PRELIMINARY STORMWATER REPORT

The Osprey

7440 159th Pl NE
Redmond, Washington 98052

Prepared for:
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This report has been prepared by Staff of DCI Engineers under the direction of the professional engineer whose stamp and signature appears hereon.

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1. PROJECT OVERVIEW

The proposed 7440 159th Pl NE project will construct a multi-story building on a 27,420 sq. ft. (0.629-acre) site comprising of one parcel (parcel #9270700080) along the east side of 159th Pl. NE and the north side of Leary Way NE in Redmond, Washington. The total project areas are as follows:

On-site Area: 27,420 sf = 0.629 acres
Frontage Improvement area: 4,142 sf
Total Disturbed area within right of way: 13,905 sf
Total Project Area: 41,325 sf = 0.948 acres
(Onsite area + Total Disturbed Area within ROW)

This Preliminary Stormwater Report was created in accordance with the 2012 Washington State Department of Ecology Stormwater Management Manual (including the 2014 amendment) and the 2019 City of Redmond Stormwater Technical Notebook. This Stormwater Report provides stormwater requirements and design calculations for the project site.

2. EXISTING CONDITIONS

The site is composed of a single parcel containing one building and associated onsite parking. The site is primarily flat with no existing storm system located onsite. The site is gently sloped from northern to western side of the slope of about 0.50% such that surface water runoff drains toward the frontage of 159th Pl NE. The diameter of existing storm pipe is 12" PVC all along 159th Pl NE. A city owned and maintained storm system in 159th Pl NE collects and conveys surface water runoff downstream to the ultimate downstream discharge at the Sammamish River. The site is surrounded by Heron Rockery Trail on northeast side of the property and "The Carter" townhomes towards west side of the property. There is 60 feet right of way front of the proposed site on 159th Pl. NE. The total project areas are as follows:

On-site Area: 27,420 sf = 0.629 acres
Frontage Improvement area: 4,142 sf
Total Disturbed area within right of way: 13,905 sf
Total Project Area: 41,325 sf = 0.948 acres
(Onsite area + Total Disturbed Area within ROW)

The existing land cover on-site is as follows (see basin map in Appendix B):

	Hard Surface (Roof)	Impervious (Pollutant Generating)	Pervious	Total Site Area
Existing Conditions	12,300 SF (0.282 AC)	15,120 SF (0.347 AC)	0 SF (0.00 AC)	27,420 SF (0.629 AC)

City critical area maps were reviewed with the project. The following City of Redmond maps were reviewed (maps and project location are included in the Appendix):

- Critical Aquifer Recharge Areas (Appendix C) – CARA I
- MR5: Onsite Stormwater Management Custom Areas – Regional Facility Surcharge Area
- MR6: Runoff Treatment Custom Areas – Regional Facility Surcharge Area
- MR7: Flow Control Requirements Custom Areas– Regional Facility Surcharge Area
- North Overlake Drainage Area – N/A: Outside of mapped basins
- Historical Land Cover – Mapped as Pasture
- Regional Facilities Map – Inside limits of regional facility surcharge areas
- Downtown Stormwater Infrastructure - Downstream pipes mapped as >=12"
- Overlake Stormwater Infrastructure Map - N/A: Outside of mapped basins

3. PROPOSED CONDITIONS

The proposed building will house multi-family housing and associated parking onsite. Access to the site will be from a curb cut from 159th Pl. NE. A new sidewalk and planting strip will be constructed along 159th Pl. NE.

Sidewalk and utility easements will be required for the new sidewalk and will be provided during the coordinated civil review process. The sidewalk created on 159th Pl. NE will drain into existing storm system on 159th Pl. NE. The proposed building will be located approximately 37 feet from the northeast parcel no. 1125059037 and 23 feet from the property line. The proposed project is identified as a "LARGE" project based on the city of Redmond stormwater technical notebook (ch.3, p.56). The project designation and associated requirements are based on the total project work area, which includes on-site improvements and work within the right-of-way. The proposed sidewalk on-site that is located along the western and southern edge of the building will sheet flow into 159th Pl NE. The stormwater runoff from the proposed sidewalk in the right-of-way will sheet flow into 159th Pl. NE as well.

Threshold Discharge Area (TDA)

The project site threshold discharge area are as follows:

TDA existing land cover consist of hard surface (pollution generated) area of 15,120 sf, hard surface (roof top) area of 12,300 sf, and no pervious area.

TDA 1 developed land cover consists of hard surface (roof top) area of 214,410 SF, hard surface sidewalk (infiltrated) 773 SF, and pervious surface area (infiltrated) 3,21 SF.

TDA 2 developed land cover consist of hard surface (pollution generated – not infiltrated) area of 417 SF, hard surface – sidewalk (on-site) 1,609 sf, and hard surface – sidewalk (right-of-way) 4,278 SF.

All the areas are shown in appendix 'B' of this report. The total project areas are as follows:

On-site Area: 27,420 sf = 0.629 acres
Frontage Improvement area: 4,278 sf
Total Disturbed area within right of way: 13,905 sf
Total Project Area: 41,325 sf = 0.948 acres
(Onsite area + Total Disturbed Area within ROW)

The proposed land cover on-site for the developed condition is as follows (see basin map in Appendix B):

	Hard Surface (Roof)	Impervious (NPGIS)	Impervious (PGIS)	Pervious	Total Site Area
Developed Conditions	20,930 SF (0.480 AC)	4,486 SF (0.103 AC)	259 SF (0.006 AC)	1,745 SF (0.040 AC)	27,420 SF (0.629 AC)

Critical Aquifer Recharge Area

The project site is located in Critical Aquifer Recharge Area (CARA) I. Therefore, the project must comply with the CARA standards as outlined in the City of Redmond stormwater technical

notebook section 8.3.2A. The following information will be included on the TESC plans and details and the CSWPPP report that will be submitted during the Coordinated Civil Review (CCR) submittal:

a. Monitoring plan
b. Designated project contact
c. Secondary containment
d. Provisions to secure hazardous materials
e. Response to leaking vehicles and equipment
f. Practices and procedures regarding transfer of flammable and combustible liquids
g. Practices and procedures regarding masonry and concrete handling and washout to prevent groundwater contamination
h. On-site cleanup materials

Infiltration Facilities

One stormwater infiltration facility is proposed onsite. The Department of Ecology's stormwater modeling program Western Washington Hydrology Model (WWHM2012) was used to model and size the infiltration trenches. The DOE requires a minimum of five vertical feet of clearance between the average high groundwater elevation and the bottom of the infiltration facility. The onsite infiltration facilities are sized in accordance with this requirement.

The new infiltration facility is proposed adjacent to the building along the east side of the site, providing a 5-foot horizontal setback from the property line and 2-feet clear of the proposed building. For the preliminary sizing of the trench, it is assumed that the full site (0.629 acres) can be drained to the trench via a gravity system. The full size is assumed to be impervious for the preliminary sizing. As the project progresses this report will be refined to reflect the reduction in impervious area, which may reduce the size of the proposed infiltration facilities. This infiltration facility is sized per the DOE standards to infiltrate 100% of the 100-year storm event for the tributary area. The infiltration facility will have an overflow conveyance that will flow east to connect to the private storm system to the north of the site. Though the overflow will be sized to convey full runoff from the basin, it is anticipated that the pipe will remain relatively dry, as the infiltration trench is designed to infiltrate 100% of the 100-year design storm.

The following is a tabulation of the Infiltration Gallery:

Infiltration Gallery:

	Area Infiltrated	Trench Length	Trench Width	Trench Depth	Design Infiltration Rate	Gravel Trench Porosity	Percent Infiltrated
Full Site	21,724 SF (0.499 AC) (NPGHS + NPGPS)	120-feet	7-feet	2-feet	9 in/hr	0.3	100%

Infiltration Testing:

A soil grain size analysis has been performed for the project. Per the Department of Ecology's Stormwater Management Manual for Western Washington, Volume III, Section 3.3 indicates that a soil grain size analysis is an acceptable infiltration test procedure for recessional outwash soils. The recommended soil infiltration rate is based on neighboring site infiltration studies wth comparable soils. Due to previous uses of the site to the north, small scale pit test may be required by the City of Redmond during the CCR process.

Off-Site Areas Draining On-site

There is no evidence that there are significant off-site areas draining on to the site. Stormwater runoff from the property to the north is captured via catch basins and conveyed to the 12" storm drain in 159th Pl NE. A small portion of the heron rookery trail (approximately 30 LF) seems to drain toward the eastern edge of the property, but likely infiltrates before reaching the project site.

Stormwater Capital Facilities Charges

The site is in the Downtown Regional Facilities basin. The developer is required to pay a fee in-lieu of on-site stormwater management. The fee is based on square footage of new impervious surface. In addition, the City wide stormwater capital facilities charges apply to this project. Per the Redmond Municipal Code, these capital facilities charges are outlined below:

> *The Citywide stormwater capital facilities charge (RMC 13.20.040*): All developing properties are subject to payment of a charge of $1,342.00 per 2,000 square feet of impervious area per 2019 rates. This fee is separate from the neighborhood capital facilities charges.
>
> *The Downtown sub-basin stormwater capital facilities charge (RMC 13.20.045):*
> The downtown sub-basin stormwater capital facilities charge shall be calculated for property development based upon the number of impervious units proposed to be created by the development. The charge is $5,979.00 for each impervious unit. A credit of 80 percent may be applied to the number of non-pollution generating impervious units that are managed by an approved private infiltration facility meeting current standards. The total charge to be paid in connection with any development approval shall be determined by multiplying the total number of impervious units to be created by the proposed development by the charge for each such unit minus the number of creditable impervious units multiplied by 0.80 of the charge for each unit.

The following table summarizes the preliminary anticipated capital facilities charges associated with the project:

Citywide stormwater capital facilities charge	
Impervious Area (On-site)	25,675 SF
Impervious Area (Right-of-way)	4,142 SF
Impervious Area (Total)	29,817 SF
Number of impervious units (1 unit = 2,000 SF)	14.9 units
City fee per impervious unit	$1,342.00
Total Citywide Stormwater Capital Facilities Charge:	**$19,995.80**

Downtown sub-basin stormwater capital facilities charge	
Impervious Area (On-site)	25,675 SF
Impervious Area (Right-of-way)	4,142 SF
Impervious Area (Total)	29,817 SF
Number of impervious units (1 unit = 2,000 SF)	14.9 units
City fee per impervious unit	$5,979.00
Subtotal	**$89,087.10**
Non-pollution generating impervious area managed by a private infiltration facility	21,724 SF
Number of units associated with the non-pollution generating impervious area managed by a private infiltration facility	10.9 units
Infiltration Unit Area charge reduction (0.8 * $5,979.00)	$4,783.20
Subtotal for Infiltration charges reduction	**$52,136.88**
Total Downtown Capital Facilities Charges:	**$36,950.22**

Note: The stormwater capital facilities charge fee will be reviewed, and fees will be assessed at the time of plan approval prior to permit issuance. The stormwater capital facilities charge rates that are in effect at the time of payment will be applicable on the project.

4. MINIMUM REQUIREMENTS

The proposed project will generate 25,675 square feet of impervious area on-site and 4,142 square feet of impervious area in the right-of-way. Per the 2019 City of Redmond Stormwater Technical Notebook this project is classified as a Large Project because it will create more than 5,000 sq. ft. of new impervious surface and will be required to meet all of the following minimum requirements as applicable. As indicated in Figure I-2.4.2, Minimum Requirements 1-9 will be required to be applied to the new and replaced impervious surfaces onsite.

MR 1: Preparation of Stormwater Site Plans

Stormwater site plans showing how stormwater will be collected and conveyed to the public storm sewer will be prepared in accordance with DOE and City of Redmond standards upon finalization of the site configuration.

MR 2: Construction Stormwater Pollution Prevention

The site construction plans will include TESC provisions with notes and details. A Construction Stormwater Pollution Prevention Plan (CSWPPP) also will be prepared. The proposed BMPs will include siltation barriers, an armored construction entrance, inlet protection and covering of exposed soil. Dewatering is not anticipated to be required during construction, but in the event that it is required measures to handle dewatering will be detailed. This project will not require a Construction Stormwater General Permit (NPDES) from the Department of Ecology because it encompasses less than one acre. A separate annual wet season plan shall be obtained by the developer for any clearing & grading or construction from October 1st to April 30th.

MR 3: Source Control of Pollution

The CSWPPP will include provisions for materials handling and pollution source control during construction. Any hazardous material releases shall be contained, cleaned up, and reported. The CSWPPP will provide details on how the following requirements will be met:

- Monitoring plan.
- Designated project contact.
- Secondary containment.
- Provisions to secure hazardous materials.
- Response to leaking vehicles and equipment.
- Practices and procedures regarding transfer of flammable and combustible liquids.
- On-site cleanup materials and other containment and cleanup provisions.

The operation of the completed mixed use building is not expected to generate significant pollutants on an ongoing basis.

A Phase II Environmental Site Assessment (ESA) was completed in 2018 by G-Logics, Inc. Soil and groundwater samples from the Phase II ESA were selected for chemical analysis by the project geotechnical engineering consultant Geoengineers. Their analysis of the soils detected the following contaminants at concentrations lower than the MTCA

Method A or B cleanup levels: toluene; ethylbenzene; xylenes; heavy oil-range petroleum hydrocarbons; gasoline-range petroleum hydrocarbons; chromium; lead; and arsenic. Soil contamination removal must be performed per RMC 13.25, and RMC 15.24.

MR 4: Preservation of Natural Drainage Systems and Outfalls

There are no surface channels on the project site. Runoff from the parcel either infiltrates through the existing graveled surface onsite or sheet flows to the 159th PL NE. along the west side of the site.

MR 5: On-site Stormwater Management

Projects are required to implement on-site stormwater management BMPs to infiltrate, disperse, and retain stormwater runoff on-site to the maximum extent feasible without causing flooding, groundwater contamination, or erosion impacts.

The project is in an area that drains to a Flow Control Exempt Water, the Sammamish River. Figure I-2.5.1 of the 2019 Stormwater Technical Notebook was reviewed as part of this engineering included in the appendix 'B'. The flow chart requires implementation of the following BMP's where feasible:

- Post construction Soil Quality and Depth
- Downspout Full Infiltration, Downspout Dispersion Systems, or Perforated Stub-out Connections.
- Concentrated Flow Dispersion or sheet flow dispersion.

Post construction soil quality and depth will be implemented in all planting areas.

The onsite soils have highly infiltrative characteristics, and therefore, the roof downspouts will be connected to infiltration systems to the maximum extent feasible. The urban setting of the project excludes the use of dispersion systems. Providing a perforated stub-out connection to the City's system is not encouraged due to infiltration of private stormwater through the perforated stub out connection within public land is not permitted per code.

The surface water runoff from the roof will be conveyed to an on-site infiltration trench located along the east side of the building, 7-feet west of the eastern property line that is sized to infiltrate 100% of runoff from a 100-year design storm. It is anticipated that runoff from small at-grade impervious areas such as patios will surface-infiltrate into the sandy soil on-site.

