CESCL should report the turbidity exceedance to 425-649-7000 and work to address BMP deficiencies. A quick search for their project WAR# in PARIS was unsuccessful.
20171121_1	11/21/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	public entity	fueling	other (explain)	N/A	11/21/2017	N/A	N/A	Parks Dept. employee reported fuel sheen at the Redmond yard fuel island. The dispenser pad is connected to sanitary but some of the sheen was beginning to mobilize with windblown rainfall. The employee utilized the available spill kit supplies by applying absorbent and sweeping it up. Operations employees reminded to clean up sheen at the fuel island.
20171122_1	11/22/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		dumping/ trash	multifamily	N/A	education/technical assistance	N/A	12/19/2017	N/A	N/A	Hotline contacted by anonymous caller reporting garbage around dumpster at multi-family apts. IDDE investigated and found an old couch, chair, bed frame, bike, etc. No immediate threat to stormwater quality. Issue forwarded to Redmond Solid Waste outreach personnel for follow up.
20171130_1	11/30/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		not identified	other (explain)	N/A	no action needed	N/A	12/4/2017	N/A	N/A	Redmond Code Enforcement received and forwarded a condo resident complaint concerning construction related silica dust. IDDE investigated and observed neither construction nor dust of any kind at the address indicated. No further action.
20171130_2	11/30/2017	one-time spill	Yes	Yes	Yes	Yes	N/A	N/A	pollution hotline	677624	visual recon		vehicle fluids	vehicle	N/A	other (explain)	N/A	11/30/2017	N/A	N/A	Redmond field employee observed a sheen in City right of way and notified Public Works maintenance personnel. Maintenance personnel identified impacted ROW applying sand and absorbent, then recovering material with City sweeper. The vehicle that may have caused the issue was identified as a private pick-up truck and was parked at a repair shop near the where the incident occurred. There may have been some residual sheen discharge to the MS4. No further action.
20171204_1	12/4/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		not identified	source not identified	N/A	other (explain)	N/A	12/4/2017	N/A	N/A	Redmond employee reported non-contiguous sheen “burbs” floating down the Sammamish River seen from the trestle bridge. IDDE investigated and confirmed the phenomena. IDDE investigated upstream at each outfall in an attempt to pinpoint a source. The sheen burps were no longer visible about a half mile upstream. Source not identified and sheen dissipated. No further action.

20171206_1	12/6/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		natural source	other (explain)	N/A	N/A	N/A	12/15/2017	N/A	N/A	Stormwater maintenance field staff reported unusual substance in a manhole as they were performing permit required inspections. IDDE was alerted and investigation determined that material was broke down aquatic vegetation. The only input to the manhole is from a large manmade pond at a condo complex. There have been observations of the tips of this type of aquatic plant breaking off their tips off during certain seasons. The manhole does not convey any public stormwater. No further action.
20171206_2	12/6/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	construction	N/A	other (explain)	verbal notice	12/6/2017	N/A	N/A	Field employees notified IDDE of a pile of soil in the middle of a busy pubic ROW. IDDE investigated and found a small pile of dirt in a left had turn lane. City PW operations personnel were flagging traffic around the dirt. It was determined that the soil had come from an unsecure tailgate of a dump truck hauling soil to Cadman from a large nearby construction site. The site was being excavated and trucks with pony trailers were passing by the location every few minutes. IDDE notified the City construction inspector for that project and he had the site superintendent shovel the pile up and ran a sweeper. No further action.
20171208_1	12/8/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	pollution hotline		visual recon		allowable discharge	public entity	N/A	other (explain)	N/A	12/8/2017	N/A	N/A	City employee reported a car fire on private property to the Hotline that the Fire Dept. responded to. IDDE and LSC responded. A food delivery fan had an open flame set-up to keep food warm, and this system had caught the vehicle on fire. Residual firefighting effluent had entered the private storm drain that infiltrates. The incident took place within Redmond's primary wellhead protection zone. IDDE required the impacted storm drains to be cleaned. The property owner contracted the cleaning company and billed the catering company. No further action.
20171214_1	12/14/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		sediment/ soil	construction	N/A	add or improve source control BMP	verbal notice	12/14/2017	N/A	N/A	A Redmond field employee reported turbidity in the MS4 and IDDE investigated. The nature of the storm system (channeled manholes w/o sumps in traffic lanes) made it difficult to visually trace the issue to the source. However, a large project upstream that was dewatering a large excavation was also drilling deep piling holes and backfilling with CDF gravel. The shade of turbidity was consistent with CDF fines. It was speculated that at one point during drilling CDF fines migrated into where groundwater was being pumped offsite into the MS4. By the time IDDE had identified this possible source, the last piling had been completed and the dewatering was verified to have no turbidity issue. The thousands of gpm flow rate quickly cleared the system and made it very unlikely to absolutely confirm or deny the responsible party. No further action.

20171215_1	12/15/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		not identified	source not identified	N/A	other (explain)	N/A	12/15/2017	N/A	N/A	A Redmond field employee reported a sheen on a MS4 stormwater pond. IDDE investigated and determined the sheen was very residual in nature and the pond inflow pipes and storm system showed no evidence of sheen. No absorbents deployed on the pond due to the de minimus nature of the sheen that was mostly visible between pond vegetation. No further action.
20171218_1	12/18/2017	one-time spill	Yes	Yes	Yes	Yes			pollution hotline		visual recon		vehicle fluids	source not identified		other (explain)	other (explain)	12/18/2017			Parks Dept. personnel called Hotline to report sheen in the Perrigo Park parking lot. Source not identified. Parks applied absorbent. Public Works used sweeper and vactor to clean impacted impervious area and stormwater conveyance.
20171219_1	12/19/2017	other (explain)	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		other (explain)	not identified	other (explain)	no action needed	N/A	12/20/2017	N/A	N/A	Field staff observed elevated turbidity in conveyance ditch and reported it to IDDE. Next day investigation observed only barely perceptible turbidity. Turbidity possible from recent precipitation. No source identified.
20171219_2	12/19/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	other (explain)		visual recon		cement/concrete	construction	N/A	add or improve source control BMP	penalty or fine	12/28/2017	N/A	N/A	During a multifamily construction project sprinkler system confidence test, IDDE observed evidence that at some point it appeared that concrete washwater had been discharged to the new private storm system. Residual concrete was obvious in the bottom of the pipes. IDDE required the construction project management to vactor and jet the impacted structures and the concrete subcontractor was notified of the violation.
20171219_3	12/19/2017	one-time spill	No	Yes	No	Yes			pollution hotline		visual recon		other (explain)	commercial	mobile business	other (explain)	verbal notice	12/21/2017	N/A	N/A	Redmond employee and resident arrived home to find neighbor's landscaper had a piece of equipment leak fuel onto ground from faulty cap and parked on extreme slope. Employee called Spill Hotline and Standby employees responded. Absorbents applied to storm drain contamination. Redmond IDDE followed up with verbal warning about adequate spill kit available and other BMP's.
20171221_1	12/21/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		paint	commercial	mobile business	behaviour modification	verbal notice	12/21/2017	N/A	N/A	Redmond employee while walking to lunch observed that a paint contractor had a paint bucket holder detach from the bucket truck bucket and fall to the sidewalk below them, spilling latex paint on the ground. The employee took the initiative to explain to the paint contractor as they were preparing to hose the paint off of the sidewalk that they would violate code if it were to discharge to the storm system. The employee notified IDDE via the City's general phone number and IDDE investigated. IDDE explained the code to the contractors and their management the complaint options to clean up the spill.

20171222_1	12/22/2017	one-time spill	No	Yes	No	Yes			pollution hotline		visual recon		vehicle fluids	vehicle	N/A	add or improve source control BMP	verbal notice	12/22/2017	N/A	N/A	Parks Maintenance supervisor called IDDE Hotline to report sheen in City owned parking lot adjacent to a Parks' facility. IDDE investigated and confirmed motor oil was dripping from a parked vehicle. Sheen had entered the two parking lot storm drains but was contained within the system by a baffle tee, preventing down system contamination. Absorbents were deployed. Additional investigation determined that the vehicle belonged to an employee of a auto parts business adjacent to the parking lot. A drip pan was placed under the vehicle and the vehicle owner stated that they would drive their other vehicle to work in the future until the oil leak was repaired. A private vactor truck was onsite for a Parks project and agreed to clean the impacted parking area and storm drains.
20171226_1	12/26/2017	other (explain)	No	No	No	Yes	N/A	N/A	pollution hotline		visual recon		none found	other (explain)	N/A	other (explain)	N/A	1/12/2018	N/A	N/A	Anonymous caller to Hotline reported that a mobile mechanic continually works on vehicles behind an Overlake auto parts store. The caller stated that drips and spills of vehicle fluids were a regular occurrence and was allowed to take place with the permission of the parts store manager. IDDE and LSC investigated and found zero evidence of what was described in the Hotline call. Parts store management indicated that the call was likely from a disgruntled employee recently let go. No further action.
20171226_2	12/26/2017	one-time spill	No	Yes	No	Yes	N/A	N/A	staff referral		visual recon		vehicle fluids	public entity	N/A	other (explain)	N/A	12/26/2017	N/A	N/A	Redmond operations yard reported minor hydraulic fluid leak from a snow plow vehicle. The fluid volume was small, but tracked around the damp yard making it seem more of a larger issue. Crews applied absorbent and used to sweeper to collect the material. No further action.

City of Redmond

NPDES Annual Report Covering 2017

Attachment 6:

Stormwater-Related Reports

In 2017, the City of Redmond completed an *On-site Stormwater Management Business Case Analysis Report*. The following contains the main body of this report. The report is supported 13 technical memos, which when combined to within the report make the document too large to download as part of the NPDES annual report submittal. The memos are available by going to www.redmond.gov/lid or by contacting Peter Holte at 425-556-2822, pholte@redmond.gov.

City of Redmond

ON-SITE STORMWATER MANAGEMENT BUSINESS CASE ANALYSIS

FINAL REPORT
AUGUST 2017

Washington
7525 166th Avenue NE, Ste. D215
Redmond, WA 98052
425.867.1802

Oregon
4000 Kruse Way Pl., Bldg. 1, Ste 220
Lake Oswego, OR 97035
503.841.6543

www.fcsgroup.com

This entire report is made of readily recyclable materials, including the bronze wire binding and the front and back cover, which are made from post-consumer recycled plastic bottles.

FCS GROUP
Solutions-Oriented Consulting

<This Page Intentionally Left Blank>

TABLE OF CONTENTS

Table of Contents 1

Section I. Executive Summary 2

Section II. Introduction 6

Section III. BCA Process 8

III.A. Goal Setting 8

III.B. Scenario Development 9

III.C. Criteria and Measurement 10

Section IV. BCA Results 13

IV.A. Results 14

IV.B. Discussion of Results 14

Section V. Conclusion 17

Appendix A: Technical Memorandum 18

Appendix B: Cost Model 19

Appendix C: Detailed Scenario Results 20

No Infiltration Scenario 21

100% Infiltration at ½ the Sites Scenario 22

91% Infiltration Scenario 23

100% Infiltration Scenario 24

Section I. EXECUTIVE SUMMARY

The Western Washington Phase II Municipal Stormwater Permit requires development to manage stormwater runoff on-site, where feasible. When this new stormwater requirement was initiated, Redmond City Council directed staff to study the impact of this new requirement to development in Downtown and Overlake. Both neighborhoods are designated regional growth centers and are planned to accommodate dense urban development to meet the City's growth targets.

To accomplish this, the City conducted a Business Case Analysis comparing different levels of on-site stormwater management for new development and redevelopment in the Downtown and Overlake areas. This Business Case Analysis is a goal-oriented, transparent, and repeatable process that best links City goals to tangible policy decisions. The process has four main parts, discussed in further detail below.

Identifying Goals.