The surface water runoff from the sidewalk along the western and southern edge of the building will bypass the proposed infiltration facility and sheet flow into 159th Pl NE. The emergency vehicle access located along the eastern property line will be routed to the municipal storm drain in Leary Way. The project does not intend to install permeable pavement for the sidewalks on-site

Refer to Appendix C for infiltration calculations.

MR 6: Runoff Treatment

The project is proposing 259 SF of PGIS, and 0 SF of PGPS. Because the proposed pollution-generating impervious surface (PGIS) external to the building and uncovered areas of pavement is less than the 5,000 SF threshold, and the proposed pollution-generating pervious surface (PGPS) is less than ¾ acres, runoff treatment is not required for the project site. The site is located in the regional facility surcharge area.

MR 7: Flow Control

As noted in Section 3 of this report, the site is located within the Redmond Regional Facilities Basin. Stormwater Quantity Control is provided by the City of Redmond upon payment of the downtown capital facilities charges outlined in Section 3 above.

MR 8: Wetlands Protection

There are no wetlands on or in the directly abutting the project site.

MR 9: Operation and Maintenance

The building's maintenance staff will be charged with monitoring the function of the on-site drainage facilities. If the final drainage design includes elements for which the Department of Ecology has identified maintenance guidelines, an Operations & Maintenance Manual will be prepared for maintenance staff.

5. DOWNSTREAM ANALYSIS

The drainage system downstream of the site was reviewed. The following documents were used in the downstream review:

- City of Redmond 2012 GIS Maps
- City of Redmond 2012 Downtown Basin Map
- Site visit, 11/12/2019

The existing downstream drainage system consists of a short run of catch basins and varying size storm drains until outfall to the pond located south of the site.

The downstream drainage system begins at a catch basin (structure #1223) approximately 46-ft south of the northwest corner of the site.

From structure #1223 stormwater flows to the southwest across 159th Pl NE in an 8" storm drain to a catch basin (structure #1224).

From structure #1224 stormwater then flows to the southeast in a 12" storm drain to a storm drain maintenance hole (structure #1228).

From structure #1228 stormwater continues to flow to the southeast in a 12" storm drain to another SDMH (structure #14865).

From structure #14865 stormwater continues to flow southeast in a 15" storm drain to its eventual outfall to the pond located approximately 130-feet south of the site.

At the time of the downstream drainage system site visit the existing storm facilities appeared to be competent. The project intends to infiltrate at a minimum 100% of the 100-year storm event. Because of this, storm drain pipes conveying water off-site will remain relatively dry and have a negligible impact downstream of the site.

Refer to Appendix F for the downstream drainage map.

6. CONVEYANCE

The stormwater site plan incorporates an infiltration facility that plans to infiltrate 100% of the collected surface water runoff. An overflow pipe will be sized to convey the overflow of the 100-year design storm. Conveyance and sizing calculations will be provided in the CCR submittal.

APPENDICES:

Appendix A: Site Maps
Vicinity Map
City of Redmond – Maps from the 2019 Stormwater Technical Notebook
NRCS Soils Data

Appendix B: Storm Requirements and Basin Areas
Figure I-2.4.1 Flow Chart for Determining Requirements for New Development
Figure I-2.4.2 Flow Chart for Determining Requirements for Development
Figure I-2.5.1 Flow Chart for Determining LID MR #5 Requirements
Figure EX-01: Existing Land Cover Map
Figure FG-01: Developed Land Cover Map

Appendix C: Infiltration Calculations
WWHM Stormwater Calculations

Appendix D: Site Assessment Packet
Site Assessment Packet
Composite Site Plan

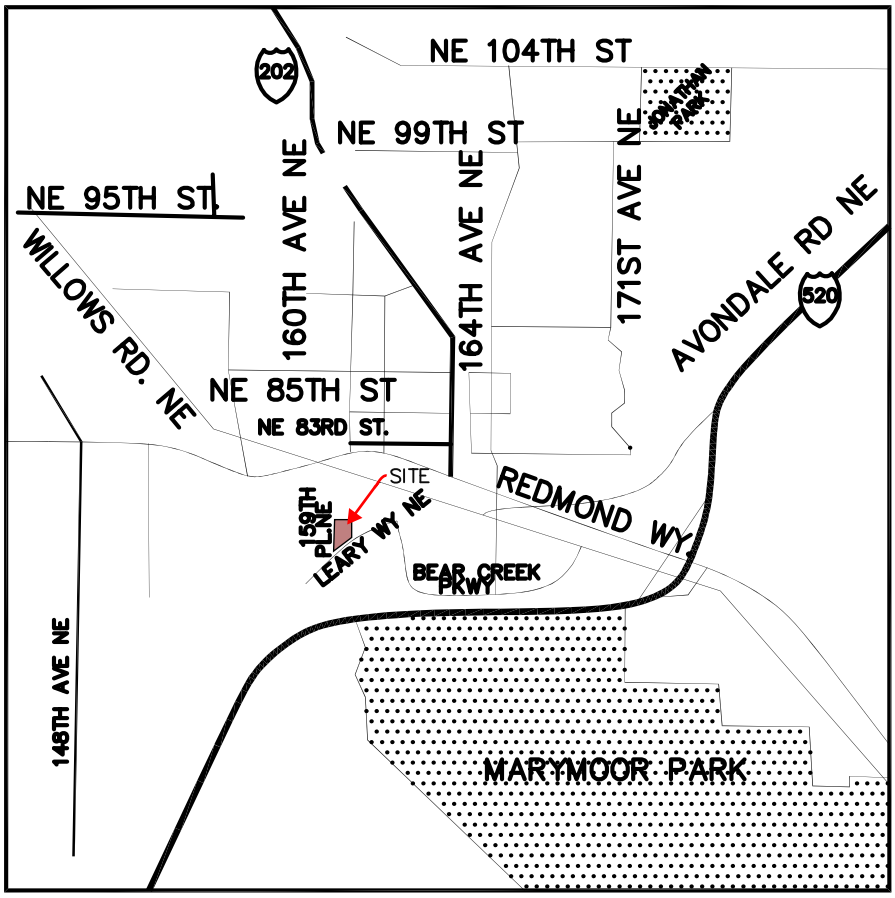
Appendix E: Downstream Drainage System
Downtown Basin Map

Appendix A: Site Maps

Vicinity Map

City of Redmond – Maps from the 2019 Stormwater Technical Notebook

NRCS Soils Data

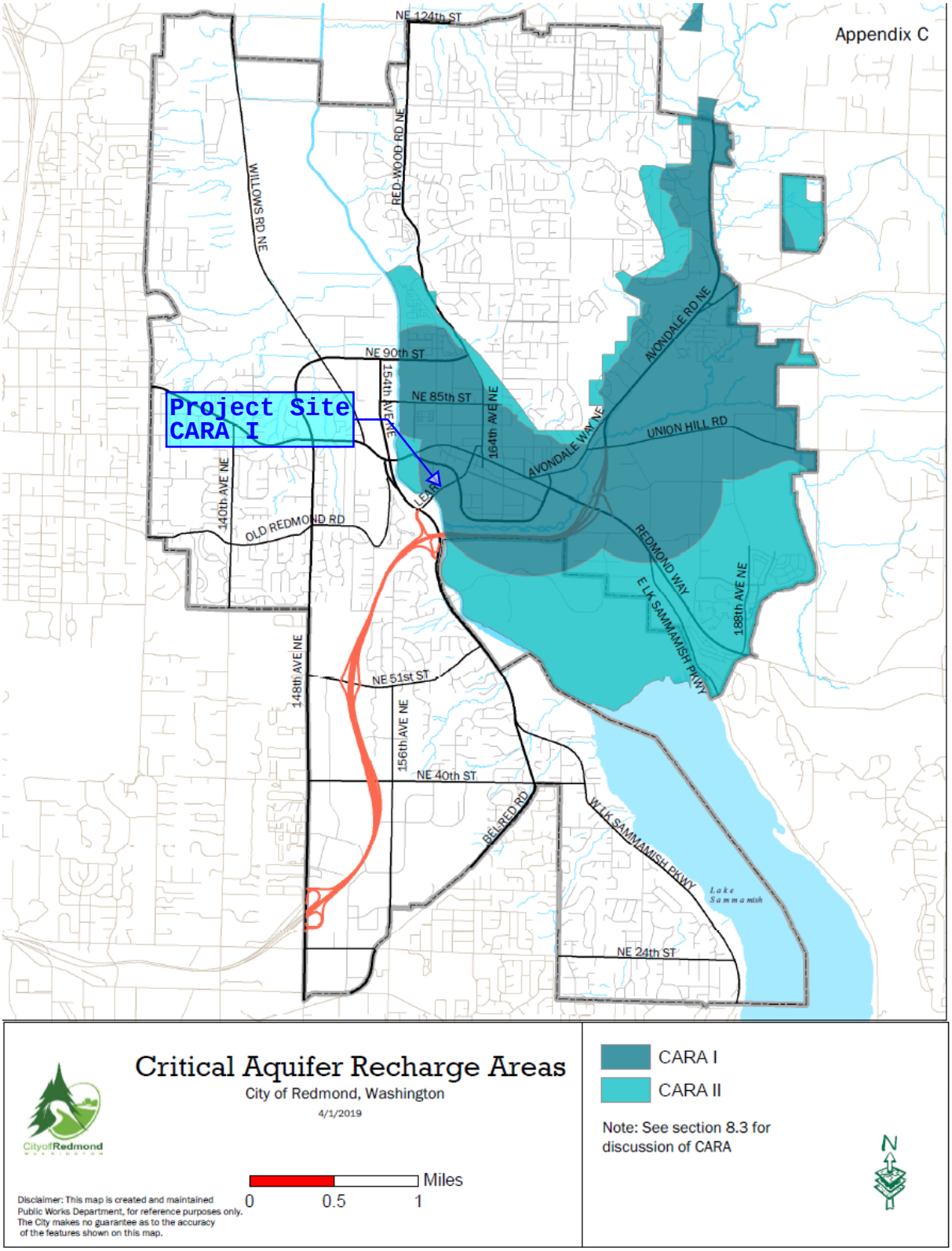


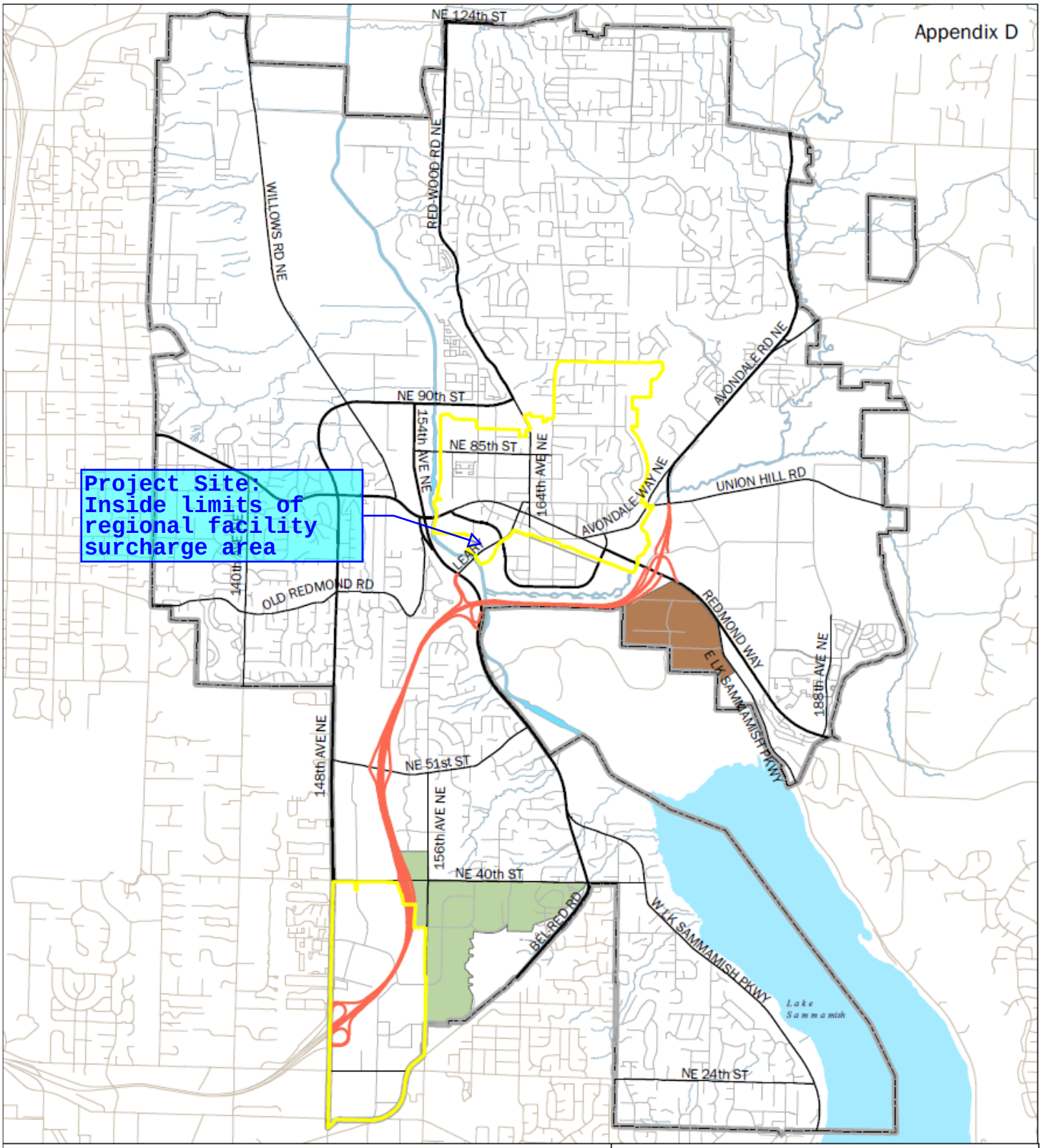
VICINITY MAP

NOT TO SCALE

N

Appendix C - Critical Aquifer Recharge Areas





MR 5: Onsite Stormwater Management Custom Areas

City of Redmond, Washington

4/1/2019

N

Miles

0 0.5 1

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Regional Facility Surcharge Areas

40th Street Basin

Marymoor - 100% Infiltration

Note: See section 2.5.5 for explanation of custom areas

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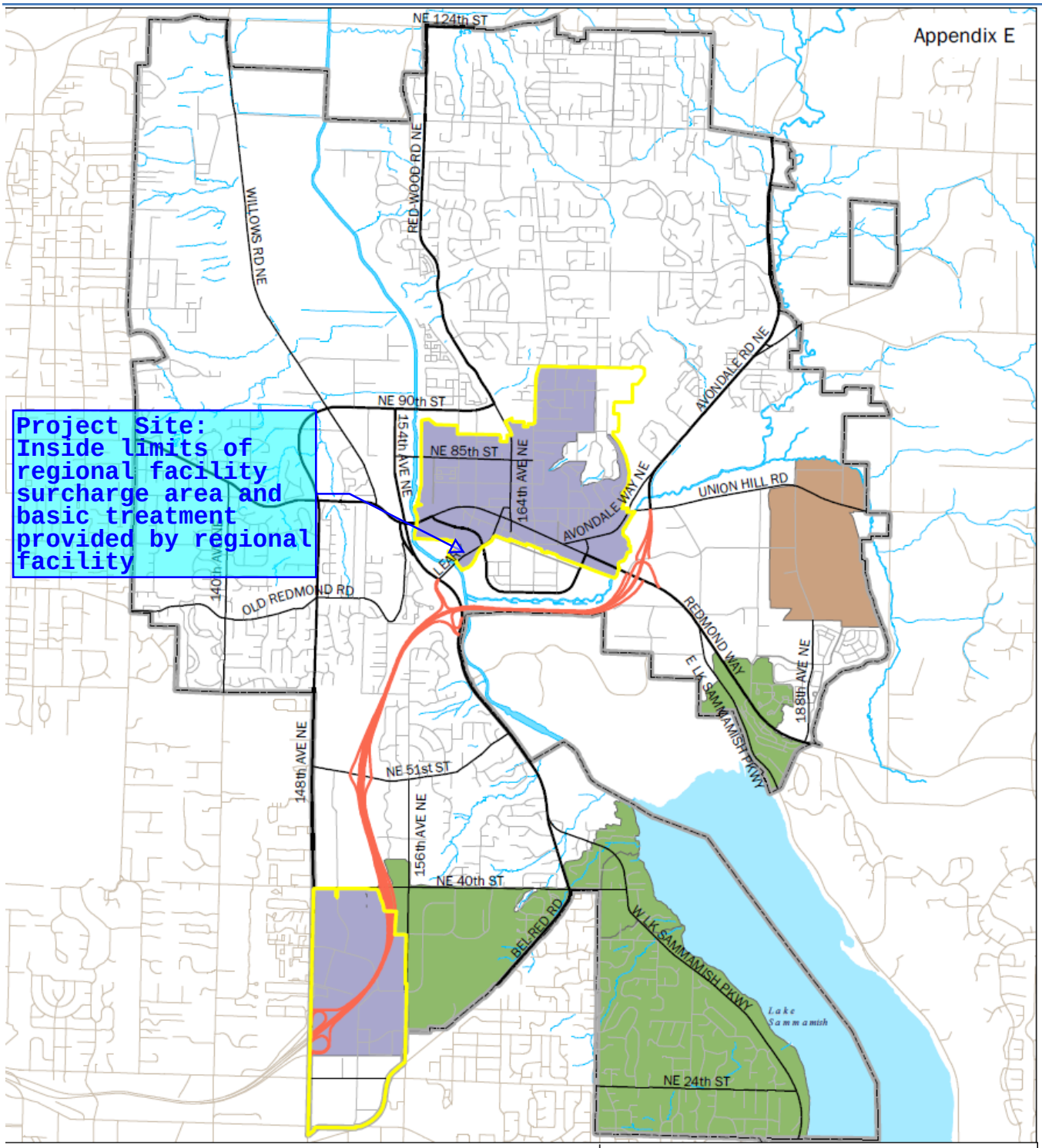
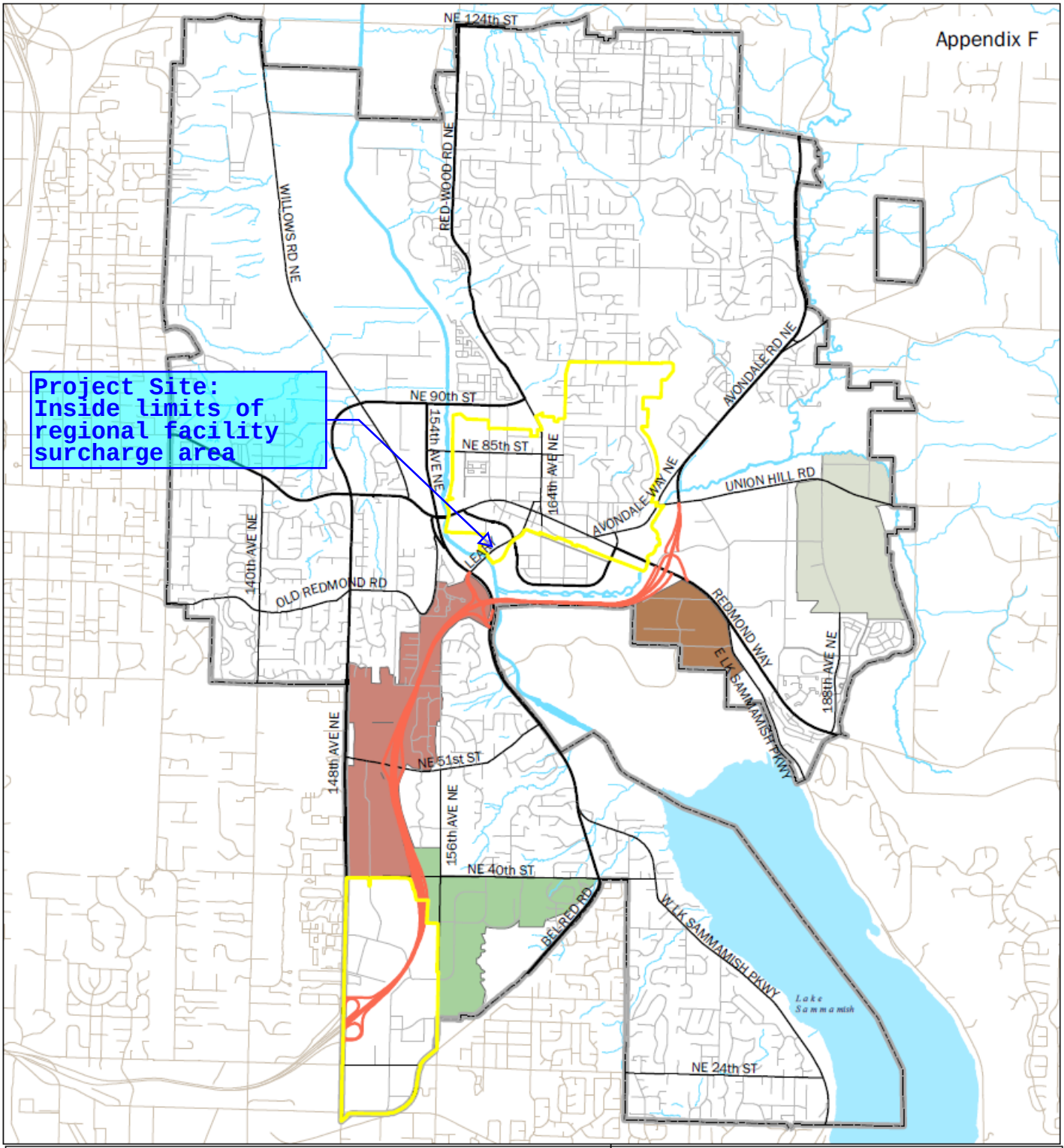
Appendix E - Minimum Requirement Map 6





MR 7: Flow Control Requirements
Custom Areas
City of Redmond, Washington
4/1/2019

Disclaimer: This map is created and maintained by Public Works Department, for reference purposes only. The City makes no guarantee as to the accuracy of the features shown on this map.

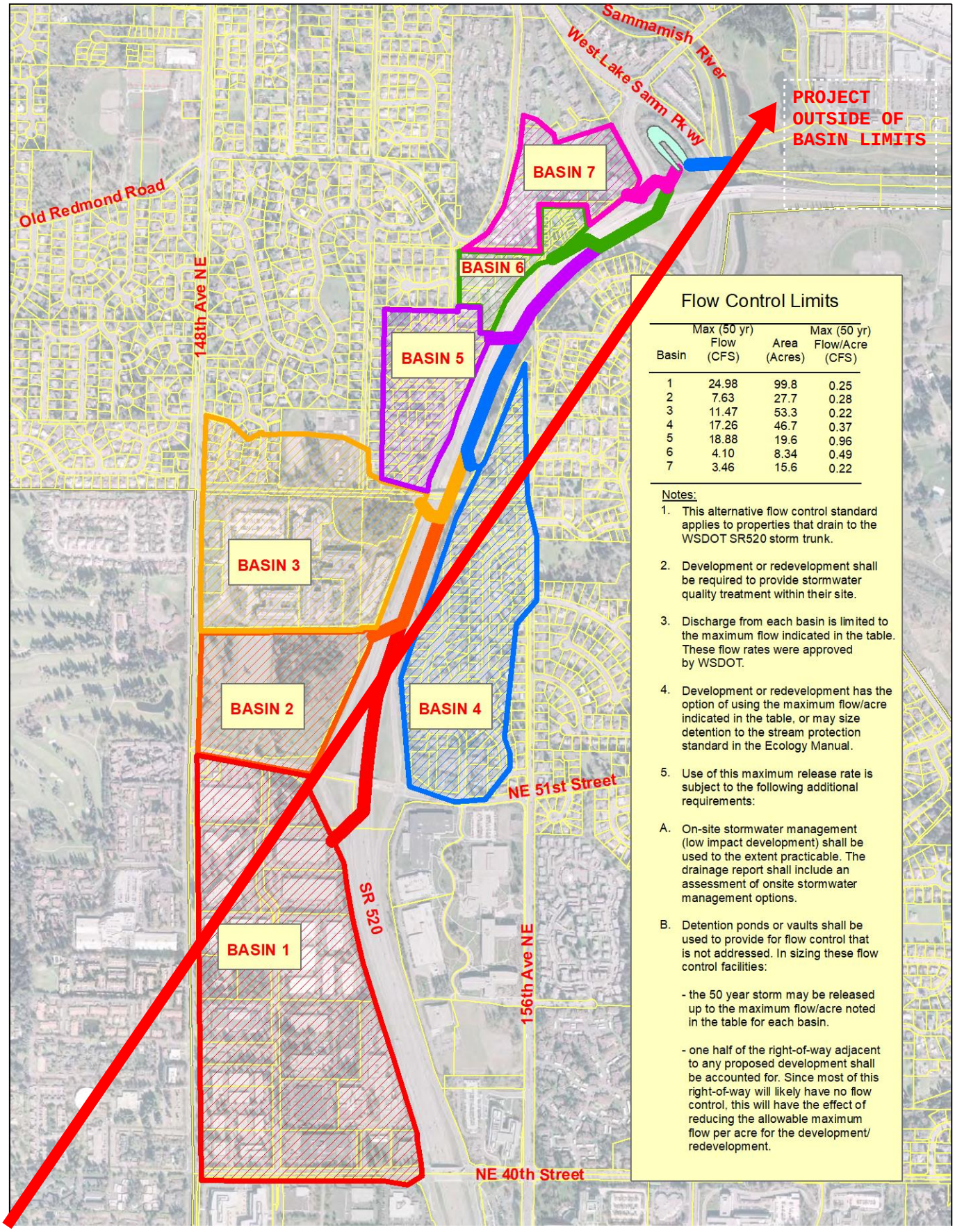
0 0.5 1 Miles

- Regional Facility Surcharge Areas
- SE Redmond
- 40th Street Basin
- 520 Drainage Basin
- Marymoor - 100% Infiltration

Note: See Section 2.5.7 for explanation of custom areas

Document Path: Q:\NRDivision\NRFunctions\04MappingGISDatabase\PROJECTS\StormwaterTechNotebook\Maps\MR7_FlowControl.mxd

CITY OF REDMOND PUBLIC WORKS
NORTH OVERLAKE DRAINAGE AREA
ALTERNATIVE FLOW CONTROL STANDARD



Flow Control Limits

Basin	Max (50 yr) Flow (CFS)	Area (Acres)	Max (50 yr) Flow/Acre (CFS)
1	24.98	99.8	0.25
2	7.63	27.7	0.28
3	11.47	53.3	0.22
4	17.26	46.7	0.37
5	18.88	19.6	0.96
6	4.10	8.34	0.49
7	3.46	15.6	0.22

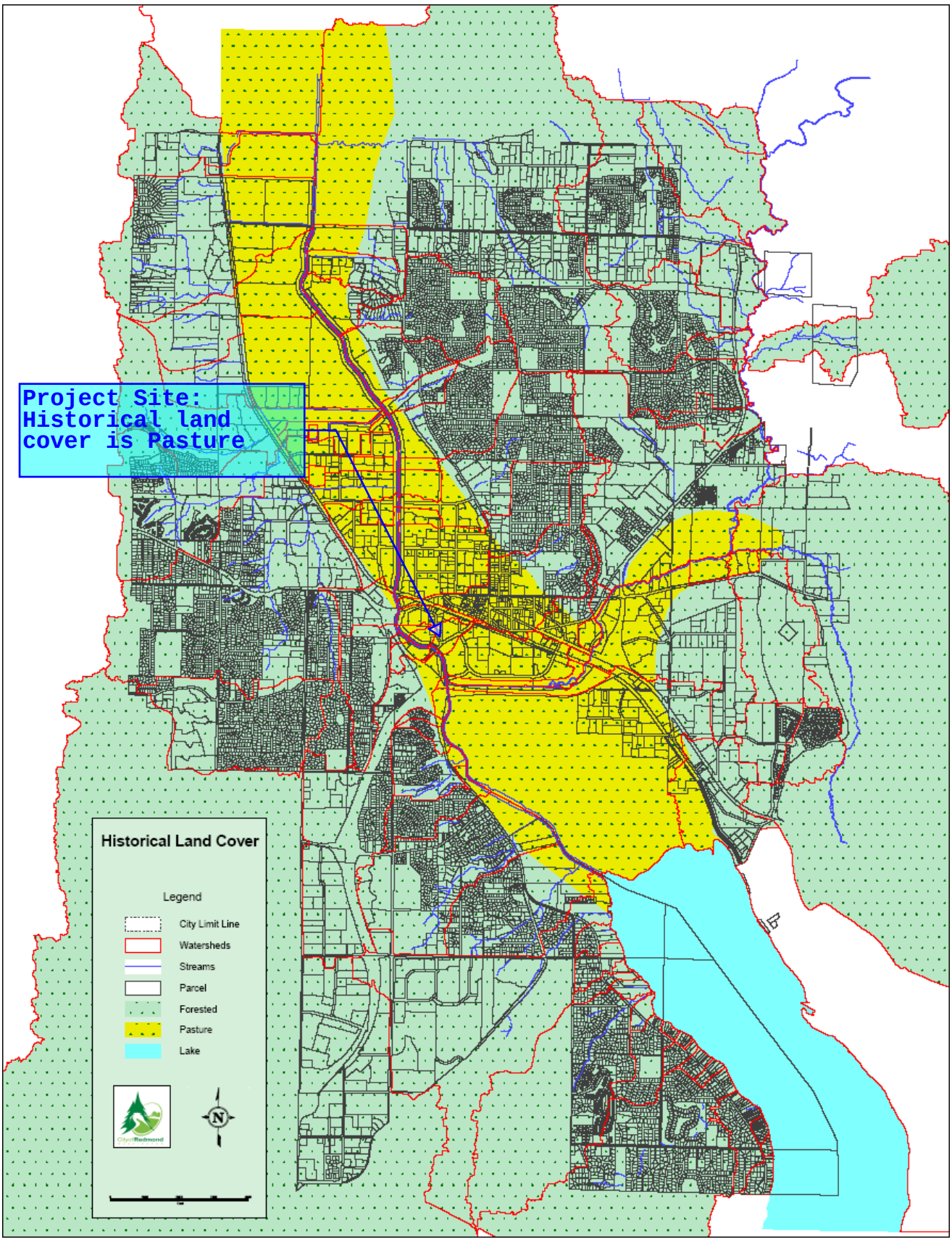
Notes:

1. This alternative flow control standard applies to properties that drain to the WSDOT SR520 storm trunk.
2. Development or redevelopment shall be required to provide stormwater quality treatment within their site.
3. Discharge from each basin is limited to the maximum flow indicated in the table. These flow rates were approved by WSDOT.
4. Development or redevelopment has the option of using the maximum flow/acre indicated in the table, or may size detention to the stream protection standard in the Ecology Manual.
5. Use of this maximum release rate is subject to the following additional requirements:

A. On-site stormwater management (low impact development) shall be used to the extent practicable. The drainage report shall include an assessment of onsite stormwater management options.