The study goals link directly back to the City's objectives and acknowledge social, economic, and environment considerations. These include:

- ***Goal #1: Protect human health and safety by managing system capacity and well water supply***
- ***Goal #2: Help meet development goals for Overlake and Downtown through cost effective, predictable, permit compliant regulations***
- ***Goal #3: Maintain or increase environmental protection through stormwater management***

Determining Viable Alternatives.

With these goals in mind, staff developed four viable analytical scenarios for consideration in the Business Case Analysis:

- **No Infiltration:** Developments in the Downtown and Overlake areas determine that roof infiltration is infeasible and do not infiltrate any stormwater from their roofs. This would result in all stormwater runoff entering the public stormwater conveyance system. This scenario reflects a lower level of roof infiltration than has occurred with new development prior to the new Ecology standards.

- **100% Infiltration at Half of Sites:** Half of the developments in Downtown and Overlake with good soils infiltrate all of the runoff generated by their roofs. The other half determines that stormwater infiltration is infeasible. This scenario is most similar to the state of stormwater infiltration in new developments as occurred prior to the new 2017 Ecology standards.

- **91% Infiltration:** Developments with good soils in Downtown and Overlake implement cost-effective on-site stormwater management, infiltrating 91% of the runoff generated by their roofs.

- **100% Infiltration:** All development with good soils in Downtown and Overlake infiltrate all of the stormwater runoff generated by their roofs. This results in the least amount of stormwater entering the City's stormwater conveyance system.

Establishing Evaluation Criteria.

The project team developed the following criteria to provide the basis for differentiating and evaluating the scenarios described above. All criteria relate directly back to a goal.

- **Well Shut-Off Potential Increase (Goal #1):** The City relies on wells located in the Downtown area to help meet its water supply needs. A reduction in on-site infiltration would negatively impact these wells, as there would be less groundwater to recharge them.

- **Regional Flow Control & Flood Protection (Goal #1):** The City's stormwater conveyance system must have adequate capacity to convey runoff to regional facilities. Less on-site stormwater management results in more runoff to convey, increasing flooding frequency and requiring greater capital investments in conveyance capacity.

- **Private Infiltration System Costs (Goal #2):** Infiltration of roof runoff requires the construction and ongoing maintenance of a private infiltration facility. Attaining higher levels of infiltration requires additional capital investments and results in increased maintenance costs.

- **Change in Market Value (Goal #2):** The need for on-site infiltration facilities can restrict the size and type of development that occurs on a specific site, potentially impacting the market value of that site.

- **Sammamish River Temperature (Goal #3):** Because it impacts groundwater levels (which are cooler than water coming from surface streets), stormwater infiltration can influence stream temperatures.

- **Stream Water Quality (Goal #3):** Stormwater runoff carries pollutants that negatively impact the environment – as a result, reducing the level of untreated runoff reduces the amount of pollution in local streams. This study includes measured copper loadings in the Redmond Way basin based on flow rates.

- **Regional Runoff Treatment Costs (Goal #3):** The cost of regional stormwater treatment increases with the volume of runoff being treated. On-site roof infiltration reduces the volume of stormwater runoff requiring treatment, resulting in cost savings.

Analyzing Options.

Staff measured how each scenario differs in the established criteria, resulting in a relative ranking of scenarios. This ranking is further broken down by lifecycle cost as well as individual criteria.

	No Infiltration	100% Infiltration @ ½ the Sites	91% Infiltration	100% Infiltration	Relative Impact
Overall Analysis Ranking	4th	2nd	3rd	1st	
Lifecycle Costs ($ Millions)	$153	$128	$137	$98	
Individual Criteria Rankings:					
Reg. Flow Control & Flood Protection	*4th*	*2nd*	*3rd*	*1st*	*High*
Regional Runoff Treatment Costs	*4th*	*3rd*	*2nd*	*1st*	*High*
Private Infiltration System Costs	*1st*	*2nd*	*3rd*	*4th*	*Low*
Change in Market Value	*1st*	*3rd*	*2nd*	*4th*	*Low*
Stream Water Quality	*4th*	*3rd*	*2nd*	*1st*	*Very Low*
Well Shut-Off Potential Increase[1]	*2nd*	*N/A*	*N/A*	*1st*	*Very Low*
Sammamish River Temperature	*2nd*	*N/A*	*N/A*	*1st*	*Very Low*

The City evaluated additional criteria. One example is the ancillary benefits of green infrastructure. This analysis focused on roof infiltration that does not have ancillary benefits like rain gardens and green roofs. In Overlake, green infrastructure will collocate in required landscaped areas.

[1] Scenarios with "N/A" were not studied further because results for first and second ranked scenarios were similar.

Under its NPDES permit, the City must require on-site stormwater management using specific measures where feasible. The results of this analysis show that a future scenario where 100% of new development and redevelopment infiltrate 100% of roof runoff in the Downtown and Overlake provides the greatest benefit to the City of Redmond. The City can realize these benefits through a combination of monitoring and policy that reduces uncertainty around on-site infiltration feasibility and encourages its development and maintenance.

Section II. INTRODUCTION

The City of Redmond (City) holds a National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit for Western Washington, which permits the City to discharge stormwater into State waters and requires the City to create and implement a Stormwater Management Program (SWMP).

As part of this program, the City must regulate the stormwater impacts of new development and redevelopment. Specifically, Minimum Requirement #5 in the Stormwater Management Manual for Western Washington requires new development and redevelopment to provide on-site stormwater management using specific measure to infiltrate roof runoff and other impervious areas where feasible[2]. Feasibility is a critical part of this requirement, as the extent to which on-site stormwater management is feasible is hard to predict.

This uncertainty complicates infrastructure planning and business development, as the City needs to understand the level of expected on-site stormwater management to adequately plan for City services. In both Overlake and Downtown, stormwater regional facilities are built or designed to treat runoff (Downtown) or control runoff (Overlake). The regional facilities have been designed with an assumed amount of infiltration occurring. The new requirement of development to have on-site stormwater management impacts the planning and assumptions of regional facilities in the urban centers.

Through policies and monitoring, the City can reduce uncertainty and better plan for future development. However, the City must determine the best level of on-site stormwater management it should manage towards (while still meeting permit requirements). To analyze this issue, the project team prepared a Business Case Analysis (BCA) that considers various on-site stormwater management scenarios for the Downtown and Overlake areas. The BCA helps determine which scenario best achieves the City's goals at the lowest cost while meeting permit requirements.

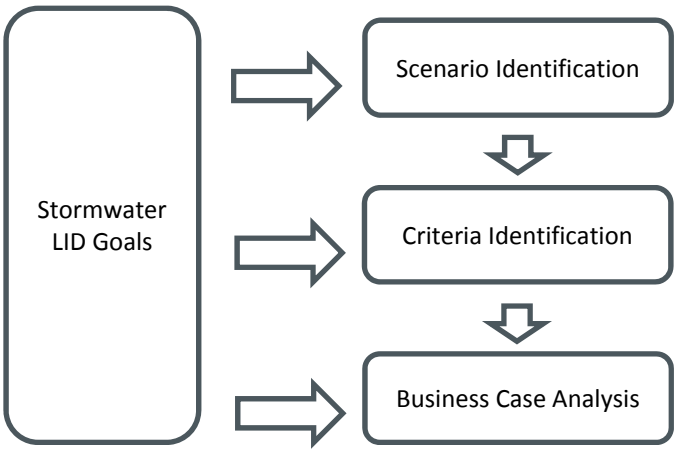
[2] Appendix I – Minimum Technical Requirements of the *Western Washington Phase II Municipal Stormwater Permit*. Last updated 16 Jan 2015. P. 20

It is important to recognize the diligence of City staff in preparing this analysis. Their work is a service to City residents, businesses, and the development community, in helping meet Redmond's goals.

Section III. BCA Process

The Business Case Analysis (BCA) process involves four steps, summarized below in **Figure III-1:**

Figure III-1: Business Case Analysis Process



The process depicted in **Figure III-1** intends to align the City's decision-making with its goals in a transparent and repeatable manner. It involves establishing goals, developing plausible alternatives and evaluation criteria, and preparing the calculations for each alternative. Throughout the process, City staff engaged with an external stakeholder group to confirm and amend the findings of this analysis. City staff would like to thank this stakeholder group for their valuable contributions to this effort.

III.A. GOAL SETTING

The City established goals for this BCA with two primary focuses;

- First, the goals should link back to the City's mission, vision, and values.
- Next, the goals should be specific enough to relate directly to the issue being addressed.

City staff developed a set of goals over two meetings and later confirmed them with the stakeholder group. The first meeting was a fact-finding workshop introducing the issue and discussing goals; the second meeting involved refining the goals. The resulting goals are as follows:

- ***Goal #1: Protect human health and safety by managing system capacity and well water supply***
- ***Goal #2: Help meet development goals for Overlake and Downtown through cost effective, predictable, permit compliant regulations***
- ***Goal #3: Maintain or increase environmental protection through stormwater management***

These goals align with a traditional triple-bottom-line analysis that considers the social (Goal #1), economic (Goal #2), and environmental (Goal #3) impacts of a decision.

III.B. SCENARIO DEVELOPMENT

The BCA involved evaluating a variety of scenarios representing unique decision points available to the City. Given the realm of possibilities, defining alternatives can be a daunting process – however, limiting the number of scenarios is important for the sake of practicality in preparing calculations, assessing results, and communicating findings. Recognizing this, City staff established requirements that all scenarios:

- ***Comply with applicable regulations, including State laws and development regulations.*** No scenario can outwardly go against any established regulations, as the City would not choose an alternative that is against the law.
- ***Establish consistent standards for the Overlake and Downtown areas.*** It is important that the methods used in the analysis are consistent for both areas in order to prevent conflicting or variant policies.
- ***Comply with the agreed upon use of regional facilities.*** Since the City has invested heavily in regional stormwater facilities, it would not choose an alternative that violates the accepted use of these facilities.
- ***Align with the City's mission, vision, and values.*** This constraint prevents consideration of options that are outwardly against City interests. For example, preventing all development in the Downtown and Overlake areas would go against the City's established strategic objectives and cannot be considered in the analysis.

The City also defined a set of variables to differentiate among the various scenarios considered. These variables include development requirements, in-lieu compliance opportunities, location of on-site stormwater management facilities, and amount of on-site stormwater management. Ultimately, the City decided that only the amount of on-site stormwater management should vary between scenarios – other changes either violated previously determined constraints or were physically infeasible by site constraints.

Resulting Scenarios

Staff originally brainstormed seven potential scenarios for analysis. After analyzing constraints and variables, the City determined that four full build out scenarios were truly viable:

- **No Infiltration:** Developments in the Downtown and Overlake areas determine that roof infiltration is infeasible and do not infiltrate any stormwater from their roofs. This would result in all roof stormwater runoff entering the public stormwater conveyance system. This scenario reflects a lower level of roof infiltration than has occurred with new developments prior to the new Ecology standards.

- **100% Infiltration at Half of Sites:** Half of the developments with good soils infiltrate all of the runoff generated by their roofs. The other half determines that stormwater infiltration is infeasible. This scenario is most similar to the state of stormwater infiltration in new developments as occurred prior to the new Ecology standards.

- **91% Infiltration:** Developments with good soils implement cost-effective on-site mitigation measures, infiltrating 91% of the annual runoff generated by their roofs.

- **100% Infiltration:** All development with good soils in the Downtown and Overlake study areas infiltrate all of the stormwater runoff generated by their roofs. This results in the least amount of stormwater entering the conveyance system.

III.C. CRITERIA AND MEASUREMENT

The criteria provide a basis for evaluating and comparing scenarios, helping City staff determine the optimal alternative. The selection process utilized three guidelines to ensure that each criterion contributes meaningfully to the decision making process.

- ***Relate directly to goals of the study.*** The criteria should help show how a specific scenario helps or hinders achievement of the goals established at the beginning of the study. All criteria should have a direct impact on goals.