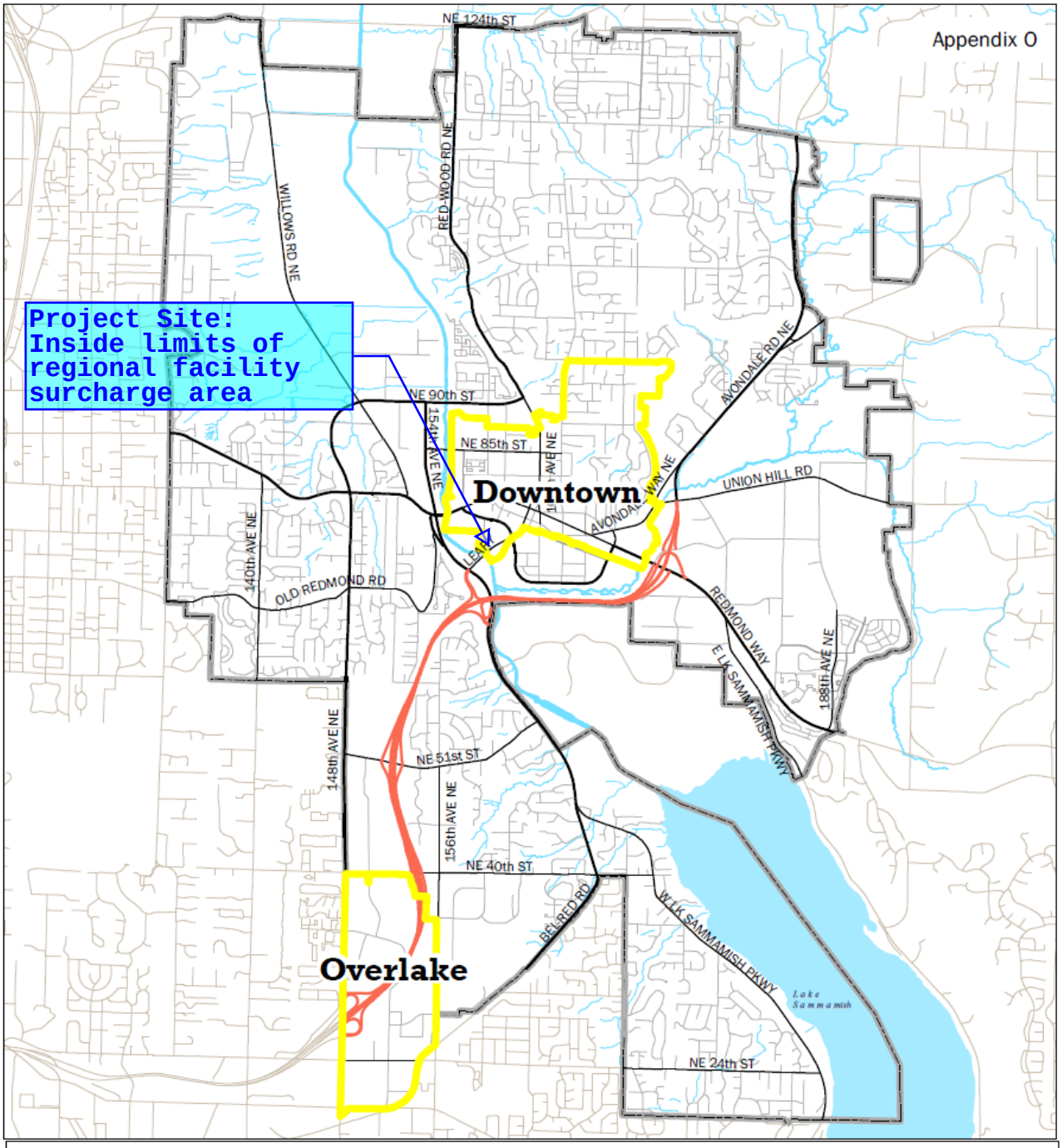
B. Detention ponds or vaults shall be used to provide for flow control that is not addressed. In sizing these flow control facilities:

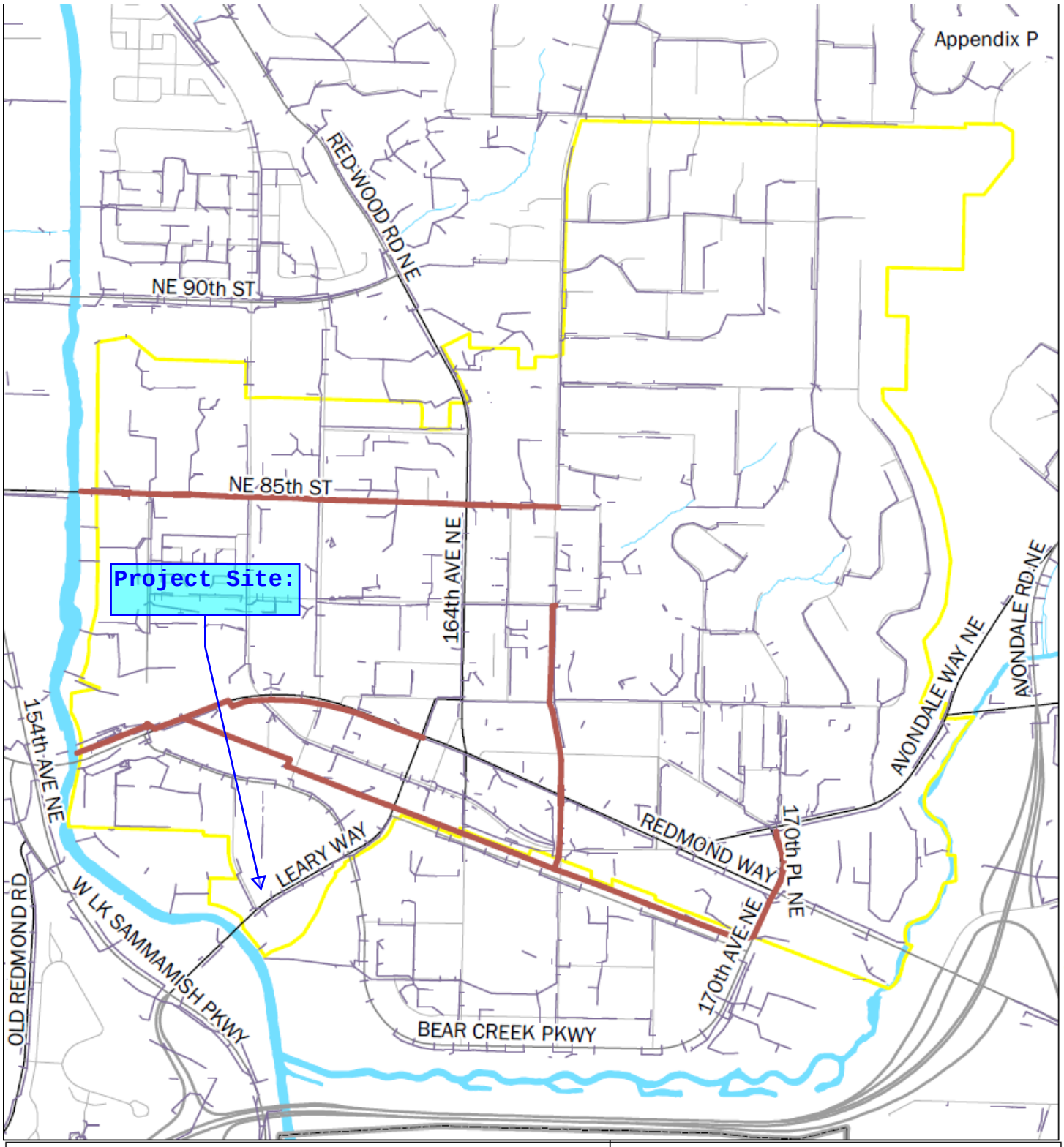
- the 50 year storm may be released up to the maximum flow/acre noted in the table for each basin.
- one half of the right-of-way adjacent to any proposed development shall be accounted for. Since most of this right-of-way will likely have no flow control, this will have the effect of reducing the allowable maximum flow per acre for the development/ redevelopment.



Stormwater Technical Notebook Issue No. 6 November 2011

Appendix O - Regional Facilities Map





Downtown Stormwater Infrastructure

City of Redmond, Washington

4/1/2019

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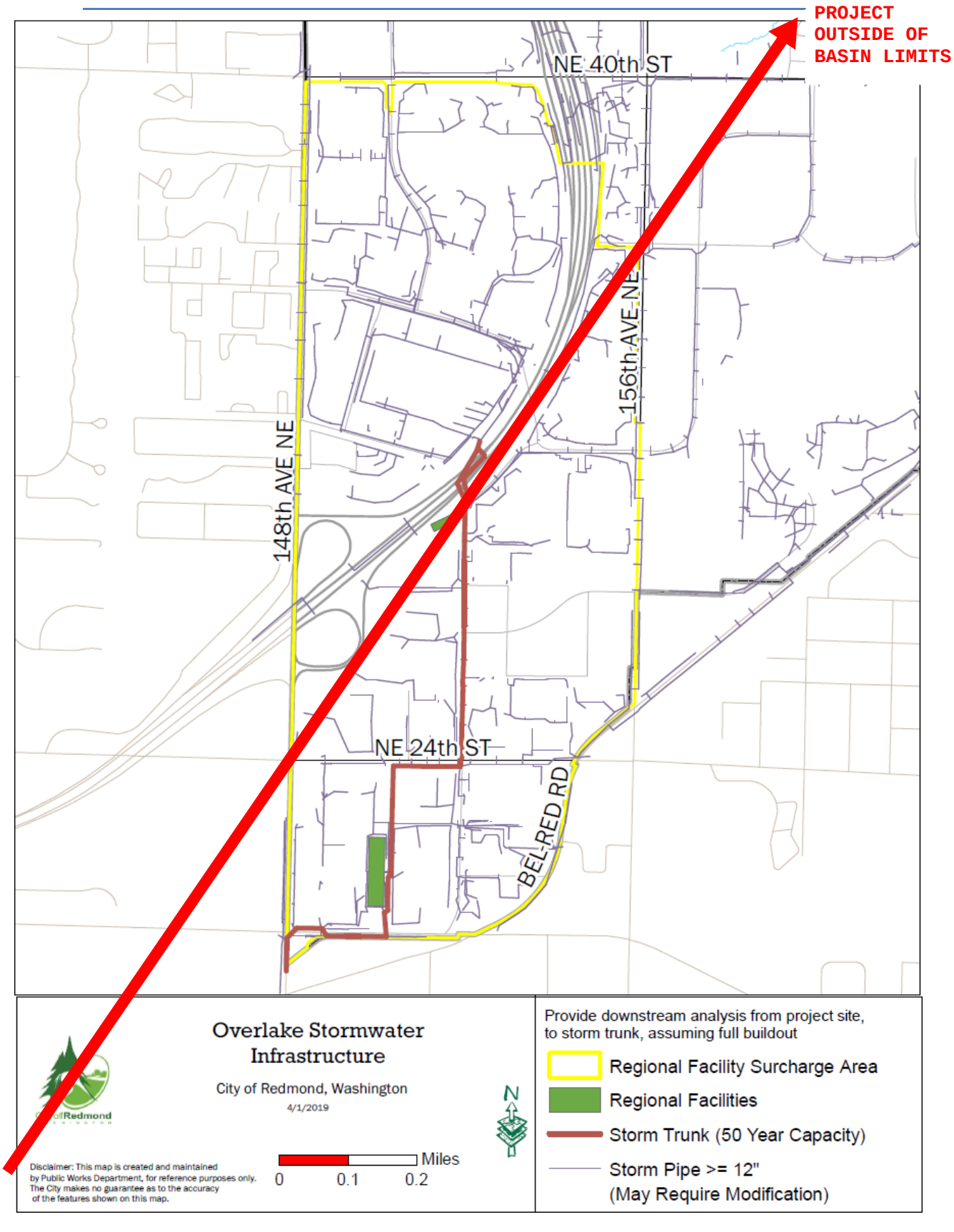
Miles

0 0.125 0.25

Provide downstream analysis from project site, to storm trunk, assuming full buildout

- Storm Trunk (50 Year Capacity)
- Storm Pipe >= 12"
- Regional Facility Surcharge Area (May Require Modification)

Appendix Q - Overlake Stormwater Infrastructure Map



Soil Map—King County Area, Washington
(Blackbird)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 11, Sep 14, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 31, 2013—Oct 6, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

King County Area, Washington (WA633)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
AgC	Alderwood gravelly sandy loam, 8 to 15 percent slopes	0.0	0.0%
Ea	Earlmont silt loam	29.0	35.3%
EvB	Everett very gravelly sandy loam, 0 to 8 percent slopes	42.6	51.9%
KpC	Kitsap silt loam, 8 to 15 percent slopes	1.7	2.0%
Pc	Pilchuck loamy fine sand	5.3	6.5%
W	Water	3.5	4.3%
Totals for Area of Interest		**82.2**	**100.0%**

Appendix B: Storm Requirements and Basin Areas

Figure I-2.4.1 Flow Chart for Determining Requirements for New Development
Figure I-2.4.2 Flow Chart for Determining Requirements for Development
Figure I-2.5.1 Flow Chart for Determining LID MR #5 Requirements
Figure EX-01: Existing Land Cover Map
Figure FG-01: Developed Land Cover Map