- ***Vary by scenario.*** Even if a specific metric is deemed important, it does not facilitate an evaluation and ranking of scenarios if it has the same value for all scenarios. For example, traffic safety may be very important to the City but it is unlikely that car accidents will vary based on the roof runoff infiltration of new development.

- ***Be unique and mutually exclusive with other criteria.*** Criteria should not overlap, as overlapping criteria can introduce bias to the comparison of scenarios by placing excessive emphasis on a particular impact.

Of these considerations, the main driver for criteria selection in this BCA dealt with variation between scenarios. Some criteria initially deemed as important would later be shown to not vary between each scenario. From an initial criteria list of 17, seven were used for the analysis:

- **Well Shut-Off Potential Increase (Goal #1):** The City relies on wells located in the Downtown area to meet its water supply needs. A reduction in on-site stormwater management would negatively impact the City's supply wells, as there would be less groundwater to pump.

- **Regional Flow Control & Flood Protection (Goal #1):** The City's stormwater conveyance system must have adequate capacity to convey runoff to regional facilities. Less on-site stormwater management results in more runoff to convey, increasing flooding frequency and requiring greater capital investments in conveyance capacity.

- **Private Infiltration System Costs (Goal #2):** Infiltration of roof runoff requires the construction and ongoing maintenance of private infiltration facilities. Attaining higher levels of infiltration requires additional capital investments and results in increased maintenance costs.

- **Change in Market Value (Goal #2):** The need for on-site stormwater management facilities can restrict the size and type of development that occurs on a specific site, potentially impacting the market value of that site by reducing the buildable area.

- **Sammamish River Temperature (Goal #3):** Groundwater is cooler than surface waters during summer months. Increasing groundwater through on-site stormwater management can increase groundwater entering the Sammamish River, cooling the river.

- **Stream Water Quality (Goal #3):** Stormwater runoff carries pollutants that negatively impact the environment – as a result, reducing the quantity of runoff reduces the amount of pollution in local streams.

- **Regional Runoff Treatment Costs (Goal #3):** The cost of regional stormwater treatment facilities increases with the volume of runoff being treated. On-site mitigation reduces the volume of runoff requiring treatment, resulting in cost savings.

Each criterion must also have a method for measurement that can easily be compared among future build out scenarios. There are three types considered in this analysis:

- **Basic Scaling Factor**. This is a basic ranking scale, such as 1 – 5 or High/Medium/Low. It is the simplest measurement technique and useful for criteria that are difficult to measure. It is also useful for comparing multiple, very different, criteria.
- **Cost Equivalent**. This involves a dollars-to-dollars comparison where impacts are measured in terms of cost.
- **Physical Measurement**. This drills down to a specific measurable quantity such as gallons infiltrated, pounds of metals removed, etc. This is more complicated than a scaling factor and useful when criteria cannot easily be converted to cost-equivalent impacts.

In a BCA with many alternatives or ranking requirements, it is useful to standardize the measurement options and, as necessary, weight these options by importance. While this is good for a high-level

"apples-to-apples" comparison, it risks assuming a false level of accuracy. With only four scenarios, such standardization is not necessary. Instead, the most accurate measurement option is used for each criterion. These are shown below.

Table III-1: Criteria Descriptions

Criteria	Measurement Option	Description
Well Shut-Off Potential Increase	Physical Measurement	Change (in inches) of groundwater levels around wells due to changes in infiltration
Regional Flow Control and Flood Protection	Cost Equivalent	Cost required to adequately size pipes and facilities
Private Infiltration System Costs	Cost Equivalent	Cost for building and maintaining private infiltration facilities
Change in Market Value	Cost Equivalent	Change in value (measured in dollars) of a property due to development alterations related to infiltration
Regional Runoff Treatment Costs	Cost Equivalent	Estimated cost for treating additional stormwater for roof runoff
Sammamish River Temperature	Physical Measurement	The change in the predicted temperature of the Sammamish river
Stream Water Quality	Physical Measurement	Amount of copper loading into the Redmond Way basin in kilograms

Section IV. BCA RESULTS

The BCA helps individuals make a cost-effective decision that best reflects established goals. It is a transparent, repeatable, decision-support tool. As a support tool, the BCA does not certify the *best* decision but rather informs the decision-making process. It helps the user understand which decisions best relate to his or her goals in relation to expected costs. The analysis is conducted in two parts:

- The first step involves measuring criteria for each scenario through a series of technical analyses, the results of which are shown in **Appendix A**. **Appendix B** shows additional cost calculations that convert results from the technical analysis to comparable costs across scenarios. This analysis considers lifecycle costs over a 30-year time horizon. It also includes the calculation methodology of the potential market loss resulting from on-site stormwater management.

- The second step involves combining and rating the criteria for each alternative to produce a relative ranking of the scenarios.

The result of this analysis is a ranking of each criteria, for each scenario. Staff analysis showed that, for some criteria, changes between scenarios were small or non-existent – while some scenarios ranked higher in these criteria, the relative impact is small.

Dollar costs are summed together to produce a lifecycle cost estimate for each scenario. This total lifecycle cost, in conjunction with the remaining criteria, provide for an overall ranking of each scenario. These three items (overall ranking, lifecycle cost ranking, and individual criteria ranking) are shown below. **Appendix C** shows the detailed analysis for each scenario.

IV.A. RESULTS

Table IV-1: Business Case Analysis Results

	No Infiltration	100% Infiltration @ ½ the Sites	91% Infiltration	100% Infiltration	Relative Impact
Overall Analysis Ranking	4th	2nd	3rd	1st	
Lifecycle Costs ($ Millions)	$153	$128	$137	$98	
Individual Criteria Rankings:					
Reg. Flow Control & Flood Protection	*4th*	*2nd*	*3rd*	*1st*	*High*
Regional Runoff Treatment Costs	*4th*	*3rd*	*2nd*	*1st*	*High*
Private Infiltration System Costs	*1st*	*2nd*	*3rd*	*4th*	*Low*
Change in Market Value	*1st*	*3rd*	*2nd*	*4th*	*Low*
Stream Water Quality	*4th*	*3rd*	*2nd*	*1st*	*Very Low*
Well Shut-Off Potential Increase[3]	*2nd*	*N/A*	*N/A*	*1st*	*Very Low*
Sammamish River Temperature	*2nd*	*N/A*	*N/A*	*1st*	*Very Low*

IV.B. DISCUSSION OF RESULTS

The overall ranking is determined considering all criteria and their relative impacts. The "100% Infiltration" scenario ranks first (most preferred) due to its lower lifecycle cost and overall top ranking in other criteria such as water quality. The "No Infiltration" scenario ranks lowest due to the significant increase in infrastructure costs related to conveying additional stormwater. It's important to note that the costs provided do not include the cost of already built stormwater regional facilities. The costs provided are in addition to investments already made.

[3] Scenarios with "N/A" were not studied further because results for first and second ranked scenarios were similar.

Significance of high-volume flows

A main cost-driver for each scenario dealt with capital costs for conveying and treating stormwater runoff, mainly making sure the system can handle higher-volume storms. These infrequent, but larger, storm events drive up infrastructure costs and result in a relatively lower cost for the "100% Infiltration" scenario. This issue is particularly apparent in the "91% Infiltration" scenario – even though this scenario calls for 91% infiltration on-site, such a design does not reduce the size of conveyance needed to limit flooding.

Relative market value impact

Staff analysis of on-site infiltration potential resulted in a finding that the majority of existing sites, if following current land use codes, can implement 100% on-site infiltration without changing the nature of construction. This means that the relative market cost of private infiltration facilities is significantly lower than originally anticipated in this study. Such a finding drives relative costs in the "100% Infiltration" scenario down.

Stream and groundwater impacts are relatively low

Metals loading, river temperature, and well shut-off potential, while different among scenarios, were found to change little. This relatively low impact is a result of the role roof infiltration plays in recharging groundwater and providing flows to the Sammamish River relative to other inputs. Inputs are low enough that while there is a measurable variance between scenarios, there is not significant impact to groundwater levels or river water quality. Thus while the "100% Infiltration" scenario ranks first in water quality, it is not a major driver in its overall ranking.

It is important to note that if water quality, groundwater recharge, or river temperatures were studied for the entire area that influences each criterion the result of on-site stormwater management would not be insignificant. The study area is a fraction of the overall area influencing each criteria.

Additional green infrastructure benefits are not measurable

Although the benefits of green infrastructure are well-recorded[4], further analysis showed that they do not apply to this BCA due to the type of infiltration facilities being considered. Thus while these benefits were part of the initial list of 17 criteria, they were not included in the final calculation.

[4] For example, see compilation provided by the Center for Neighborhood Technology here <http://www.cnt.org/sites/default/files/publications/CNT_Value-of-Green-Infrastructure.pdf> (accessed 21 August 2017).

Outside of the water quality benefits already defined, green infrastructure is shown to provide additional benefits due to the utilization of plants and green space created in some instances. In the Downtown area, on-site stormwater management will be accomplished underground (drywells, trenches) rather than the types of on-site stormwater management with plants and green space that provide ancillary benefits. Green infrastructure may be used in the Overlake area, but it is not clear if or how green infrastructure would provide ancillary benefits in comparison to typical landscaping. There is therefore no measureable impact. Although the “100% Infiltration” scenario ranks highest in the analysis overall, ancillary green infrastructure benefits do not play a major role in that ranking.

Section V. CONCLUSION

This On-site Stormwater Management Business Case Analysis relates the City of Redmond's goals to roof infiltration alternatives in the Downtown and Overlake urban centers.

The process identifies the 100% roof runoff infiltration scenario as the cost-effective solution that best matches City goals. This means that the City will benefit overall if future development infiltrates roof runoff. The City should consider these results when establishing policies and procedures to better define the feasibility of infiltrating roof runoff.

To realize the benefits described in this Business Case Analysis, it will be important for the City to provide a level of certainty with regard to the amount of roof runoff infiltration expected. This can come from a combination of monitoring, incentives, and prescriptive policy measures. Although the "100% Infiltration" scenario ranks highest overall, its benefits will not be realized if the City must oversize regional facilities due to uncertainty.

City of Redmond

NPDES Annual Report Covering 2017

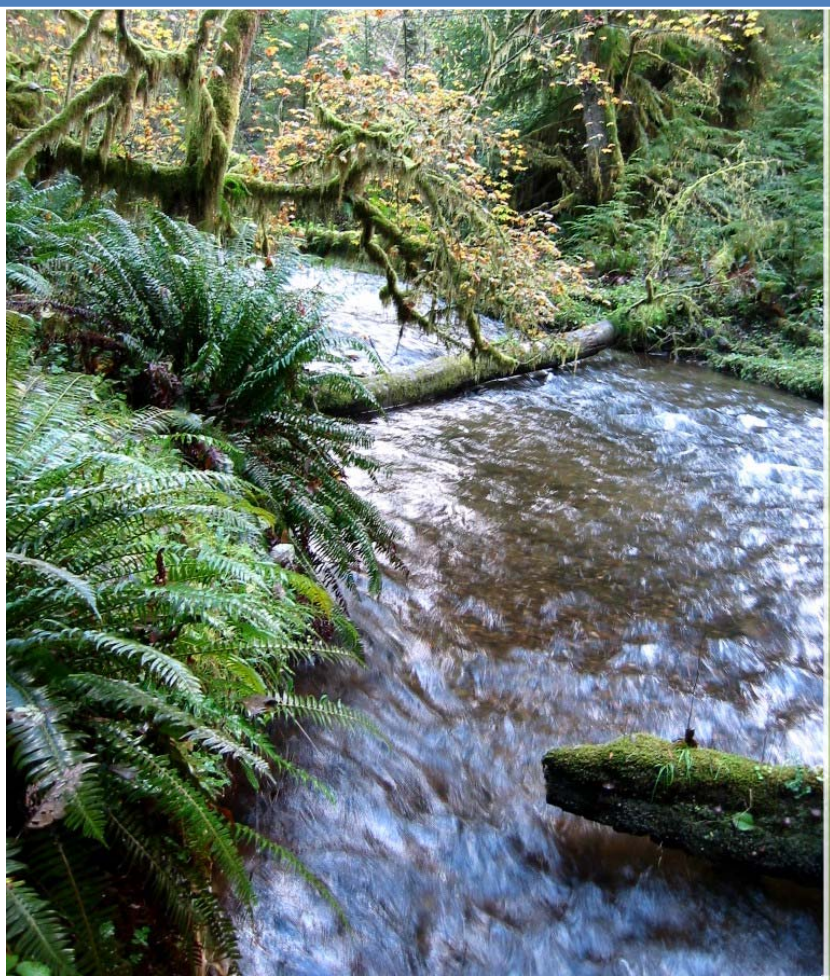
Attachment 7:

2016 Monitoring Report

Note: The City completed its NPDES-related status and trend monitoring obligations at the end of 2016 and produced the following report. Because no additional work was required of the City in 2017, Redmond is resubmitting the final report completed 2016.