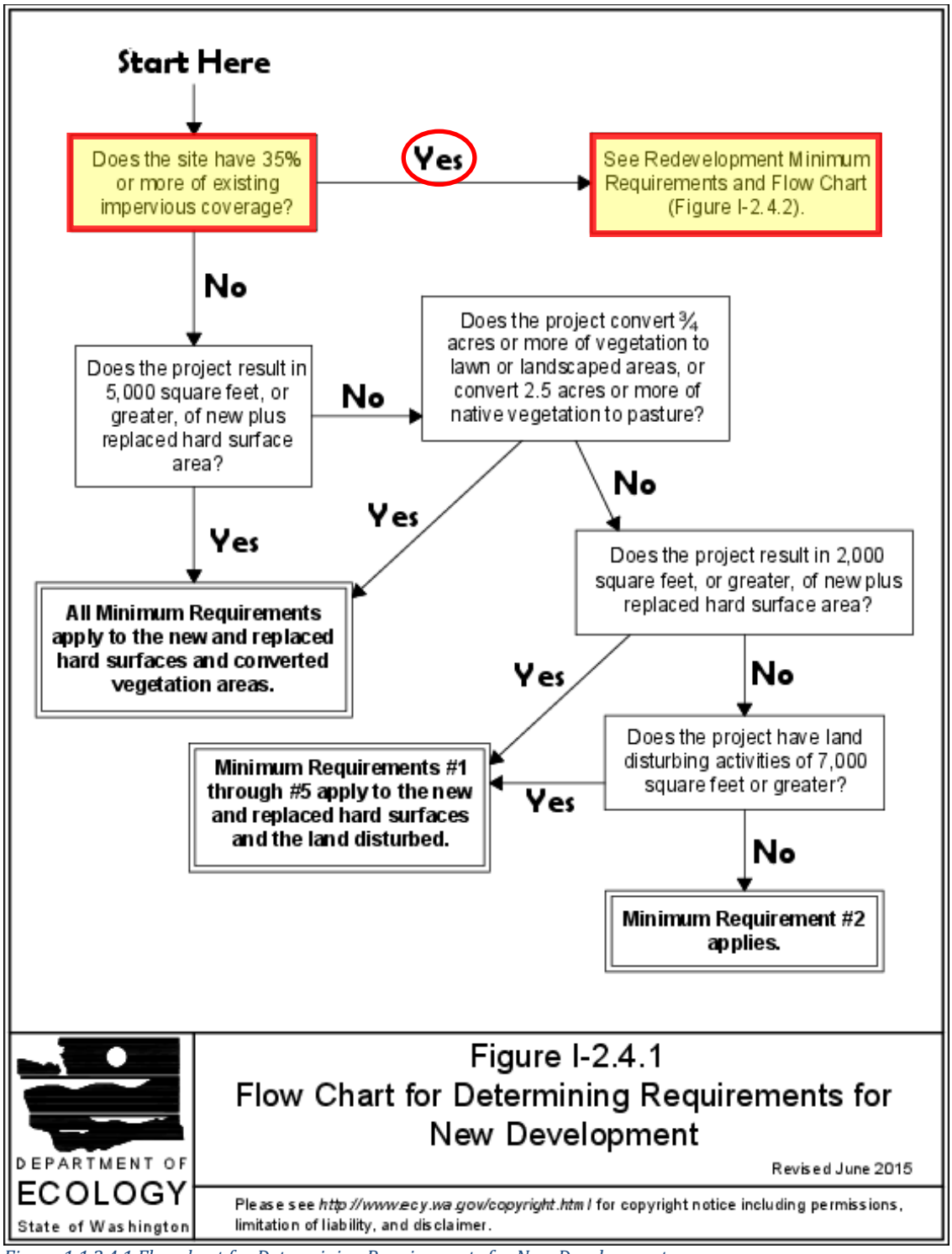


Figure 1 1.2.4.1 Flowchart for Determining Requirements for New Development

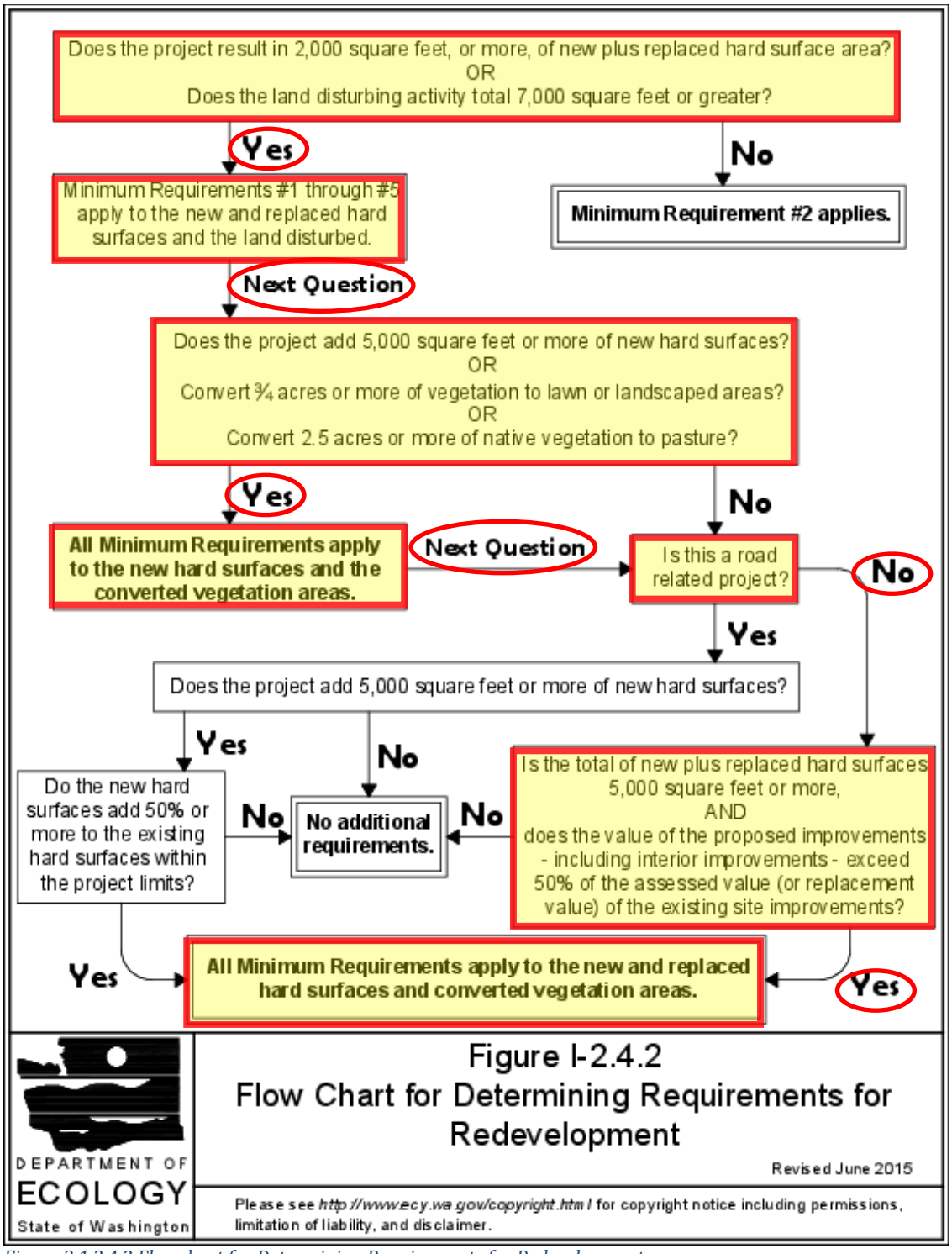


Figure 2 1.2.4.2 Flowchart for Determining Requirements for Redevelopment

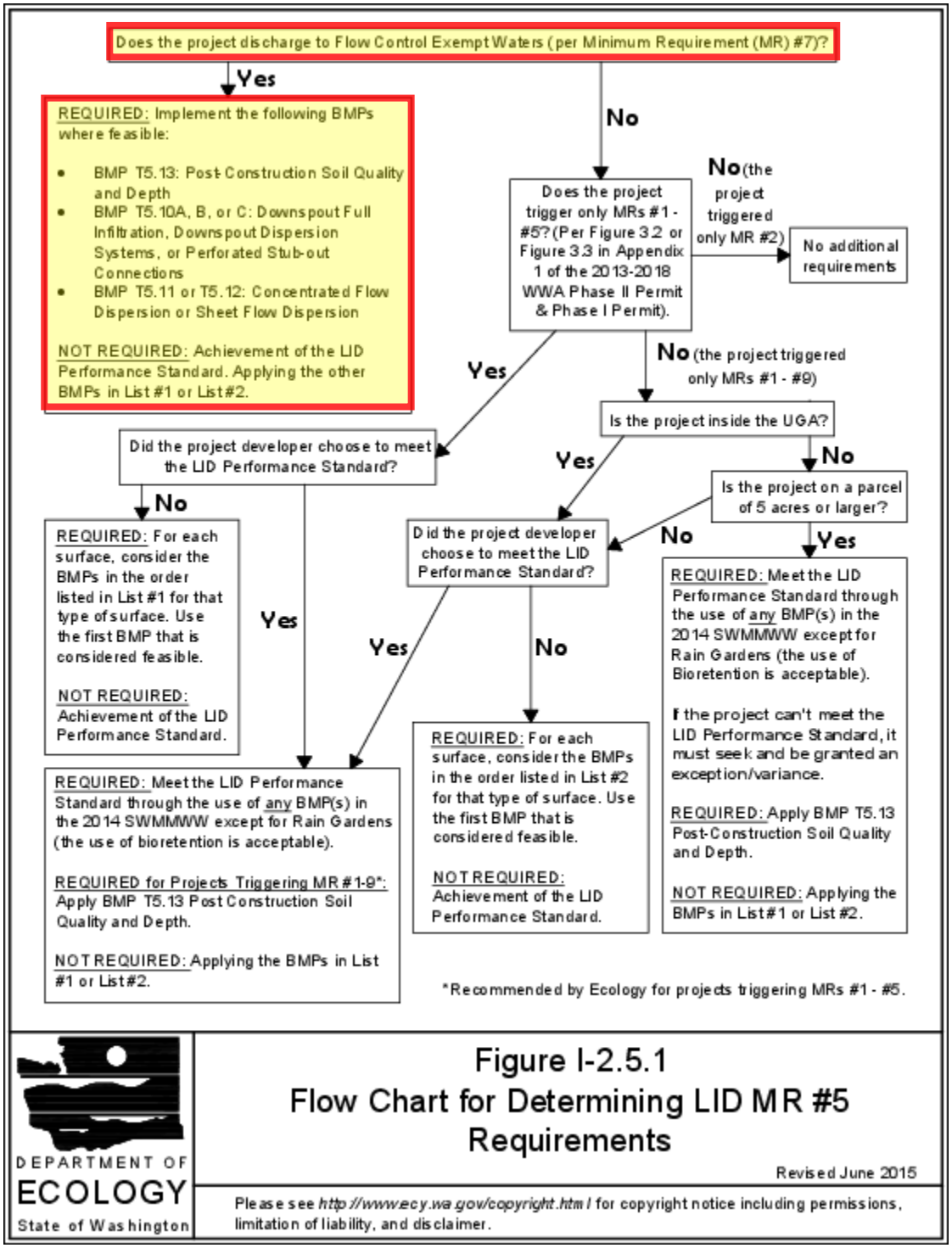


Figure 3 1.2.5.1 Flow Chart for Determining LID MR #5 Requirements

EX LAND COVER BREAKDOWN:

HARD SURFACE – POLLUTION GENERATING
14,728 SF (0.34 AC)

HARD SURFACE – ROOF TOP
12,304 SF (0.28 AC)

PERVIOUS SURFACE
0 SF (0.0 AC)

N

LEARY WAY

N88°35'52"W 165.82'

N01°24'08"E 259.46'

N01°24'08"E 2627.73'

Δ=13°29'58"
L=71.52' R=303.54'

214.15'
N26°26'36"W

40.26'
N63°34'03"W

159TH PLACE NE

Δ=27°50'32"
L=162.08' R=333.54'

T=82.67'

N26°26'36"W 288.05' MEAS. (288.32' REF. 2)

Δ=11°35'22"
R=955.00' L=193.17'

GRAPHIC SCALE

30 0 15 30

(IN FEET)
1 inch = 30 ft.

PROJECT NAME:	PROJECT NO:	BY: K. OLIVER	SHEET NO:
7440 159TH PL NE	19012-0002	DATE: 03/29/2019	C-100

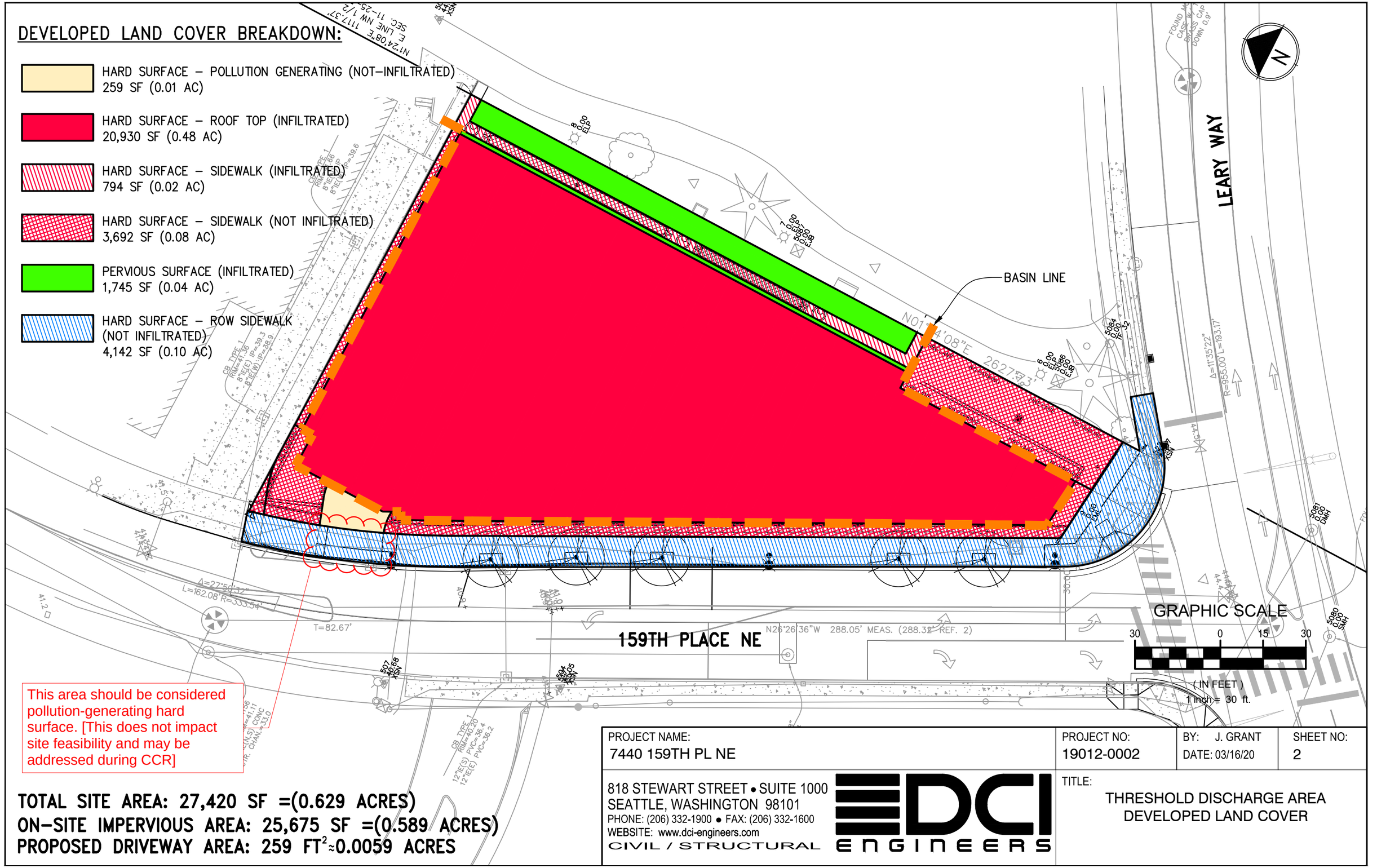
818 STEWART STREET • SUITE 1000
SEATTLE, WASHINGTON 98101
PHONE: (206) 332-1900 • FAX: (206) 332-1600
WEBSITE: www.dci-engineers.com
CIVIL / STRUCTURAL

DCI ENGINEERS

TITLE: EXISTING LAND COVER

DEVELOPED LAND COVER BREAKDOWN:

- HARD SURFACE – POLLUTION GENERATING (NOT–INFILTRATED)
  259 SF (0.01 AC)
- HARD SURFACE – ROOF TOP (INFILTRATED)
  20,930 SF (0.48 AC)
- HARD SURFACE – SIDEWALK (INFILTRATED)
  794 SF (0.02 AC)
- HARD SURFACE – SIDEWALK (NOT INFILTRATED)
  3,692 SF (0.08 AC)
- PERVIOUS SURFACE (INFILTRATED)
  1,745 SF (0.04 AC)
- HARD SURFACE – ROW SIDEWALK (NOT INFILTRATED)
  4,142 SF (0.10 AC)



This area should be considered pollution-generating hard surface. [This does not impact site feasibility and may be addressed during CCR]

TOTAL SITE AREA: 27,420 SF =(0.629 ACRES)
ON–SITE IMPERVIOUS AREA: 25,675 SF =(0.589 ACRES)
PROPOSED DRIVEWAY AREA: 259 FT^2≈0.0059 ACRES

PROJECT NAME:	PROJECT NO:	BY: J. GRANT	SHEET NO:
7440 159TH PL NE	19012-0002	DATE: 03/16/20	2

818 STEWART STREET • SUITE 1000
SEATTLE, WASHINGTON 98101
PHONE: (206) 332-1900 • FAX: (206) 332-1600
WEBSITE: www.dci-engineers.com
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TITLE:
THRESHOLD DISCHARGE AREA
DEVELOPED LAND COVER

LEGEND:

TDA 1 (INFILTRATION AREA)

TDA 2 (BYPASS AREA)

LEARY WAY

159TH PLACE NE

N26°26'36"W 288.05' MEAS. (288.32' REF. 2)

N01°24'08"E 2627.83'

N1°24'08"E 1117.37' E. LINE NW 1/2 SEC. 11-25-2

T=82.67'

L=162.08' R=333.54' Δ=27°50'32"

R=955.00' L=193.17' Δ=11°35'22"

FOUND CONCRETE MONUMENT IN CASE

FOUND MONUMENT CASE W/ BRASS CAP DOWN 0.9'

SSMH 48" 3FTSMH156 RIM=41.11 8"IE(N,S) CONC CTR. CHAN.=33.0

CB TYPE 1 RIM=41.66 8"IE(N) IP 8"IE(W) IP=39.6

CB TYPE 1 RIM=41.36 8"IE(E) IP=39.3 8"IE(W) IP=38.9

CB TYPE 1 RIM=40.20 12"IE(S) PVC=36.4 12"IE(E) PVC=36.2

FIRE LANE NO PARKING

GRAPHIC SCALE

30 0 15 30

(IN FEET)

1 inch = 30 ft.

PROJECT NAME:	PROJECT NO:	BY: J. GRANT	SHEET NO:
7440 159TH PL NE	19012-0002	DATE: 03/16/20	3

818 STEWART STREET • SUITE 1000
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PHONE: (206) 332-1900 • FAX: (206) 332-1600
WEBSITE: www.dci-engineers.com
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TITLE:

THRESHOLD DISCHARGE AREA SITE BASIN MAP

Appendix C: Infiltration Calculations
WWHM Stormwater Calculations

WWHM2012

PROJECT REPORT

General Model Information

Project Name:	2019-0329
Site Name:	Evans Auto
Site Address:	159th Pl NE
City:	Redmond
Report Date:	3/10/2020
Gage:	Seatac
Data Start:	1948/10/01
Data End:	2009/09/30
Timestep:	15 Minute
Precip Scale:	1.000
Version Date:	2018/10/10
Version:	4.2.16

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Forest, Flat	0.538
Pervious Total	0.538
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.538

Based on the historical land use map, this pre-developed land use should be pasture. (This will not impact site development feasibility and may be addressed during CCR).

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
A B, Lawn, Flat	0.04
Pervious Total	0.04
Impervious Land Use	acre
ROOF TOPS FLAT	0.48
SIDEWALKS FLAT	0.018
Impervious Total	0.498
Basin Total	0.538

The exhibits show bypass areas for the infiltration system (emegency vehicle access, sidewalk, driveway, etc.). The calculations provided here should reflect that bypass. Since you're within the downtown system, the flow control requirement won't be an issue, but we will need to confirm that the bypass flows can be safely handled by the existing storm system. Given current site configuration and a lack of any known drainage problems in this area, this can be addressed during CCR.

Element Flows To:

Surface	Interflow	Groundwater
Gravel Trench Bed 1	Gravel Trench Bed 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Gravel Trench Bed 1

Bottom Length:	120.00 ft.
Bottom Width:	7.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	2
Pour Space of material for first layer:	0.3
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	9
Infiltration safety factor:	1
Total Volume Infiltrated (ac-ft.):	77.566
Total Volume Through Riser (ac-ft.):	0
Total Volume Through Facility (ac-ft.):	77.566
Percent Infiltrated:	100
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	2 ft.
Riser Diameter:	12 in.
Element Flows To:	
Outlet 1	Outlet 2

Gravel Trench Bed Hydraulic Table

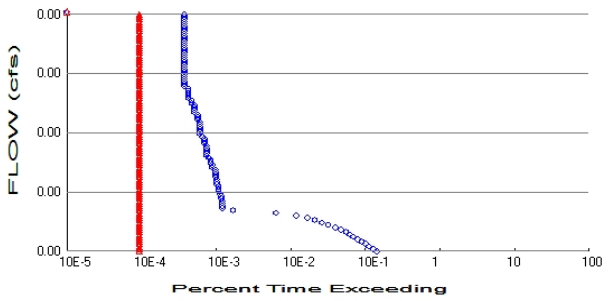
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.019	0.000	0.000	0.000
0.0222	0.019	0.000	0.000	0.175
0.0444	0.019	0.000	0.000	0.175
0.0667	0.019	0.000	0.000	0.175
0.0889	0.019	0.000	0.000	0.175
0.1111	0.019	0.000	0.000	0.175
0.1333	0.019	0.000	0.000	0.175
0.1556	0.019	0.000	0.000	0.175
0.1778	0.019	0.001	0.000	0.175
0.2000	0.019	0.001	0.000	0.175
0.2222	0.019	0.001	0.000	0.175
0.2444	0.019	0.001	0.000	0.175
0.2667	0.019	0.001	0.000	0.175
0.2889	0.019	0.001	0.000	0.175
0.3111	0.019	0.001	0.000	0.175
0.3333	0.019	0.001	0.000	0.175
0.3556	0.019	0.002	0.000	0.175
0.3778	0.019	0.002	0.000	0.175
0.4000	0.019	0.002	0.000	0.175
0.4222	0.019	0.002	0.000	0.175
0.4444	0.019	0.002	0.000	0.175
0.4667	0.019	0.002	0.000	0.175
0.4889	0.019	0.002	0.000	0.175
0.5111	0.019	0.003	0.000	0.175

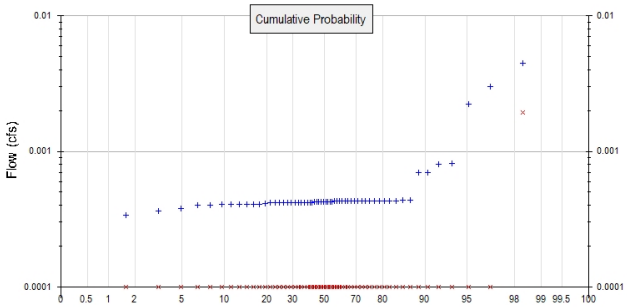
0.5333	0.019	0.003	0.000	0.175
0.5556	0.019	0.003	0.000	0.175
0.5778	0.019	0.003	0.000	0.175
0.6000	0.019	0.003	0.000	0.175
0.6222	0.019	0.003	0.000	0.175
0.6444	0.019	0.003	0.000	0.175
0.6667	0.019	0.003	0.000	0.175
0.6889	0.019	0.004	0.000	0.175
0.7111	0.019	0.004	0.000	0.175
0.7333	0.019	0.004	0.000	0.175
0.7556	0.019	0.004	0.000	0.175
0.7778	0.019	0.004	0.000	0.175
0.8000	0.019	0.004	0.000	0.175
0.8222	0.019	0.004	0.000	0.175
0.8444	0.019	0.004	0.000	0.175
0.8667	0.019	0.005	0.000	0.175
0.8889	0.019	0.005	0.000	0.175
0.9111	0.019	0.005	0.000	0.175
0.9333	0.019	0.005	0.000	0.175
0.9556	0.019	0.005	0.000	0.175
0.9778	0.019	0.005	0.000	0.175
1.0000	0.019	0.005	0.000	0.175
1.0222	0.019	0.005	0.000	0.175
1.0444	0.019	0.006	0.000	0.175
1.0667	0.019	0.006	0.000	0.175
1.0889	0.019	0.006	0.000	0.175
1.1111	0.019	0.006	0.000	0.175
1.1333	0.019	0.006	0.000	0.175
1.1556	0.019	0.006	0.000	0.175
1.1778	0.019	0.006	0.000	0.175
1.2000	0.019	0.006	0.000	0.175
1.2222	0.019	0.007	0.000	0.175
1.2444	0.019	0.007	0.000	0.175
1.2667	0.019	0.007	0.000	0.175
1.2889	0.019	0.007	0.000	0.175
1.3111	0.019	0.007	0.000	0.175
1.3333	0.019	0.007	0.000	0.175
1.3556	0.019	0.007	0.000	0.175
1.3778	0.019	0.008	0.000	0.175
1.4000	0.019	0.008	0.000	0.175
1.4222	0.019	0.008	0.000	0.175
1.4444	0.019	0.008	0.000	0.175
1.4667	0.019	0.008	0.000	0.175
1.4889	0.019	0.008	0.000	0.175
1.5111	0.019	0.008	0.000	0.175
1.5333	0.019	0.008	0.000	0.175
1.5556	0.019	0.009	0.000	0.175
1.5778	0.019	0.009	0.000	0.175
1.6000	0.019	0.009	0.000	0.175
1.6222	0.019	0.009	0.000	0.175
1.6444	0.019	0.009	0.000	0.175
1.6667	0.019	0.009	0.000	0.175
1.6889	0.019	0.009	0.000	0.175
1.7111	0.019	0.009	0.000	0.175
1.7333	0.019	0.010	0.000	0.175
1.7556	0.019	0.010	0.000	0.175
1.7778	0.019	0.010	0.000	0.175
1.8000	0.019	0.010	0.000	0.175

1.8222	0.019	0.010	0.000	0.175
1.8444	0.019	0.010	0.000	0.175
1.8667	0.019	0.010	0.000	0.175
1.8889	0.019	0.010	0.000	0.175
1.9111	0.019	0.011	0.000	0.175
1.9333	0.019	0.011	0.000	0.175
1.9556	0.019	0.011	0.000	0.175
1.9778	0.019	0.011	0.000	0.175
2.0000	0.019	0.011	0.000	0.175

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 0.538
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.04
Total Impervious Area: 0.498

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.000457
5 year	0.000691
10 year	0.000882
25 year	0.001168
50 year	0.001418
100 year	0.001702

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.000	0.000
1950	0.001	0.000
1951	0.001	0.000
1952	0.000	0.000
1953	0.000	0.000
1954	0.000	0.000
1955	0.000	0.000
1956	0.000	0.000
1957	0.000	0.000
1958	0.000	0.000

1959	0.000	0.000
1960	0.000	0.000
1961	0.000	0.000
1962	0.000	0.000
1963	0.000	0.000
1964	0.000	0.000
1965	0.000	0.000
1966	0.000	0.000
1967	0.000	0.000
1968	0.000	0.000
1969	0.000	0.000
1970	0.000	0.000
1971	0.000	0.000
1972	0.002	0.000
1973	0.000	0.000
1974	0.000	0.000
1975	0.000	0.000
1976	0.000	0.000
1977	0.000	0.000
1978	0.000	0.000
1979	0.000	0.000
1980	0.000	0.000
1981	0.000	0.000
1982	0.000	0.000
1983	0.000	0.000
1984	0.000	0.000
1985	0.000	0.000
1986	0.000	0.000
1987	0.000	0.000
1988	0.000	0.000
1989	0.000	0.000
1990	0.000	0.000
1991	0.001	0.000
1992	0.000	0.000
1993	0.000	0.000
1994	0.000	0.000
1995	0.000	0.000
1996	0.003	0.000
1997	0.000	0.000
1998	0.000	0.000
1999	0.001	0.000
2000	0.000	0.000
2001	0.000	0.000
2002	0.000	0.000
2003	0.000	0.000
2004	0.000	0.002
2005	0.000	0.000
2006	0.000	0.000
2007	0.004	0.000
2008	0.000	0.000
2009	0.000	0.000

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.0045	0.0019
2	0.0030	0.0000
3	0.0022	0.0000

4	0.0008	0.0000
5	0.0008	0.0000
6	0.0007	0.0000
7	0.0007	0.0000
8	0.0004	0.0000
9	0.0004	0.0000
10	0.0004	0.0000
11	0.0004	0.0000
12	0.0004	0.0000
13	0.0004	0.0000
14	0.0004	0.0000
15	0.0004	0.0000
16	0.0004	0.0000
17	0.0004	0.0000
18	0.0004	0.0000
19	0.0004	0.0000
20	0.0004	0.0000
21	0.0004	0.0000
22	0.0004	0.0000
23	0.0004	0.0000
24	0.0004	0.0000
25	0.0004	0.0000
26	0.0004	0.0000
27	0.0004	0.0000
28	0.0004	0.0000
29	0.0004	0.0000
30	0.0004	0.0000
31	0.0004	0.0000
32	0.0004	0.0000
33	0.0004	0.0000
34	0.0004	0.0000
35	0.0004	0.0000
36	0.0004	0.0000
37	0.0004	0.0000
38	0.0004	0.0000
39	0.0004	0.0000
40	0.0004	0.0000
41	0.0004	0.0000
42	0.0004	0.0000
43	0.0004	0.0000
44	0.0004	0.0000
45	0.0004	0.0000
46	0.0004	0.0000
47	0.0004	0.0000
48	0.0004	0.0000
49	0.0004	0.0000
50	0.0004	0.0000
51	0.0004	0.0000
52	0.0004	0.0000
53	0.0004	0.0000
54	0.0004	0.0000
55	0.0004	0.0000
56	0.0004	0.0000
57	0.0004	0.0000
58	0.0004	0.0000
59	0.0004	0.0000
60	0.0003	0.0000
61	0.0003	0.0000