2016

Stream Monitoring Report



Tanya L. MacFarlane

Surface Water Quality Technician

3/16/2016

TABLE OF CONTENTS

2016 City of Redmond Stream Monitoring Report 1

Intro 1

Site Confirmation 1

Ancillary Site Information 6

Peters Creek 6

Bear Creek 7

Willows Creek 8

High School Creek 9

Water Quality Monitoring 13

Watershed Health Monitoring 21

Peters Creek-Site 158 21

Bear Creek Mouth-Site 512 22

Bear Creek behind Swedish Medical Center-Site 626 23

High School Creek-Site 656 23

Willows at Overlake Church-Site 736 24

Willows Headwaters-Site 885 25

Gun Club-Site 814 25

References 29

Table 1: Original City of Redmond Sites, Locations, and Notes about Each Location

Table 2: Final City of Redmond Site List

Table 3: Summary of Existing Watershed, Fish Use, and Water Quality Conditions for Class II Stream

Table 4: Percentage of Land Use Upstream Of Sample Site Draining To Basin

Table 5a: Water Quality Index (WQI) calculation sheets from Ecology. Peters Creek, Site 512

Table 5b: Water Quality Index (WQI) calculation sheets from Ecology. Bear Creek/ at the Sammamish River, Site 512.

Table 5c: Water Quality Index (WQI) calculation sheets from Ecology. Gun Club Creek, Site 814

Table 5d: Water Quality Index (WQI) calculation sheets from Ecology. High School Stream, Site 656

Table 5e: Water Quality Index (WQI) calculation sheets from Ecology. Willows at Overlake Church, Site 736

Table 5f: Water Quality Index (WQI) calculation sheets from Ecology. Willows Headwaters, Site 885

Table 5g: Water Quality Index (WQI) calculation sheets from Ecology. Bear Creek behind Swedish Medical Center, Site 626

Appendix A: Metals Laboratory Report

Appendix B: Grain Size Laboratory Report

Appendix C: Pesticides Laboratory Report

Appendix D: Bases/Neutrals/Acids Laboratory Report

Appendix E PCBs Laboratory Report

Appendix F: PBDE Laboratory Report

Appendix G: Quality Assurance Project Plan for RSMP Small Streams-Redmond

2016 CITY OF REDMOND STREAM MONITORING REPORT

INTRO

The City of Redmond in 2014 chose option 2 for compliance with the 2013-2018 NPDES Permit.

SITE CONFIRMATION

The City of Redmond initially conducted a desktop evaluation of all sites provided by Washington State Department of Ecology (Ecology). The table of sites was downloaded and sorted for Redmond and then by "ORDER" number. The result produced 20 sites within the City of Redmond city limits. Each of the sites' coordinates were then brought into Redmond's GIS layer and spatially located.

Several sites were not suitable without doing a field visit. Site 798 is located in the Sammamish River. Site 874 is located in/on a building without a stream within 0.5 miles. Site 886 is located in a tributary that does not flow 4-6 months out of the year. Sites 900 and 977 are located in the midline of Lake Sammamish.

Next, a GIS layer was added to the map with all the sites that Redmond has historically sampled and compared locations. Sites 41, 58, 221, 419, 512, 626, 656, 736, and 784 had been monitored for continuous temperature, monthly water quality and/or benthos at a location within 300 meters.

In April 2014, all sites, except 798, 874, 886, 900 and 977 were field verified. Three sites were difficult to determine; therefore, on June 25, 2014 Brandi Lubliner and Anne Dettlebach from Ecology, toured sites 459, 512, and 886. They determined that site 512 remains a "maybe" but sites 459 and 886 were not samplable due to flow. The results of the desktop and field evaluations are presented in Table 1. In summary, the list included 7 sites that were to be sampled beginning October 1, 2014. The final 7 sites are listed in Table 2 with the initial and final GPS coordinates.

Table 1: Original City of Redmond Sites, Locations, and Notes about Each Location.

ORDER	LON_DD	LAT_DD	Sample Yes/No	WRIA	Subwater-shed Name	NHD GNIS	Notes	LandType/Owner	Redmond Location
41	-122.091069	47.68306	No	8	Bear Creek	Bear Creek	Not wadable, too deep, too swift	Friendly Village developed open space	Bear Creek at Friendly Village
58	-122.089474	47.687881	No	8	Bear Creek	Bear Creek	Not wadable, too deep, too swift, 50 m from site 784	Elm Court, developed open space	Bear Creek at Novelty Hill
158	~~-122.142431~~ -122.141	~~47.683244~~ 47.683	Yes	8	Bear Creek-Sammamish River	Peters Creek	Move site downstream 73m	Arena Sports (no access) Seneca (NGPE) City of Redmond, Wallace (NPGE), developed medium intensity	Peter's at Arena Sports, via Seneca, walk upstream
221	-122.093184	47.679188	No	8	Bear Creek	Bear Creek	Not wadable, too deep, too swift, bottom is muddy, access is challenging	WASHDOT CB Richard Ellis NGPE , herbaceous	Bear Creek at Evans Confluence
419	-122.091832	47.678924	No	8	Bear Creek	Evans Creek	Not wadable, too deep, too swift, channel incised	WASHDOT CB Richard Ellis NGPE, hay/ pasture	Evans upstream of Bear Confluence
459	-122.113141	47.6999	No	8	Bear Creek-Sammamish River		Channel braided and dry as of June 2014. Headwater channel-multiple joining channels	City of Redmond, developed low intensity	Headwaters of High School Creek
512	-122.117131	47.667758	Maybe	8	Bear Creek	Bear	Not wadeable, too deep, too	City of Redmond,	Mouth of Bear Creek

ORDER	LON_DD	LAT_DD	Sample Yes/No	WRIA	Subwater-shed Name	NHD GNIS	Notes	LandType/Owner	Redmond Location
						Creek	swift. Under Construction. Completion date approx. 9/14	developed open space	
626	-122.098486	47.677608	Yes	8	Bear Creek	Bear Creek	Not wadable in high flow. Bridge sampling/ for estimated flow use King County gage installed at Union Hill Road and Bear Creek. Bridge removal expected within 2 years	Swedish NGPE, shrub/scrub, replanted buffer in 2010, developed open space	Behind Swedish Medical Center
656	-122.125271	47.710295	Yes	8	Bear Creek-Sammamish River		Rechannelization completed in 2013	Greystone, NGPE plat not finale developed open space	High School Creek upstream of NE 124th
657	-122.091099	47.702746	No	8	Bear Creek	Bear Creek	Not wadable, too deep, too swift, not safe, access issues	M&M Autobody not friendly, not working with us, developed medium intensity	Up and downstream is out of Redmond City limits
736	~~-122.1450~~ -122.142	~~47.688406~~ 47.688	Yes	8	Bear Creek-Sammamish River	Willows Creek	Move location to nearest stream 270 m to the southeast	PSE Easement, developed medium intensity	Willows Creek at Overlake Church
753	-122.151274	47.683061	No	8	Bear Creek-Sammamish River	Willows Creek	Not accessible, not unidirectional flow, no defined right and left bank, change of land use and greater than 25% increase in flows downstream	Emergent herbaceous wetlands PSE transmission lines, easement	Willows Creek at PSE property
784	-122.089709	47.688351	No	8	Bear Creek	Bear Creek	Not wadable, too deep, too swift, not safe, 50 m from site 58	Elm Court, developed open Space	Bear Creek and Novelty Hill Road

ORDER	LON_DD	LAT_DD	Sample Yes/No	WRIA	Subwater-shed Name	NHD GNIS	Notes	LandType/Owner	Redmond Location
798	-122.114555	47.65697	No	8	Bear Creek-Sammamish River	Sammamish River	Not wadable, in Sammamish River	Park/Non Wilderness, developed open space	Sammamish River at Marymoor Park
814	~~-122.159812~~ -122.157	~~47.686714~~ 47.686	Yes	8	Bear Creek-Sammamish River		Move site downstream 270m, site is not located on a stream	PSE Transmission lines, easement, developed open space	Gun Club
874	-122.139456	47.651246	No	8	Bear Creek-Sammamish River		There is not a stream within 0.5 mile	Nintendo of America, developed high intensity	Nintendo Property, on the green roof
885	-122.157503	47.681774	Yes	8	Bear Creek-Sammamish River	Willows Creek	Channel is braided but have collected benthos in past years	Deciduous forest, Redmond City Park and Maple Brook Lane Homeowners Association	Willows Headwaters
886	-122.12775	47.710834	No	8	Bear Creek-Sammamish River		Site dry 4-6 months per year	City of Redmond	Kensington Estates Rehabilitation Project in 2010
900	-122.083631	47.635625	No	8	Lake Sammamish-Sammamish River		Not a qualifying stream. Site is in a lake.		Sammamish River
977	-122.080264	47.632008	No	8	Lake Sammamish-Sammamish River		Not a qualifying stream. Site is in a lake.		Sammamish River

Table 2: Final City of Redmond Site List

EIM_Location_ID	Field Site ID	Latitude	Longitude	Stream Name	STRAH _ORD	New Latitude	New Longitude	Feet from Original	Basin SQ. Miles
RSM06600-050295	158-WUGA	47.683	-122.141	Peters	1	47.683159	-122.142	142	1.50
RSM06600-165607	512-WUGA	47.66776	-122.117	Bear Creek	3	47.668001	-122.117	89	49.91
RSM06600-193111	626-WUGA	47.67761	-122.098	Bear Creek	3	47.677582	-122.098	38	48.53
RSM06600-209463	656-WUGA	47.7103	-122.125	High School	1	47.710185	-122.125	40	0.59
RSM06600-220119	736-WUGA	47.688	-122.142	Willows at Church	1	47.68798	-122.142	16	0.44
RSM06600-256359	814-WUGA	47.686	-122.157	Gun Club	1	47.685769	-122.153	1070	0.20
RSM06600-275671	885-WUGA	47.68177	-122.158	Willows headwaters	1	47.681815	-122.154	784	0.33

ANCILLARY SITE INFORMATION

(Taken directly from the 2013 City of Redmond Citywide Watershed Management Plan-Prepared for the City of Redmond, Public Works Department, by Herrera Environmental Consultants, Inc.)

PETERS CREEK

Peters Creek is located in the west-central portion of the City. It enters the left bank of the Sammamish River north of 90th Street. The "west branch" tributary joins the main stem just upstream of NE 87th Street. The upstream portion of the left bank tributary has its headwaters in Grass Lawn Community Park. The entire stream length (21,325 linear feet) is located within the City, and 12,250 linear feet is designated as a Class II stream. An average of 1.9 stormwater outfalls can be found per 1,000 feet along the creek.

The Peters Creek watershed is 1,045 acres (1,007 acres of which is located in the City). The watershed is highly developed with predominantly single-family dwellings. Land cover is predominantly landscaped yards.

A high-flow bypass structure is located on the main stem of Peters Creek at Old Redmond Road. This drainage structure is designed to bypass flows greater than the 2-year recurrence interval to a separate storm drainage conveyance system that drains directly to the Sammamish River. The intended purpose of this bypass feature is to reduce stream bank erosion caused by high flows in Peters Creek main stem, while maintaining base flows (City of Redmond 2008). This bypass structure generally functions as intended. The City has constructed a variety of other enhancements in the watershed including fish passable weirs at the mouth of Peters Creek, replaced multiple culverts, stabilized channel segments and rehabilitated riparian buffers in several locations. However, there are still many portions of Peters Creek that need rehabilitation.

In general, water quality in Peters Creek is compromised due to the high level of development in the watershed. Ecology included the left bank tributary of Peters Creek from the confluence with the main stem upstream to Redmond Way on the 2008 Section 303(d) list as a Category 5 waterbody due to impairment from low dissolved oxygen concentrations, high temperature, and high fecal coliform bacteria concentrations (Ecology 2008c). The median B-IBI score for Peters Creek based on data collected by the City as part of the Annual Benthic Monitoring study (2002 through 2010) is 20, indicating poor conditions (PSSB 2011).

Riparian habitat on Peters Creek is fair, and is composed of primarily deciduous species and some coniferous species. Riparian habitat is the highest quality in the ravines in the upper portion of the watershed, but is impacted by roads and development in the lower portion of the watershed (Washington Trout 2005). There is a high level of encroachment (19 percent) into the 30-foot riparian buffer.

There are 10 full barriers to fish passage and 6 other partial barriers throughout the watershed. However, surveys by Washington Trout indicated significant salmonid use. These surveys indicate there are many more fish using Peters Creek than was previously documented (Washington Trout 2005).

BEAR CREEK

Bear Creek is entirely a lowland stream system, originating in a large area of forests and wetlands in south Snohomish County and north King County. The Bear Creek watershed represents one of the most important salmonid bearing system in the entire Sammamish River watershed. The Bear Creek watershed covers approximately 32,100 acres (50 square miles). Bear Creek is a right bank tributary of the Sammamish River. With the headwaters located in protected land, Upper Bear Creek has a relatively high level of watershed function resulting from a low impervious surface percentage, few street crossings, and a high level of forest cover and riparian forest.

Lower Bear Creek has a moderate level of watershed function, due primarily to higher impervious surface percentage and consequent stormwater impacts, from both poorer water quality and inadequate flow control.

Land use in the Bear Creek drainage area within the city limits is highly urbanized with 26 percent of the land used for commercial development. Open space (primarily agriculture) makes up 15 percent of the land use.

A portion of Bear Creek is listed as a Category 4A waterbody for high fecal coliform bacteria concentrations, high temperature, and low dissolved oxygen concentrations (Ecology 2008c). As described in *Chapter 2: Regulatory Drivers*, this category means that a characteristic use is impaired by these pollutants; however, TMDL studies (Ecology 2008a, 2008b) and a water quality implementation plan (Ecology 2011b) addressing these sources of impairment has already been developed and approved by the USEPA.

The headwaters of Bear Creek have wide riparian buffers; however, in the lower reaches there is much less forested riparian buffer (LWCS/WRIA8 2005). In many reaches, woody vegetation has been totally cleared right up to the stream edge and development has occurred within the

regulatory buffer (Kerwin 2001). Pursuant to the City's SMP, buffers of 150 feet are required on either side of Bear Creek west of Avondale Road, and an additional 50-foot outer buffer is required east of Avondale Road.

WILLOWS CREEK

Willows Creek is located in the west-central portion of the City, entering the left bank of the Sammamish River north of 95th Street. Willows Creek runs west to east with about a third of its watershed represented by three headwater tributaries that combine at the upper end of a large central wetland. Steep slopes occur along the edge of the plateau at the upper end of the undeveloped central portion of the watershed. Nearly all of the system is piped above the valley walls. It appears that in the past a major tributary joined the main stem of the creek on the left bank near Willows Road. This tributary is currently isolated from the rest of the system, but it may be possible to realign the channel to combine the flows in the future. While the tributary is highly degraded in its lowest reaches, the valley wall reaches generally have broad forested buffers, and fair quality instream habitat. The total stream length is 13,040 linear feet, all of which is located within the City limits and 9,835 linear feet of which is designated as a Class II stream. An average of 1.1 stormwater outfalls can be found per 1,000 feet along the creek.

In the 463-acre watershed for Willows Creek, the dominant land uses are single-family residential and parks and undeveloped land. The watershed includes a Puget Sound Energy power line right-of-way, a generally grassy corridor that also includes the Puget Powerline Trail. Several of the headwater tributaries are located in large protected open space areas upstream of Willows Creek Business Park. Land cover in the watershed is dominated by forest and landscaped areas.

A left bank tributary of Willows Creek is listed on the 2008 Section 303(d) list as a Category 5 waterbody for low dissolved oxygen and high fecal coliform bacteria (Ecology 2008c). Willows Creek is also listed as Category 2 waterbody for temperature. However, the mapping for this tributary is inaccurate; the tributary, known as Gun Club Tributary, does not connect with Willows Creek. The Gun Club Tributary is a Class III stream with wooded buffers. All indicators show that the hydrology supporting the Gun Club Tributary is relatively stable. The median B-IBI score for Willows Creek based on data collected by the City as part of the Annual Benthic Monitoring study (2002 through 2010) is 22, indicating poor conditions (PSSB 2011). Riparian conditions are generally poor in the lower reach, with inadequate tree and shrub cover due to Puget Sound Energy's policy of preventing tree establishment under their power

lines. A relatively high level (17 percent) of development is encroaching into the 30-foot stream buffer. In the upper reach, most of the riparian zone is protected in large NGPEs, large tracts, or utility corridor open space.

There are 14 partial fish passage barriers on the middle reach, and one complete barrier at the power line culvert near the headwaters, approximately 5,500 feet upstream of the mouth (Washington Trout 2005). Significant salmonid use has been observed on the main stem (Washington Trout 2005). A few pairs of Coho salmon have been regularly observed spawning in Willows Creek.

HIGH SCHOOL CREEK

High School Creek is a right bank tributary of the Sammamish River that is located in the northern portion of the City. A major portion of the upper watershed is located in the City, while the other main tributary as well as the valley portion is located in unincorporated King County. The stream length within the City is 14,650 feet, 8,505 feet of which is designated as a Class II stream. A left bank tributary, Kensington Tributary enters High School Creek near Redmond Woodinville Road.

A King County channel relocation project was recently completed on the downstream reach of this tributary, including a culvert replacement under NE 124th Street and rehabilitation of an adjacent wetland. Upstream of the relocation project, the tributary flows through wetlands in a narrow ravine. The main stem of High School Creek flows through a future development project with a short, highly degraded section of the stream. Upstream of this impacted reach, the stream enters a densely forested ravine with a thick understory. There is a 4-acre manmade pond at the headwaters of High School Creek.

The High School Creek watershed is approximately 1,686 acres, of which 635 acres are located in the City. Land use in the City portion of the watershed is predominantly single family residences, which are characterized by large lots that transition to more dense development. While land cover is mostly landscaping, there are significant areas of established forest buffering the streams along steep ravines. Twenty-seven percent of the watershed within the City is considered EIS.

The riparian buffer is in good condition in the channel relocation reach in the valley. The adjacent rehabilitated wetland provides additional buffer. Further upstream, the steep ravine provides a relatively wide riparian buffer of mostly deciduous trees and wetlands with invasive plant species. Near 167th Place NE, the valley becomes less confined and residential development begins to infringe on the riparian buffer (Washington Trout 2005).

There are eight fish passage barriers on High School Creek including seven partial barriers and two complete barriers. One complete barrier (a perched culvert) south of NE 116th Street has been replaced with a fish passable culvert. There are additional downstream barriers outside of the city limits. Significant salmonid use has been observed in High School Creek based on Washington Trout surveys (Washington Trout 2005). There are anecdotal reports of Coho salmon using the lowest reach and documented cutthroat trout in the reach through the ravine (Washington Trout 2005).

High School Creek has multiple channels with older uncontrolled development contributing runoff to the upper reaches. The upper watershed is mostly developed with low density residential, some of which is under development pressure in the near future. High School Creek also has intact wetlands and forested buffers.

Table 3. Summary of Existing Watershed, Fish Use, and Water Quality Conditions for Class II Streams.

	Peters	Willows	High School	High School	Idylwood	Mackey
Land Cover						
% Forest [a]	9%	28%	20%	20%	16%	90%
% Pasture [b]	1%	14%	10%	10%	1%	9%
% Landscape [c]	48%	32%	43%	43%	51%	1%
%Effective Impervious Surface [d]	42%	26%	27%	27%	32%	0%
Land Use [e]						
% Commercial	5%	15%	11%	11%	2%	0%
% Industrial	8%	8%	0%	0%	0%	0%
% Roads [f]	17%	6%	14%	14%	20%	0%
% Single-Family Residential [g]	46%	36%	62%	62%	59%	0%
% Multifamily Residential [h]	15%	0%	0%	0%	1%	0%
% Parks and undeveloped land [i]	8%	35%	12%	12%	19%	100%
Physical Parameters						
Watershed Area (Acres inside City Limits) [j]	1,007	453	635	635	152	172
Total Watershed Area (Acres inside and outside of City Limits) [k]	1,045	453	1,686	1,686	426	1,138
Total Stream Length In City (feet) [l]	21,325	13,040	14,650	14,650	4,330	10,230
Class II Stream Length In City (feet) [l]	12,250	9,835	8,505	8,505	3,920	4,920
Total Stream Length (feet) [m]	21,325	13,040	34,346	34,346	8,067	27,040
Class II Stream Length (feet) [m]	12,250	9,835	23,763	23,763	4,732	17,897
Fish Use						
Significant Salmonid Use (y/n) [n]	No	No	Yes	Yes	No	Yes
Chinook Salmon (Washington Trout 2004 and 2005)	No	No	No	No	No	NS
Coho Use (Washington Trout 2004 and 2005)	Yes	Yes	No	No	No	NS
Other Salmonid Use (Observed by Redmond Staff)	Yes	Yes	Yes	Yes	Yes	Yes
Habitat						
Large Woody Debris / 100 LF [o]	3.6	3.8	4.4	4.4	9.2	15
Tree Canopy % Cover in Buffers [p]	57	59	67	67	56	82
300-foot Buffer % Vegetated [q]	27%	53%	57%	57%	15%	84%
100-foot Buffer % Vegetated [q]	55%	69%	78%	78%	46%	89%

a Forested areas were delineated using aerial photography by NHC (2006), and updated based on 2010 aerials by City of Redmond.
b Pasture areas were delineated using aerial photography by NHC (2006), and updated based on 2010 aerials by City of Redmond.
c Landscape is the area in developed watersheds that is not effective impervious. Developed areas (all areas not pasture or forest) were identified as effective impervious or landscaped based on literature values for each land use.
d Effective Impervious is the area in developed watersheds that is impervious and directly connected to the storm drain system. Developed areas (all areas not pasture or forest) were identified as effective impervious or landscaped based on literature values for each land use.
e Land use designations are parcel based and calculated by summing different land use types into the categories presented from a maintained City of Redmond Land Use GIS database. Function and structure code combinations were used for each land use type.
f Roads include the right-of-way parcel, private, and public roads.
g Single-family is further differentiated by development density. To determine the split between effective impervious and landscape, four categories of single-family were developed based on parcel size.
h Multifamily includes condos and apartments. Commercial first story with dwelling units above are included in commercial area calculation.
i Undeveloped land includes areas that are forest and pasture as well as other areas that are not developed.
j Includes stormwater conveyance and topographic based watershed.
k Total acres of stream area in and outside city limits. King County data was used outside city limits.
l Limited to the city limits.
m Not limited to the city limits; includes streams in other jurisdictions.
n Observed significant salmonid use is greater than 50 fish per 100 linear feet of channel, taken from Washington Trout stream surveys (2004 and 2005) and Redmond staff observations.
o Large Woody Debris - wood at least 10 inches in diameter and 10 feet long, in or over bankful channel counted by field crews. Weighted average of LWD density over walked channel length.
p Tree canopy including trees a minimum 10-foot diameter canopy within regulatory buffers (for open channel stream reaches within the city limits). Digitized from 2007 aerial photos.
q Higher values –equate to more vegetation. All vegetation excluding landscaped and mowed or plowed land is included - trees, shrubs, and unmowed grasses. Limited to city limits.