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0002	3041	2	0	Pass
0.0002	2714	2	0	Pass
0.0003	2398	2	0	Pass
0.0003	2145	2	0	Pass
0.0003	1915	2	0	Pass
0.0003	1689	2	0	Pass
0.0003	1480	2	0	Pass
0.0003	1330	2	0	Pass
0.0003	1174	2	0	Pass
0.0003	1010	2	0	Pass
0.0003	843	2	0	Pass
0.0004	677	2	0	Pass
0.0004	554	2	0	Pass
0.0004	447	2	0	Pass
0.0004	354	2	0	Pass
0.0004	254	2	0	Pass
0.0004	136	2	1	Pass
0.0004	36	2	5	Pass
0.0004	26	2	7	Pass
0.0005	26	2	7	Pass
0.0005	26	2	7	Pass
0.0005	26	2	7	Pass
0.0005	25	2	8	Pass
0.0005	25	2	8	Pass
0.0005	24	2	8	Pass
0.0005	23	2	8	Pass
0.0005	23	2	8	Pass
0.0006	23	2	8	Pass
0.0006	22	2	9	Pass
0.0006	22	2	9	Pass
0.0006	22	2	9	Pass
0.0006	21	2	9	Pass
0.0006	21	2	9	Pass
0.0006	21	2	9	Pass
0.0006	21	2	9	Pass
0.0006	19	2	10	Pass
0.0007	19	2	10	Pass
0.0007	18	2	11	Pass
0.0007	18	2	11	Pass
0.0007	17	2	11	Pass
0.0007	16	2	12	Pass
0.0007	16	2	12	Pass
0.0007	16	2	12	Pass
0.0007	16	2	12	Pass
0.0008	16	2	12	Pass
0.0008	15	2	13	Pass
0.0008	15	2	13	Pass
0.0008	15	2	13	Pass
0.0008	14	2	14	Pass
0.0008	13	2	15	Pass
0.0008	13	2	15	Pass
0.0008	13	2	15	Pass
0.0009	13	2	15	Pass

0.0009	13	2	15	Pass
0.0009	13	2	15	Pass
0.0009	12	2	16	Pass
0.0009	12	2	16	Pass
0.0009	12	2	16	Pass
0.0009	11	2	18	Pass
0.0009	11	2	18	Pass
0.0009	11	2	18	Pass
0.0010	11	2	18	Pass
0.0010	10	2	20	Pass
0.0010	10	2	20	Pass
0.0010	9	2	22	Pass
0.0010	9	2	22	Pass
0.0010	9	2	22	Pass
0.0010	9	2	22	Pass
0.0010	9	2	22	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0011	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0012	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0013	8	2	25	Pass
0.0014	8	2	25	Pass
0.0014	8	2	25	Pass
0.0014	8	2	25	Pass
0.0014	8	2	25	Pass
0.0014	8	2	25	Pass
0.0014	8	2	25	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Gravel Trench Bed 1 POC	☐	70.59			☐	100.00			
Total Volume Infiltrated		70.59	0.00	0.00		100.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

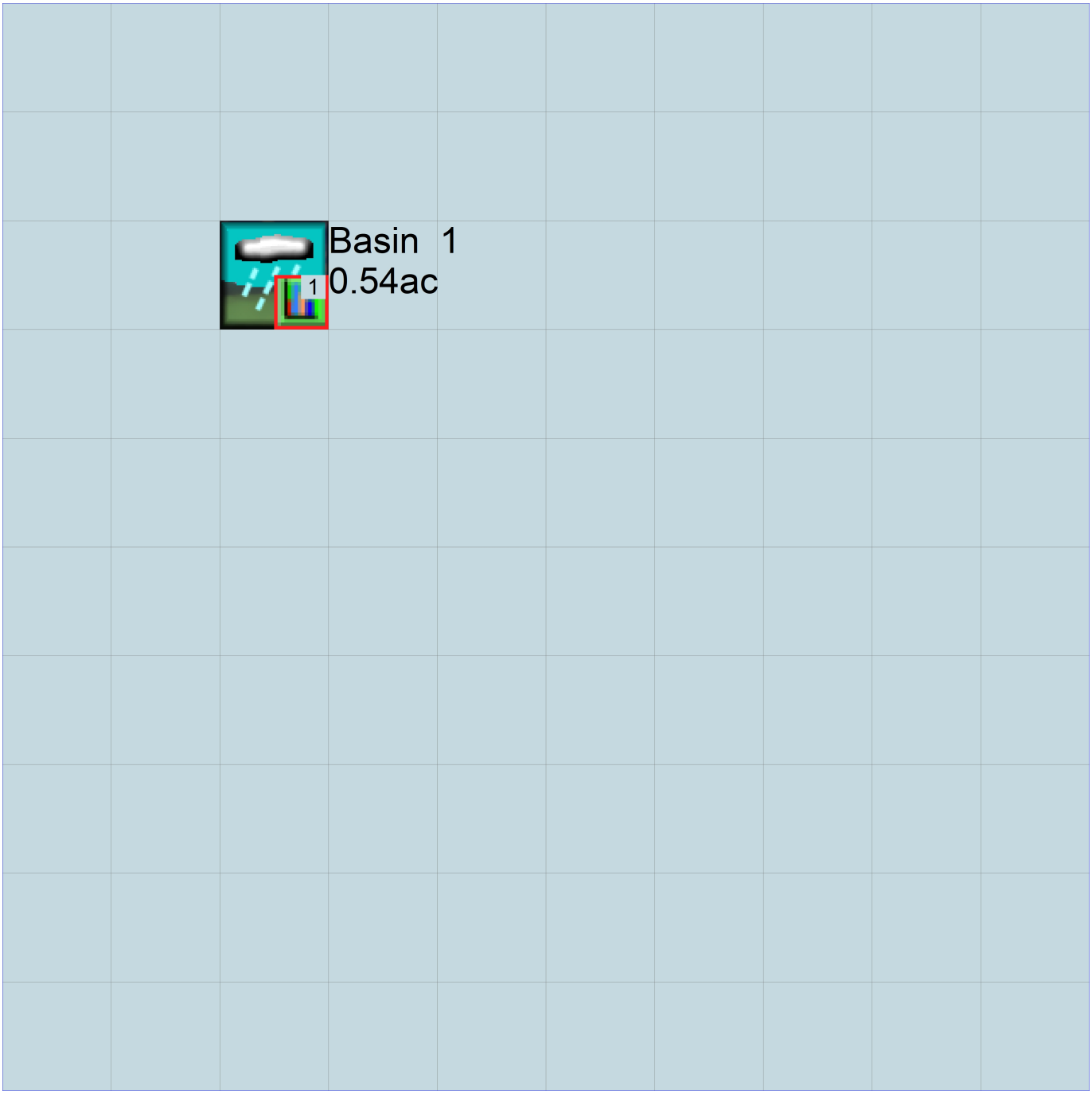
PERLND Changes

No PERLND changes have been made.

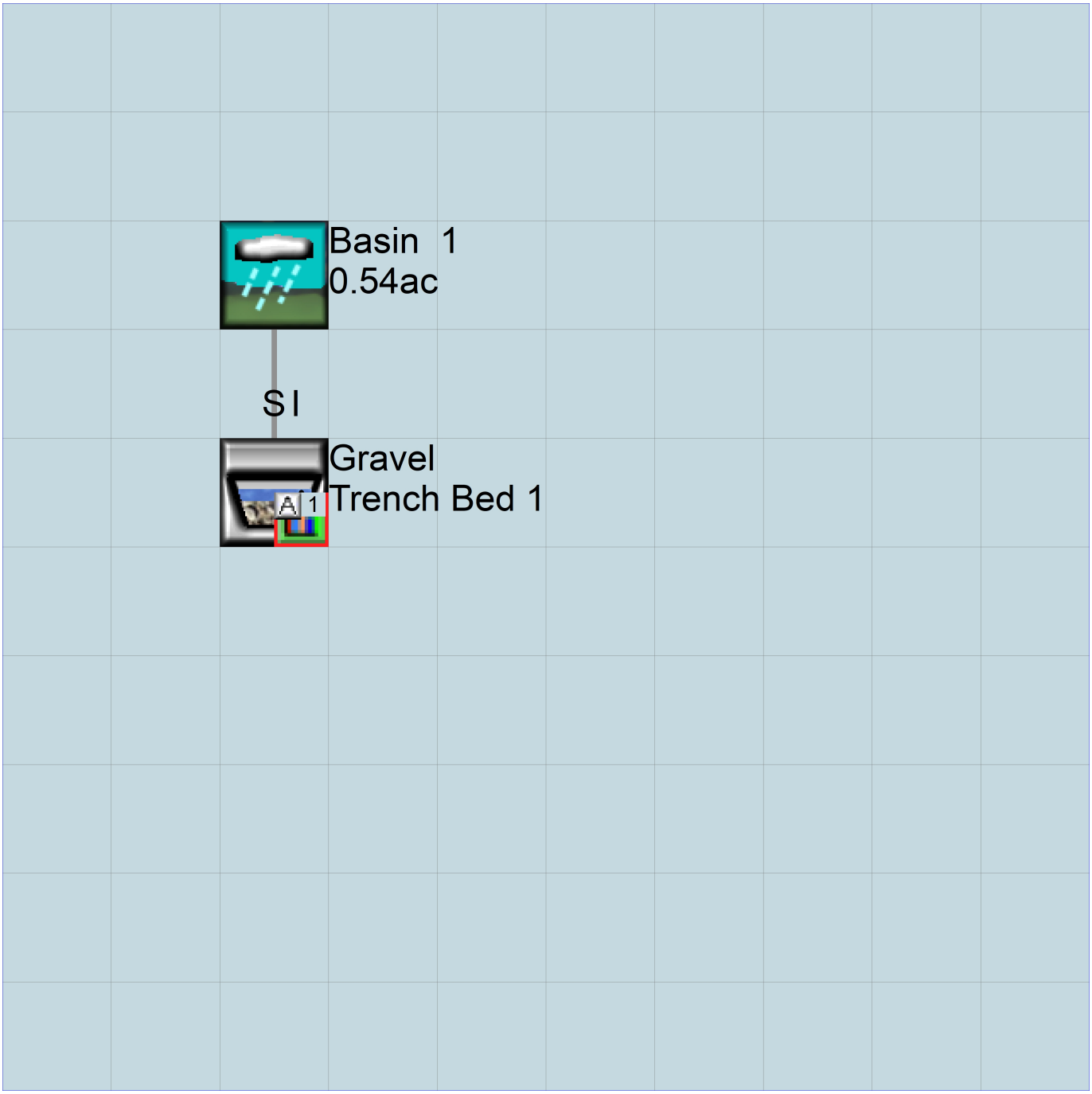
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2009 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2019-0329.wdm
MESSU       25   Pre2019-0329.MES
            27   Pre2019-0329.L61
            28   Pre2019-0329.L62
            30   POC2019-03291.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND       1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1                   MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                         User  t-series Engl Metr ***
                                      in  out           ***
    1     A/B, Forest, Flat       1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
    1         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
    1         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
    1         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
    1              0         5         2       400      0.05       0.3     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
    1              0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
    1          0.2       0.5      0.35         0       0.7       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
    1              0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND   1                       0.538     COPY   501     12
PERLND   1                       0.538     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *      *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><--------><--------> ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><---><---><---><---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
```

```
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2009 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                   UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   2019-0329.wdm
MESSU       25   Mit2019-0329.MES
            27   Mit2019-0329.L61
            28   Mit2019-0329.L62
            30   POC2019-03291.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      PERLND       7
      IMPLND       4
      IMPLND       8
      RCHRES       1
      COPY         1
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Gravel Trench Bed 1         MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
    7     A/B, Lawn, Flat         1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
    7         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
```

```
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
    7         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
    7         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
    7             0         5       0.8       400      0.05       0.3     0.996
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
    7             0         0         2         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
    7          0.1       0.5      0.25         0       0.7      0.25
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
             ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
    7             0         0         0         0         3         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    4      ROOF TOPS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    4         0    0    1    0    0    0
    8         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    4         0    0    4    0    0    0    1    9
    8         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    4         0    0    0    0    0
    8         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
```

```
    4            400      0.01       0.1       0.1
    8            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    4              0         0
    8              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    4              0         0
    8              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1***
PERLND   7                       0.04     RCHRES   1      2
PERLND   7                       0.04     RCHRES   1      3
IMPLND   4                       0.48     RCHRES   1      5
IMPLND   8                      0.018     RCHRES   1      5

******Routing******
PERLND   7                       0.04     COPY     1     12
IMPLND   4                       0.48     COPY     1     15
IMPLND   8                      0.018     COPY     1     15
PERLND   7                       0.04     COPY     1     13
RCHRES   1                          1     COPY   501     17
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
    1     Gravel Trench Be-007    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
```