TABLE 4. PERCENTAGE OF LAND USE UPSTREAM OF SAMPLE SITE DRAINING TO BASIN.

Data was obtained by USGS land cover data overlaid with King County zoning and City of Redmond data layers.

	736_WUGA	512_WUGA	885_WUGA	158_WUGA	814_WUGA	626_WUGA	656_WUGA
1-2 Res	27%	21%	37%	47%	43%	21%	36%
3-4 Res	10%	4%	13%	18%	7%	4%	23%
5> Res	3%	0%	4%	1%	0%	0%	1%
Agriculture	0%	1%	0%	0%	0%	1%	0%
Commercial	3%	2%	1%	11%	0%	1%	0%
Forest	48%	70%	45%	18%	49%	72%	40%
Industrial	8%	1%	0%	5%	0%	0%	0%
Water	0%	0%	0%	0%	0%	0%	0%

WATER QUALITY MONITORING

Redmond conducted monthly water quality grab sampling at each of the 7 sites from October 2014 through September 2015. Dates, times and results are listed in the Water Quality Index Spreadsheets shown below. Each site was monitored in situ for temperature, pH, conductivity and dissolved oxygen. Grab samples were also collected and sent to AmTest Analytical in Kirkland (fecal coliforms only) and to Manchester Environmental Laboratory (MEL). Analysis of monthly grab sampling by MEL included total phosphorus, ortho-phosphate, turbidity, total suspended solids, chloride, hardness, ammonia, total nitrogen and nitrate-nitrite-N.

Peters Creek, Site 158 has a WQI score of 58. The primary reasons for the low score are high fecals in February, and May through September. High phosphorus levels also contributed to a low score.

Willows Creek, Site 736 has a WQI score of 62. High temperatures and low dissolved oxygen in July and August affected the score. Additionally, high fecal coliforms in July, August and September lowered the score.

Willows Creek near the headwaters, Site 885, has a WQI score of 49. February had a fecal coliform sample of 530 cfu's and July's sample had a fecal coliform sample of 300 cfu's, well above the geometric mean of 50 cfu's. Total nitrogen and total phosphorus tends to be high in this reach.

High School Creek, Site 656, has a WQI score of 51. Low phosphorus, high fecal coliform hits in several months and some high TSS samples contributed to the low score.

Gun Club, Site 814 scored 42 on the WQI. Fecal coliforms were high in February (390 cfu's), May (2600 cfu's), June (480 cfu's), July (840 cfu's), August (410 cfu's) and September (110 cfu's). TSS and nitrogen are also factors contributing to the low WQI.

Bear at the mouth, Site 512, scored a 42 WQI and suffered from high fecals (610 in February and 920 in July), high nitrogen and elevated temperatures particularly in June with 18.4 C, July with 20.2 C and September with 16.5 C. This site was newly channelized just one month prior to sampling. The riparian zone is immature as is the stream bed.

Bear at Swedish Medical Center, Site 626, scored the lowest of all the sites with a WQI of 38. Fecal coliforms were over 100 cfu's for 6 of the 12 months and were between 50 and 100 for another 2 months. Nitrogen levels are high, temperatures were above 16.5 in June, July and August and total phosphorus is a concern. This reach of Bear is upstream site 512. This site is a slow moving reach through canary grass fields.

Table 5a: Water Quality Index (WQI) calculation sheets from Ecology. Peters Creek, site 512.

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	Peters NPDES
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	Yes

Calc Interim WQI scores | Calc Constituent & Overall Scores

KEY
Input
Low Concern
Moderate Concern
High Concern

OutSeason 5
SupSpawn 506

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	272	82	506	262	92	
Curve to Use:	53	26	41	272	82	506	262	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/16/2014 10:00	40	9.9	7.93	0.0772	24	12.9	1.28	1.7	81
11/5/2014 11:50	16	9.97	7.71	0.0627	2	12.4	1.04	2.2	80
12/1/2014 11:30	54	12.56	7.78	0.0495	3	4.6	1.3	3.3	84
1/6/2015 11:10	50	11.31	7.72	0.0496	4	8.4	1.11	3.6	85
2/2/2015 11:00	460	11.52	7.5	0.105	46	7.7	0.615	23	63
3/2/2015 11:00	28	11.57	7.97	0.0574	3	8.1	1.16	3.3	84
4/1/2015 11:00	46	11.38	7.82	0.0574	3	9.5	1.02	2.9	83
5/7/2015 11:20	220	10.73	7.92	0.0504	3	10.5	1.02	2.9	67
6/9/2015 11:30	250	9.54	7.75	0.0804	3	14	1.3	2.3	66
7/9/2015 9:50	520	9.32	7.89	0.0831	3	15.6	1.27	2.3	50
8/4/2015 11:00	200	9.4	7.99	0.0833	2	15	1.3	1.9	62
9/28/2015 11:10	130	10.43	7.94	0.0704	2	10.7	1.27	1.5	80
Constituent Scores:	51	78	93	66	79	80	89	88	
								Overall Score:	58

Table 5b: Water Quality Index (WQI) calculation sheets from Ecology. Bear Creek/ at the Sammamish River, site 512.

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	Bear Mouth
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	No

Calc Interim WQI scores | Calc Constituent & Overall Scores

KEY
Input
Low Concern
Moderate Concern
High Concern

OutSeason 5
SupSpawn 506

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	72	82	506	62	92	
Curve to Use:	53	26	41	72	82	506	62	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/8/2014 10:10	80	9.2	7.7	0.049	5	14.7	0.619	2.8	49
11/17/2014 11:00	44	12.66	7.51	0.0477	8	1.9	0.844	5.1	74
12/2/2014 11:30	34	12.64	7.28	0.0471	11	1.8	0.967	5.7	87
1/7/2015 10:30	26	11.48	7.32	0.0346	9	6.3	1.08	4.1	93
2/5/2015 11:00	610	10.79	7.35	0.0921	49	7.9	0.887	17	34
3/4/2015 11:00	32	12.07	7.66	0.0342	28	4.7	0.837	4.6	92
4/2/2015 11:00	66	10.56	7.36	0.0422	9	10.1	0.697	4.3	75
5/11/2015 10:40	98	9.55	7.67	0.0422	9	14.2	0.697	4.3	63
6/24/2015 11:00	110	9.48	7.97	0.0447	4	18.4	0.533	2.7	53
7/9/2015 10:30	920	9.61	8.13	0.039	6	20.2	0.34	2.5	38
8/27/2015 9:50	98	9.4	7.78	0.0273	4	16.5	0.355	1.8	71
9/29/2015 10:30	200	9.99	7.76	0.0196	4	11.3	0.543	1.8	74
Constituent Scores:	47	77	90	64	81	63	40	88	
								Overall Score:	41

Table 5c: Water Quality Index (WQI) calculation sheets from Ecology. Gun Club Creek, site 814.

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	NPDES Gun Club
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	Yes

Calc Interim WQI scores | Calc Constituent & Overall Scores

OutSeason 5
SupSpawn 506

KEY
Input
Low Concern
Moderate Concern
High Concern

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	272	82	506	262	92	
Curve to Use:	53	26	41	272	82	506	262	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/16/2014 11:00	50	10.03	8.05	0.0582	3	14	0.678	2	83
11/5/2015 11:20	20	10.29	7.82	0.0351	2	12	1.66	3.9	90
12/1/2014 10:30	30	13.08	7.72	0.0268	3	3.7	1.95	5.3	95
1/6/2015 10:00	26	11.66	7.65	0.0393	30	7.8	1.58	6.3	91
2/2/2015 10:30	390	11.66	7.75	0.0625	23	7.5	0.945	11	59
3/2/2015 10:40	70	11.65	7.87	0.0396	3	7.4	1.28	2.6	87
4/1/2015 10:30	32	11.51	7.76	0.042	5	9	1.24	4.4	88
5/7/2015 10:20	2600	11.12	7.91	0.042	5	9.4	1.24	4.4	40
6/9/2015 10:50	480	9.67	7.85	0.0699	11	14.3	0.75	8.7	58
7/22/2015 14:20	840	9.31	8.03	0.0696	37	16.6	0.693	2.6	40
8/4/2015 10:00	410	9.39	8.2	0.0732	37	16.1	0.662	6.3	47
9/28/2015 9:50	110	10.91	8.1	0.0528	2	10.2	0.69	1.9	83
Constituent Scores:	33	78	88	76	66	76	70	82	
								Overall Score:	42

Table 5d: Water Quality Index (WQI) calculation sheets from Ecology. High School Stream, site 656.

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	PDES High Scho
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	Yes

Calc Interim WQI scores | Calc Constituent & Overall Scores

KEY
Input
Low Concern
Moderate Concern
High Concern

OutSeason 5
SupSpawn 506

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	272	82	506	262	92	
Curve to Use:	53	26	41	272	82	506	262	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/16/2014 11:00	30	9.99	7.93	0.0835	1	13.2	0.541	0.8	88
11/5/2014 9:30	38	10.57	7.66	0.0336	5	11.9	0.756	2.9	90
12/1/2014 9:40	110	13.36	7.59	0.0274	3	3.2	0.964	1.9	85
1/6/2015 9:20	22	11.82	7.57	0.0296	3	7.3	1.03	2.2	95
2/2/2015 9:20	650	11.89	7.6	0.238	210	7.1	1.07	75	42
3/2/2015 9:40	4	11.94	7.81	0.0341	2	6.6	1.04	1.4	96
4/1/2015 9:40	44	11.52	7.73	0.0341	5	9.4	0.682	2.4	92
5/7/2015 9:50	56	11.13	7.74	0.0318	5	9.1	0.682	2.4	88
6/9/2015 10:00	350	9.9	7.78	0.0861	65	14	0.647	8.5	53
7/1/2015 9:00	380	9.2	7.87	0.107	3	16.1	0.543	1.5	60
8/4/2015 9:30	450	9.23	7.99	0.126	2	16	0.417	1.7	58
9/28/2015 9:10	27	10.91	7.91	0.084	1	9.3	0.437	0.5	94
Constituent Scores:	48	77	93	40	65	79	97	76	
								Overall Score:	51

Table 5e: Water Quality Index (WQI) calculation sheets from Ecology. Willows at Overlake Church, Site 736

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	NPDES Willows O
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	Yes

Calc Interim WQI scores | Calc Constituent & Overall Scores

OutSeason 5
SupSpawn 506

KEY
Input
Low Concern
Moderate Concern
High Concern

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	272	82	506	262	92	
Curve to Use:	53	26	41	272	82	506	262	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/6/2014 12:30	30	9.1	7.5	0.0581	10	13.9	0.312	22	68
11/5/2015 10:30	28	9.86	7.55	0.0414	1	11.7	0.483	1.2	86
12/1/2015 11:00	36	12.95	7.56	0.0409	5	2.8	0.786	3.2	91
1/6/2015 10:40	2	11.79	7.55	0.0322	1	7.3	0.859	1.1	97
2/2/2015 10:00	2	11.93	7.66	0.0391	2	6.7	0.622	1.9	96
3/2/2015 10:20	2	13.1	7.93	0.0349	1	6.8	0.749	1.2	96
4/1/2015 11:30	4	12.8	7.92	0.0349	1	9.1	0.461	1.2	95
5/7/2015 10:50	10	10.92	7.78	0.0424	1	9.8	0.461	1.2	89
6/9/2015 11:10	20	9.44	7.67	0.0787	2	15.6	0.4	1.2	89
7/8/2015 7:40	110	7.96	7.78	0.0711	3	16.8	0.213	1.7	60
8/4/2015 10:30	100	8.18	7.77	0.0779	26	17.1	0.222	1.1	57
9/28/2015 11:40	180	9.75	7.73	0.0587	2	10.7	0.382	3	77
Constituent Scores:	68	61	94	79	81	76	100	83	
								Overall Score:	62

Table 5f: Water Quality Index (WQI) calculation sheets from Ecology. Willows Headwaters Site 885

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	PDES Willows H
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	Yes

Calc Interim WQI scores | Calc Constituent & Overall Scores

OutSeason 5
SupSpawn 506

KEY
Input
Low Concern
Moderate Concern
High Concern

	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Default Curve No.:	53	26	41	272	82	506	262	92	
Curve to Use:	53	26	41	272	82	506	262	92	
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/8/2014 9:20	60	10.41	8.06	0.0794	8	12.4	1.8	4.8	77
11/17/2014 9:30	19	12.44	7.96	0.062	6	5.4	1.86	3.5	84
12/2/2014 10:30	10	12.77	7.92	0.0627	11	4.9	1.82	5.5	84
1/7/2015 10:00	10	11.32	7.88	0.0691	10	8.1	1.8	3.8	82
2/5/2015 9:40	530	11.19	7.47	0.255	397	8.6	1	50	40
3/4/2015 10:00	8	12.22	7.9	0.066	8	6	1.82	5	84
4/2/2015 9:50	32	11.25	7.78	0.066	13	9.4	1.78	5.2	80
5/11/2015 9:10	12	10.52	7.92	0.0735	13	10.9	1.78	5.2	78
6/24/2015 9:40	92	10.23	8.09	0.0822	8	12.7	1.88	3.6	73
7/22/2015 7:30	300	9.82	7.87	0.101	20	13	1.89	6.2	34
8/27/2015 8:40	46	10.15	7.92	0.0778	8	12.6	1.92	2.5	87
9/29/2015 9:30	25	10.83	7.93	0.0714	9	10.1	1.86	3.6	90
Constituent Scores:	58	83	91	50	61	82	42	77	
								Overall Score:	49

Table 5g: Water Quality Index (WQI) calculation sheets from Ecology. Bear Creek behind Swedish Medical Center Site 626

A Water Quality Index for Washington State streams (Version 6: 2014.06.11).

Station:	PDES Bear Swedi
Recreation Use:	Extraordinary
Aquatic Life (Temperature):	Core(16)
Aquatic Life (Oxygen):	Core
Supplemental Spawning:	09/15 to 05/15
Ecoregion:	2
Small Puget Sound Stream:	No

Calc Interim WQI scores | Calc Constituent & Overall Scores

OutSeason 5
SupSpawn 506

KEY
Input
Low Concern
Moderate Concern
High Concern

Default Curve No.:	53	26	41	72	82	506	62	92	
Curve to Use:	53	26	41	72	82	506	62	92	
	FC	Oxygen	pH	TP	TSS	Temp	TN	Turbidity	Monthly
Date	col/100mL	mg/L	std. Units	mg/L	mg/L	C	mg/L	NTU	Scores
10/8/2014 10:50	110	9.25	7.64	0.0448	2	14.6	0.629	2.1	47
11/17/2015 10:10	43	12.56	7.39	0.043	7	1.8	0.879	3.5	89
12/2/2014 12:00	44	12.47	7.78	0.043	10	1.9	0.969	4.8	88
1/7/2015 11:00	22	11.32	7.34	0.0322	9	6.2	1.05	4.5	93
2/5/2015 10:20	590	10.68	7.34	0.0974	50	7.9	0.904	18	33
3/4/2015 10:30	46	12.08	7.44	0.0341	10	4.5	0.836	4.7	93
4/2/2015 10:30	84	10.28	7.09	0.0341	7	10.1	0.703	4.3	82
5/7/2015 10:00	64	9.46	7.51	0.0387	7	14	0.703	4	64
6/9/2015 10:30	140	9.66	7.93	0.0438	3	18.1	0.557	2.1	53
7/9/2015 10:00	370	8.77	7.7	0.0403	2	20.5	0.408	2.2	33
8/27/2015 9:20	180	9.32	7.86	0.0302	2	16.3	0.386	1.3	62
9/29/2015 10:00	110	10.19	7.71	0.0308	3	11.1	0.569	2	65
Constituent Scores:	53	72	94	65	86	62	41	89	
								Overall Score:	38

WATERSHED HEALTH MONITORING

During July, August and September of 2015, Redmond conducted watershed health monitoring for the 7 sites named in previous sections. Benthos, periphyton, chlorophyll a, sediments and habitat information were collected. Benthos, habitat, and periphyton results were not provided to the City as of December 31, 2015 and thus, will not be found in this report.

Table 6: Date and time of beginning of habitat collection. Note that habitat was done over 1 entire day and flagging, benthos, periphyton, waters and sediments may have been collected on another day.

Site Number/Name	Habitat Collection	Sediment	Sediment W.O#
158-Peters Creek	7/1/15 07:00	7/1/15 07:00 9/2/15 07:00	1507038-01 1509061-01 2nd
512-Bear Creek Mouth	7/29/15 07:00	7/28/15 10:00 7/28/15 10:00 DUP	1507038-03 1507038-07 DUP
626-Bear behind Swedish	8/25/15 09:00	8/25/15 10:00	1508034-01
656-High School Creek	7/15/15 07:30	7/15/15 07:00	1507038-04
736-Willows/Overlake Church	7/8/15 08:00	7/8/15 07:00	1507038-02
814-Gun Club Creek	8/8/15 09:00	9/8/15 07:00	1509061-02
885-Willows Headwaters	7/22/15 07:00	7/22/15 09:00	1507038-06

PETERS CREEK-SITE 158

This reach of Peters Creek flows from west to east beginning with the most upstream point around Willows Road and most downstream point at NE 151st. The site is located along the valley in Redmond, flanked by industrial/commercial sites and office parks. Immediately upstream of the sample site is an indoor soccer complex and a gas station. To the north is a car repair shop and warehouse businesses (fitness facility and a commercial paint store). To the south (left bank) is building supply with an active outdoor operation (forklifts, light industrial activities). The riparian

zone is narrow and the parking lot and business operations encroach into the 30' riparian buffer zone.

Habitat monitoring started on July 1, 2015. The site had been previously flagged and GPS on June 18th. On July 1, 2015, a team of two people collected benthos, periphyton and sediment and another team of 2 people collected habitat data. The benthic, periphyton and chlorophyll a samples were processed and preserved at the site. The data was collected per the Ecology protocol delineated in Appendix G—QAPP. Once enough sediment was collected, the sample was taken back to the Sammamish River Business Park, City of Redmond Surface Water Quality Laboratory and sieved, processed, labeled and stored.

A collection error on this first effort resulted in MEL contacting Redmond and informing that the samples were unacceptable due to too much water and could not be processed. On September 2, 2015 a second, complete set of sediment samples was collected and processed according to protocol. MEL ended up analyzing both samples.

MEL explained that once the sample was sieved, that bottles had to settle and the liquid needed to be piped off. For this to occur, the samples had to settle overnight. This resulted in a shift in sample collection for the remaining sites. Logistically, Redmond could no longer take the sediment samples to the MEL locker pickup on the same day they were collected. This extra day would mean water samples would expire. So the new sampling schedule was to collect water one day, sediments on one day and habitat assessment on another.

BEAR CREEK MOUTH-SITE 512

This site is located just upstream of the mouth. In the summer of 2014 about ½ mile of channel was moved further to the south allow for the widening of SR520. Meanders, large woody debris, a newly planted riparian zone and cobble installation were part of the restoration activities. Bear was diverted into this new channel in August of 2014 for the first time. The sampling reach (300m) is located entirely within the site restoration.

The sampling site is flanked by SR520 to the south, Redmond Town Center Mall to the north and just upstream are shopping malls, Redmond Way and Bear Creek Parkway. The riparian buffer zone immediately adjacent to the sampling site is greater than 200 ft. but it is immature. Parking lots and business activities encroach on the buffer in the reach immediately upstream.

The site was flagged and GPS on July 27, 2015, sediment, periphyton and benthos were collected on July 28, 2015, and habitat assessment was conducted on July 29th. MEL work order #'s are 150738-03 and 1507038-07. This site was chosen as the duplicate sample, therefore 2 sets of sediment data exist.

Pesticides were not detected in either sample. Bases/Neutrals/Acids (BNAs) were above the RL for Chrysene, Fluoranthene, Phenanthrene, Pyrene and Retene for sample 150738-03 and no BNAs were found above the RL for sample # 1507038-07. Metal results are presented in Table 7 alongside the Washington State Department of Ecology SCUM II for freshwater benthic protection standards for comparison. PCB and PBDE congener laboratory results can be found in the appendices.

BEAR CREEK BEHIND SWEDISH MEDICAL CENTER-SITE 626

This reach is downstream of the Bear/Evans confluence and flows through an open field of canary grasses in the upper part of the reach and poplar trees in the downstream section. This channel is slow moving, silted bottom with very little cobble, woody debris or shade. The reach is plagued with *Brazilian Elodea* and is overgrown with algae. Stream channel is monotonous and there is little diversity. Deer, heron and small birds are often seen in the area.

To the north of the site exist a former farm and grass fields. To the south of the site is an office park and medical center. The buffer in the reach is greater than 150' and has been replanted within the last 10 years. Pockets of homeless encampments have been observed in the area.

Site was flagged on July 28th, sediments, benthos and periphyton were collected on August 25, 2015 and habitat survey on August 26, 2015. Three people conducted the habitat survey due to the size of this site.

BNA results showed Benzo (a) pyrene, Chrysene, Fluoranthene, Pyrene and Retene above the RL. Dichlobenil results are 0.035 mg/kg. All other pesticides were non-detectable. Metal results are shown in Table 7. PCB and PBDE congener laboratory results can be found in the appendices.

HIGH SCHOOL CREEK-SITE 656

The High School Creek reach site stretches from NE 116th Street upstream 150 meters. The entire reach was rechannelized in 2013 including large woody debris, meanders, riparian planting and other stream complexity enhancements. Many of the large trees within the reach were maintained and thus, the channel is well-shaded.

To the west of the channel is a natural protection easement. To the east is a single family residence that is within 100 feet of the stream. Upstream of the site is a steep ravine that ascends about 100 feet to the hill above. This area is relatively undeveloped due to the steep slopes, but, once on top of the hill, single family residences dominate the landscape. Several large plats have been in some stage of development since 2005. This area of Redmond has experienced a high degree of development over the last decade.

Redmond has collected benthos and monthly water quality grab samples on this stream for multiple years and thus, has quite a bit of data on the stream. Stream flows during the summer of 2015 have not been observed to be that low since monitoring began in 2001. Low stream flows created a channeling environment from which to collect monthly grab samples and bugs. The day before monthly grab sampling, a hole deep enough to submerge a 1000 ml sample bottle, was created to facilitate collection.

Habitat assessment data and sediment samples were collected on 7/15/2015 under MEL work order # 1507038-04. Metal and pesticide results are shown in Table 7. PCB and PBDE congener laboratory results can be found in the appendices.

WILLOWS AT OVERLAKE CHURCH-SITE 736

Habitat assessment, sediment, benthos, and periphyton were collected on 7/8/2015. A team of 2 people collected the samples while another team of 2 did the habitat assessment. The sampling reach of this Willows site is located about 600 m upstream from the mouth at the Sammamish River. Willow's headwaters are located on the west side of Redmond around 250 feet in elevation. The stream branches predominately drain single family residential areas and some roads. Willows has very little stormwater influence. As the stream moves from west to east, it hits the valley floor and spreads out into braided channels and wetlands across the Puget Sound Energy easement dominated by grasses. The channel reforms in the business park just west of Willows Road.

The sampling reach is located within a Puget Sound Energy power line easement. The properties to the south of the stream are light industrial and encroach into the buffer. A project was completed in the early 2000's to move Willows from underneath an industrial building. The corner of that building is now within 20 feet of the stream channel.

The property to the north of the sampling site is a large church with a giant parking lot. The paved area comes within 20 meters of the stream. A paved walking path is between the stream and the parking lot.

The stream is very slow moving through this reach. The slope across the valley floor to the Sammamish River is shallow. Puget Power trims the trees every year and discards the branches in the stream which cause the stream to spread out and go around them. The area immediately upstream floods the streets and parking lots during periods of heavy rain probably due to combined factors of embedded stream bottom, shallow slope and other factors.

Metal and pesticide results are shown in table 10 below. PCB and PBDE congener laboratory results can be found in the appendices.

WILLOWS HEADWATERS-SITE 885

This site is located downstream of a steep ravine, east of Redmond Way. It is located upstream of one of the 3 main branches that contribute to the stream. The site is surrounded by undeveloped land within about 200 meters. Single family homes and roads make up the majority of the development upstream. The riparian buffer zone is relatively intact with mature trees to provide shade.

The stream channel has moved around in recent years. Stream flows can be high, allowing for sediment redistribution. Fallen trees and sediment contribute to channel braiding and rerouting. There is human influence in the area as observed by the bicycle jumps that are created and destroyed on the stream bank and several treehouses that have been built over the years.

Sediment, benthos, and periphyton were collected on 7/22/2015. PAL had non-detects for all pesticides except dichlobenil at 0.023 mg/kg.

BNA and metal results are shown in Table 7. PCB and PBDE congener laboratory results can be found in the appendices.

GUN CLUB-SITE 814

Gun Club Creek is located in a valley between the Gun Club and single family residential plats. The entire stream upslope from the sampling reach is in a steep ravine and punctuated by errant bullets from the rifle range. The original sample location was in this impossibly located area. In order to gain access and avoid stray gun fire, the sampling location was moved downstream to the first samplable location (about 300 meters).

The final sampling location is in a treed buffer area. To the southeast about 100 meters is a large residential development of single family houses. The only other development upstream of the sampling location within 200m is a paved footpath and set of stairs. Immediately to the south is a business park. Gun Club disappears under Willows Road and never resurfaces.

This site nearly went dry during the summer of 2015. Sampling holes needed to be carved out of the sediment in order to fill grab sample bottles. This was unusual. Base flows are usually robust for this tributary during summer months.

Metal results are shown in Table 7. PCB and PBDE congener laboratory results can be found in the appendices.

Table 7: Excerpt from SCUM II, March 2015-Ecology table 8-1 alongside Redmond sample data.

Freshwater sediment chemical criteria for protection of the benthic community.

Analyte	SCO	CSL	Peters 158	Willows Overlake 736	High School 656	Willows Headwaters 885	Bear Mouth 512	Gun Club 814	Bear Swedish 626
Total sulfides	39	61							
Metals	**mg/kg dw**								
Arsenic	14	120	15.1	13.0	12.3	29.4	1.70	14.7	11.5
Cadmium	2.1	5.4	0.349	0.392	0.374	0.229	0.062	0.396	0.343
Chromium	72	88	48.3	40.9	53.8	51.4	13.2	48.2	49.0
Copper	400	1200	42.3	31.3	30.3	34.1	4.58	22.9	21.4
Lead*	360	*> 1300*	31.9	16.5	20.5	14.1	2.96	**219**	15.4
Silver*	0.57	1.7	0.101	0.100	0.100	0.100	0.100	0.100	0.100
Zinc*	3200	*>4200*	311	134	214	139	22.2	240	101

Phthalates	**pg/kg dw**								
Bis(2-Ethylhexyl)phthalate	130	16	110/89	120	98				
Analyte	**SCO**	**CSL**	**Peters 158**	**Willows Overlake 736**	**High School 656**	**Willows Headwaters 885**	**Bear Mouth 512**	**Gun Club 814**	**Bear Swedish 626**
Pesticides and PCBs	**pg/kg dw**								
2,4,- D			ND	ND	ND	ND	ND	ND	ND
Triclopr			ND	ND	ND	ND	ND	ND	ND
Chlorpyrifos			ND	ND	ND	ND	ND	ND	ND
Dichlobenil			0.019	0.053	0.035	0.023	ND	.013	0.0092
Carbaryl			ND	ND	ND	ND	ND	ND	ND
Analyte-cont	**SCO**	**CSL**	**Peters 158**	**Willows Overlake 736**	**High School 656**	**Willows Headwaters 885**	**Bear Mouth 512**	**Gun Club 814**	**Bear Swedish 626**
DCPMU			ND	ND	ND	ND	ND	ND	ND
Diuron			ND	ND	ND	ND	ND	ND	ND
Polycyclic Aromatic Hydrocarbons*	**pg/kg dw**								
Phenanthrene			140/87	63	33	25	45	22	27
Anthracene			16/17	63	33	38	33	22	27

Fluoranthene			180/210	63	27	42	74	22	51
Pyrene			140/150	63	33	29	60	22	43
Benz[a]anthracene			60/75	63	33	38	22	22	27
Chrysene			91/110	63	33	38	42	22	35
Benzo(k)fluoranthene			73/83	63	33	38	33	22	27
Benzo(b)fluoranthene			80/98	63	33	38	33	22	27
Benzo[a]pyrene			88/99	63	33	38	33	22	36
Indeno[1,2,3-c,d]pyrene			84/69	63	33	38	33	22	27
Dibenzo[a,h]anthracene			39/36	130	67	76	66	43	51
Benzo[g,h,i]perylene			76/60	130	29	76	66	43	55
Retene			61/26	63	130	710	170	63	53

- Reporting limits (RL) and minimum detection limits (MDL) were different for each sample. The RL and MDL varied due to amount of sample that was available for analysis. Therefore, the numbers reported above are only the raw number reported by the laboratory and are not relative their respective RL or MDL.

SUMMARY OF COSTS

City of Redmond NPDES-RSMP Monitoring
1-Mar-16

Costs	2015-2016 NPDES Monitoring
Laboratory Costs	
MEL	
Sediment	$23,785.00
Water Qality	$15,180.00
AmTest	
Fecals	$2,100.00
Rithron	$1,000.00
Periphyton	*$2100.00
Benthos	*$1785.00
Supplies	
Hach	$4,287.37
Cole Palmer	$634.65
Sigma Aldrich	$1,502.60
Forestry Supplies	$1,431.92
Ben Meadows	$1,379.03
Home Depot	$100.40
Amazon	$194.94
Certified Materials Testing	$30.84
General and administrative	
WCC Crew Time (hrs)	304 hours
Redmond Employee Time (hrs)	526 hours
Total	**$51,626.75**

*estimates only

REFERENCES

City of Redmond. Annual Benthic Monitoring Program. (http://pugetsoundstreambenthos.org/Projects/Default.aspx?P=58)

City of Redmond. 2008. Redmond Urban Watersheds Initiated. Produced by the City of Redmond in collaboration with the Washington State Department of Ecology and the U.S. Environmental Protection Agency. http://http://www.redmond.gov/cms/One.aspx?portalId=169&pageId=3887 (accessed December 2011).

City of Redmond. 2013. City of Redmond, Washington Citywide Watershed Management Plan. Prepared by Herrera Environmental Consultants, Inc. for City of Redmond Public Works Natural Resources Division. http://www.redmond.gov/common/pages/UserFile.aspx?fileId=112355 (accessed February 2016).

Ecology. 2005. Stormwater Management Manual for Western Washington, Publication Numbers 05-01-029 through 05-10-033. Washington State Department of Ecology, Olympia, Washington.

Ecology. 2006. Water Quality Standards for Surface Waters of the State of Washington. Chapter 173 201A Washington Administrative Code (WAC). Washington State Department of Ecology (Ecology). Amended November 20, 2006.

Ecology. 2008a. Bear-Evans Watershed Fecal Coliform Bacteria Total Maximum Daily Load: Water Quality Improvement Report. Publication Number 08-10-026. Washington State Department of Ecology (Ecology). June 2008.

Ecology. 2008b. Bear-Evans Watershed Temperature and Dissolved Oxygen Total Maximum Daily Load: Water Quality Improvement Report. Publication Number 08-10-058. Washington State Department of Ecology (Ecology). September 2008.

Ecology. 2008c. Washington State's Water Quality Assessment. http://www.ecy.wa.gov/programs/wq/links/wq_assessments.html (accessed December 21, 2011). Washington State Department of Ecology.

Ecology. 2011a. Water Quality Assessment Category 4b. http://www.ecy.wa.gov/programs/wq/303d/wqassescat4b.html (accessed December 26, 2011). Washington State Department of Ecology.

Ecology. 2011b. Bear-Evans Watershed Temperature, Dissolved Oxygen and Fecal Coliform Bacteria Total Maximum Daily Load: Water Quality Implementation Plan. Publication Number 11-10-024. Washington State Department of Ecology. March 2011.

Ecology. 2015. Sediment Cleanup User's Manual II. Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC. Publication No. 12-09-057. Washington State Department of Ecology. March 2015.

Herrera and NHC. 2004. Sammamish River Case Study Technical Memorandum. Prepared for Washington State Department of Transportation by Herrera Environmental Consultants, Inc., Seattle, Washington, and Northwest Hydraulic Consultants, Inc., Seattle, Washington.

Herrera. 2013. Data Report: Redmond City Center Stormwater Outfall Monitoring. Prepared for City of Redmond by Herrera Environmental Consultants, Inc., Seattle, Washington. June 17, 2013.

Kerwin. 2001. Salmon and Steelhead Habitat Limiting Factors Report for the Cedar- Sammamish Watershed (Water Resource Inventory Area 8). Washington Conservation Commission, Olympia, Washington.

Lake Washington, Cedar, Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan (CSCP) (July 2005) (http://www.govlink.org/watersheds/8/planning/chinook-conservation-plan.aspx)

Lake Washington, Cedar, Sammamish Watershed (WRIA 8) Chinook Salmon Conservation Plan-Final. Lake Washington Cedar Sammamish Watershed / WRIA 8 Steering Committee, Seattle, Washington. July 2005.

NHC. 2006. Redmond Landscape Level Modeling Index Technical Memorandum. Prepared for City of Redmond by Northwest Hydraulic Consultants, Inc., Seattle, Washington. NHC. 2012.

PSSB. 2011. Benthic Index of Biotic Integrity (B-IBI) scores for Washington Streams. Puget Sound Stream Benthos (PSSB). http://pugetsoundstreambenthos.org/default.aspx (accessed December 21, 2011).

Redmond Urban Watersheds Initiative (October 2008) (http://www.ci.redmond.wa.us/cms/One.aspx?portalId=169&pageId=3887)

Salmon and Steelhead Habitat Limiting Factors Report for the Cedar-Sammamish Basin (Water Resource Inventory Area 8) (September 2001) (http://www.pugetsoundnearshore.org/supporting_documents/WRIA_8_LFR_FINAL.pdf)

Washington Trout. 2005. Redmond, WA Fish and Fish Habitat Distribution Study 2004–2005. http://www.washingtontrout.org/redmond/index.shtml (accessed December 21, 2011).

Water Quality Assessment for Washington (http://www.ecy.wa.gov/PROGRAMS/WQ/303d/index.html)