```
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *      *  *  *  *  *         ***
    1       0  1  0  0    4  5  0  0  0       0  0  0  0  0         2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1              1      0.02       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1           0         4.0  5.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   92    5
     Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)     (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.019284  0.000000  0.000000  0.000000
  0.022222  0.019284  0.000129  0.000000  0.175000
  0.044444  0.019284  0.000257  0.000000  0.175000
  0.066667  0.019284  0.000386  0.000000  0.175000
  0.088889  0.019284  0.000514  0.000000  0.175000
  0.111111  0.019284  0.000643  0.000000  0.175000
  0.133333  0.019284  0.000771  0.000000  0.175000
  0.155556  0.019284  0.000900  0.000000  0.175000
  0.177778  0.019284  0.001028  0.000000  0.175000
  0.200000  0.019284  0.001157  0.000000  0.175000
  0.222222  0.019284  0.001286  0.000000  0.175000
  0.244444  0.019284  0.001414  0.000000  0.175000
  0.266667  0.019284  0.001543  0.000000  0.175000
  0.288889  0.019284  0.001671  0.000000  0.175000
  0.311111  0.019284  0.001800  0.000000  0.175000
  0.333333  0.019284  0.001928  0.000000  0.175000
  0.355556  0.019284  0.002057  0.000000  0.175000
  0.377778  0.019284  0.002185  0.000000  0.175000
  0.400000  0.019284  0.002314  0.000000  0.175000
  0.422222  0.019284  0.002443  0.000000  0.175000
  0.444444  0.019284  0.002571  0.000000  0.175000
  0.466667  0.019284  0.002700  0.000000  0.175000
  0.488889  0.019284  0.002828  0.000000  0.175000
  0.511111  0.019284  0.002957  0.000000  0.175000
  0.533333  0.019284  0.003085  0.000000  0.175000
  0.555556  0.019284  0.003214  0.000000  0.175000
  0.577778  0.019284  0.003343  0.000000  0.175000
  0.600000  0.019284  0.003471  0.000000  0.175000
  0.622222  0.019284  0.003600  0.000000  0.175000
  0.644444  0.019284  0.003728  0.000000  0.175000
  0.666667  0.019284  0.003857  0.000000  0.175000
  0.688889  0.019284  0.003985  0.000000  0.175000
  0.711111  0.019284  0.004114  0.000000  0.175000
  0.733333  0.019284  0.004242  0.000000  0.175000
  0.755556  0.019284  0.004371  0.000000  0.175000
  0.777778  0.019284  0.004500  0.000000  0.175000
  0.800000  0.019284  0.004628  0.000000  0.175000
  0.822222  0.019284  0.004757  0.000000  0.175000
  0.844444  0.019284  0.004885  0.000000  0.175000
  0.866667  0.019284  0.005014  0.000000  0.175000
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```

```
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  2.000000  0.019284  0.011570  0.000000  0.175000
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  END FTABLE  1
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1              PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1              IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.76           PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.76           IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
RCHRES   1 HYDR   RO     1 1        1      WDM   1000 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      1 1        1      WDM   1001 FLOW     ENGL      REPL
RCHRES   1 HYDR   O      2 1        1      WDM   1002 FLOW     ENGL      REPL
RCHRES   1 HYDR   STAGE  1 1        1      WDM   1003 STAG     ENGL      REPL
```

```
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK        2
PERLND     PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    2

  MASS-LINK        3
PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    3

  MASS-LINK        5
IMPLND     IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK    5

  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13

  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15

  MASS-LINK       17
RCHRES     OFLOW  OVOL   1                 COPY           INPUT  MEAN
  END MASS-LINK   17


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

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Local (360)943-0304

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Appendix D: Site Assessment Packet

Site Assessment Packet

Composite Site Plan

LID Site Assessment and Planning Packet

Instructions for completing this packet:

- This packet is to be completed as part of a preliminary site assessment by the applicant per RZC 21.17.10E and as specified in the Stormwater Technical Notebook (STN).
- For documentation purposes, all projects that result in 2,000 square feet or greater of new, replaced, or new plus replaced hard surface area or have land disturbing activity of 7,000 square feet or greater must complete an LID assessment and include this packet as an appendix to the project drainage report submitted as part of the site plan entitlement process.
- This packet is to be completed early in the site development process. Please complete all sections of this packet to the best of your ability. Some sections may not apply. You may state "Not Applicable" only when you can explain why it does not apply and not when the answer is unknown. Consulting with a qualified consultant may be necessary to determine ascertain certain features of the property (i.e. depth to groundwater/ infiltration rates). Please consult with a geotechnical engineer or civil engineer if your project meets the thresholds identified above.
- This is a fillable PDF form. The forms will expand and allow you to enter more text than the space indicates. If you should run out of space, attach a separate sheet and write "continued from" and include the section and number (i.e. D.1).

The goal of this assessment is to:

- Document how projects propose to minimize:
  - Impervious areas
  - Loss of native vegetation
  - Stormwater runoff
- Demonstrate how the project proposes to comply with Minimum Requirement #5: On-site Stormwater Management.
- Some of the below requirements are modified based on whether the project is located within an urban center or an area draining to a flow control exempt water body. To determine how your site's location in the City influences On-site Stormwater Requirements (Minimum Requirement #5) refer to Map 1- MR 5: Stormwater Management Custom Areas at end of this packet and then look for the corresponding symbol for where requirements are modified. (This map is also found as Appendix F in the Redmond Stormwater Technical notebook). The custom flow control areas in Redmond include:
  - Downtown
  - Overlake
  - SR520 Drainage Basin
  - 40th Street Basin
  - SE Redmond (some properties)

APPLICANT INFORMATION

Company/Agency/Owner: _____

Contact Person: _____

Address: _____

_____

Phone: _____

Email: _____

Signature: _____

Date: _____

A PROJECT INFORMATION

Project Number: TBD

Project Address or Boundaries: 7440 159th Pl NE

Parcel Number: 9270700080

Is the site in a Flow Control Exempt area? (Refer to Section 2.5.7 of the STN): ☑ Yes ☐ No

If yes, note the items that are footnoted in the tables in Section F "F. Potential LID BMP Matrix" and refer to that footnote at the bottom of each table.

Is the site located within the Marymoor Subarea as depicted on Map 1? (Refer to Map 1at the end of this packet): ☐ Yes ☑ No

If yes, Sections B, C, D and E do not need to be completed as the intent of this packet will be exceeded through the infiltration of 100% of site runoff.

Is the site located within a Critical Aquifer Recharge Area? (Refer to Map 2: Critical Aquifer Recharge Areas at the end of this packet): ☑ Yes ☐ No

If yes, refer to Section 8.3.2 of the STN. Single-family residential projects in Critical Aquifer Recharge Area I may infiltrate runoff from pollution generating hard surfaces only after enhanced treatment using a BMP that is exposed to the surface (such as bioretention visible from public sidewalks or roads). In the Marymoor Subarea there is no stormwater conveyance available, so development is required to infiltrate stormwater, even if it lies within CARA I. Stormwater must receive enhanced treatment prior to infiltration. Infiltration of runoff from non-pollution generating surfaces is encouraged where feasible.

Project Type: ☐ Residential ☑ Commercial ☐ Industrial ☐ Public ☐ New Development ☑ Redevelopment ☐ Remodel ☐ Retrofit

☑ Combination (explain) Redevelopment of Existing site for multi-family Housing

Project Description: Redevelopment of 0.62 Acre site to include multi-family housing. Project will include a multi-story building with onsite parking. Stormwater will be infiltrated to the maximum extent feasible.

B LOW IMPACT DEVELOPMENT GOALS

In the spaces below, please document project efforts to:

Minimize Impervious Surface Coverage: Design new structure to zoning codes, while leaving ample space for infiltration system along east side of site.

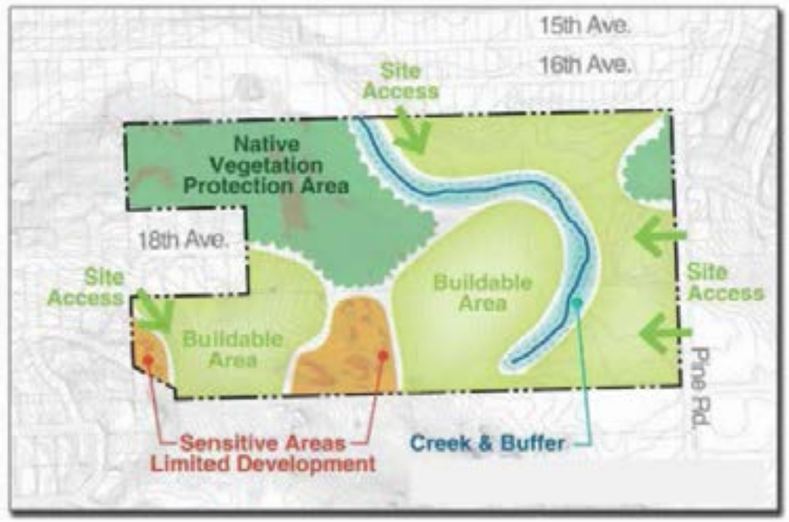
Minimize Loss of Native Vegetation: The site is currently developed with 100% impervious land cover. There is no native vegetation onsite to minimize the loss of.

Minimize Stormwater Runoff: The project proposes to infiltrate the roof runoff to the maximum extent feasible.

C CREATE SITE COMPOSITE MAP

Develop a composite site map as you collect site information in Section D. See the example below. This map must be submitted as part of the completed packet, and will be used as the basis for the site design.

Example Site Composite Map



D EXISTING SITE INVENTORY AND ANALYSIS CHECKLIST

Use this portion of the packet to document the site inventory and analysis. For additional information on each portion of the analysis, refer to Chapter 2 of the City of Redmond Stormwater Technical Notebook 8.

1. PROJECT BOUNDARIES AND STRUCTURES

- [x] Identify/delineate on map:
  - [x] Project Site boundaries (limits of disturbance)
  - [x] Existing and proposed buildings
  - [x] Required Infiltration setbacks (please describe) 5' Setback from PL; 0' Setback from Building
  - [x] Location and extent of proposed foundations and footing drains

2. SOILS

- [ ] Characterize existing soil type(s) (Refer to Section 10.5.3 of the Stormwater Technical Notebook): Type B Soils
- [ ] What is the depth to seasonal average high groundwater (feet) as determined by a geotechnical investigation? (Refer to Section 2.9.3.9 of the Stormwater Technical Notebook) 13' below existing grade (approximate)
- [ ] Is bedrock present? ☐ Yes ☑ No If yes, depth (feet) _____
- [ ] What is the measured long-term native soil infiltration rate (inch/hour) 45 Inches/Hr
- [ ] Identify source(s) of information used: Site within the vicinity of the project has measured infiltration rate of approx. 45"/hr

3. CRITICAL AREAS

- [ ] Identify and map any Critical Areas and associated buffers located on the project site and within the project vicinity
  - [ ] Erosion Hazard Areas
  - [ ] Fish and Habitat Conservation Areas
  - [ ] Floodplains No flood plains mapped onsite; High Groundwater elevation from the 100-year FEMA Floodplain is
  - [ ] Frequently Flooded Area/Special Flood Hazard Area
  - [x] Critical Aquifer Recharge Areas CARA 1 Zone
  - [ ] Landslide hazard Areas
  - [ ] Seismic Hazard Areas
  - [ ] Shoreline Environments
  - [ ] Streams
  - [ ] Wetlands
  - [ ] Other

4. TOPOGRAPHY

- [x] Describe site topography and slopes: Site topography is primarily flat
- [x] Identify/Delineate on map:
  - [x] Areas of flat(≤5%), moderate (5%-20%), moderate-steep (20%-40%) and steep(≥40%)slopes
  - [x] Closed depressions N/A

5. HYDROLOGIC PATTERNS & FEATURES

- [ ] Identify/Delineate on map:
  - [ ] Sub-basin(s) Project is one basin.
  - [ ] Existing drainage swales and ditches (please describe) No existing swales or ditches onsite.
  - [ ] Location(s) if any natural seeps or springs (please describe) None Known.
  - [ ] Existing discharge location(s) from each sub-basin and overall project site: (please describe) All runoff sheetflows offsite.
  - [ ] Signs of existing erosion (please describe) None known.
  - [ ] Existing flooding or drainage complaints on site or vicinity None Known.
  - [ ] Other

6. VEGETATION

- [ ] Native vegetation type(s): No existing native vegetation onsite
- [ ] Approximate tree canopy coverage (acres): 0
- [ ] Number of trees (greater than 6-inch diameter at breast height) 0
- [ ] Identify source(s) of information used: Visual inspections and topographic map.

7. LAND USE CONTROLS

- ❑ What is the project site zoning? RVBD
- ❑ Describe landscaping requirements:
- ❑ Describe parking requirements:
- ❑ Describe any applicable comprehensive plan designation, zoning classification, and/or overlay districts that apply to the site:
- ❑ Does a Shoreline Master Plan apply to the site? ☐ Yes ☑ No
  - ❑ If yes, describe

8. ACCESS

- ☑ Identify/Delineate on map:
  - ☑ Roads, driveways, and other points of ingress and egress within 50 feet of the project site See Composite Site Plan.
  - ☑ Identify frontage improvement requirements: See Composite Site Plan - New curb and sidewalk along the length of the

9. UTILITY AVAILABILITY AND CONFLICTS

A complete understanding of existing and proposed buried utilities is necessary to properly plan for infiltration.

- ☑ Identify/Delineate on map:
  - ☑ Existing utilities and easements present on and adjacent to the project site, including utility owner. Also note any utility or easement setback requirements that affect site planning: All existing utilities and site info shown on composite site plan.
  - ☑ Existing utilities that may need to be moved and new utilities that may need to be extended to the site: All existing utilities and site info shown on composite site plan.

EXISTING SITE CONDITIONS

	EXISTING CONDITIONS	PROPOSED CONDITIONS
Vegetated Areas		
Tree Canopy (acres)	0	0 (Approx)
Landscape (acres)	0	0.07 ac (Approx)
Total project vegetated area	0	0.07 ac (Approx)
Impervious Area		
Total roof impervious area (sq. feet)	12,304 SF	20,930 SF
Total site impervious area (acres)	0.62	0.59
Change		
% Increase/decrease in vegetated area		+11%
% Increase/decrease in impervious area		-11% (Decrease in impervious Land

POTENTIAL LID BMP MATRIX

For each of the following surfaces proposed, complete the following matrices evaluating the BMPs in the order as specified in Lists #1 and #2 contained within the Stormwater Technical Notebook*:*

- ❑ Lawn and landscaped areas
- ❑ Roofs
- ❑ Other hard surfaces

SURFACE TYPE: Landscaped Areas

For each LID BMP being evaluated, use the infeasibility criteria for each BMP in the SWMMWW to determine whether the LID BMP is infeasible for your project. You must use the first BMP that is feasible in accordance with Lists #1 and List#2 of the STN.

	FEASIBILITY/INFEASIBILITY EVALUATION			
	FEASIBLE	INFEASIBLE	NOT APPLICABLE/ NOT KNOWN	If infeasible provide justification as stated by the Infeasibility Criteria in the SWMMWW
Post Construction Soil Quality and Depth	●	○	○	
Full Dispersion[1]	○	○	●	Flow Control Exempt Area
Downspout Full Infiltration (Roofs, only)	○	○	●	Landscape Area
Rain Gardens/Bioretention[1]	○	○	●	Flow Control Exempt Area
Permeable Pavement or Functional Equivalent[1]	○	○	●	Flow Control Exempt Area
Downspout Dispersion	○	●	○	Landscape Area
Perforated Stubout Connection (Roofs, only)	○	●	○	Landscape Area
Sheet Flow Dispersion	○	●	○	Flow paths not attainable in urban setting
Concentrated Flow Dispersion	○	●	○	Flow paths not attainable in urban setting

[1]Not Required in Flow Control Exempt Areas

SURFACE TYPE: Roof

For each LID BMP being evaluated, use the infeasibility criteria for each BMP in the SWMMWW to determine whether the LID BMP is infeasible for your project. You must use the first BMP that is feasible in accordance with Lists #1 and List#2 of the STN.

	FEASIBILITY/INFEASIBILITY EVALUATION			
	FEASIBLE	INFEASIBLE	NOT APPLICABLE/ NOT KNOWN	If infeasible provide justification as stated by the Infeasibility Criteria in the SWMMWW
Post Construction Soil Quality and Depth	○	○	●	Roof Area
Full Dispersion[1]	○	○	●	Flow Control Exempt Area
Downspout Full Infiltration (Roofs, only)	●	○	○	Roof infiltration to be applied
Rain Gardens/Bioretention[1]	○	○	●	Flow Control Exempt Area
Permeable Pavement or Functional Equivalent[1]	○	○	●	Flow Control Exempt Area
Downspout Dispersion	○	●	○	Flow paths not attainable in urban setting
Perforated Stubout Connection (Roofs, only)	○	●	○	Not attainable, Connect to Neighbor's storm system
Sheet Flow Dispersion	○	●	○	Flow paths not attainable in urban setting
Concentrated Flow Dispersion	○	●	○	Flow paths not attainable in urban setting

[1]Not Required in Flow Control Exempt Areas

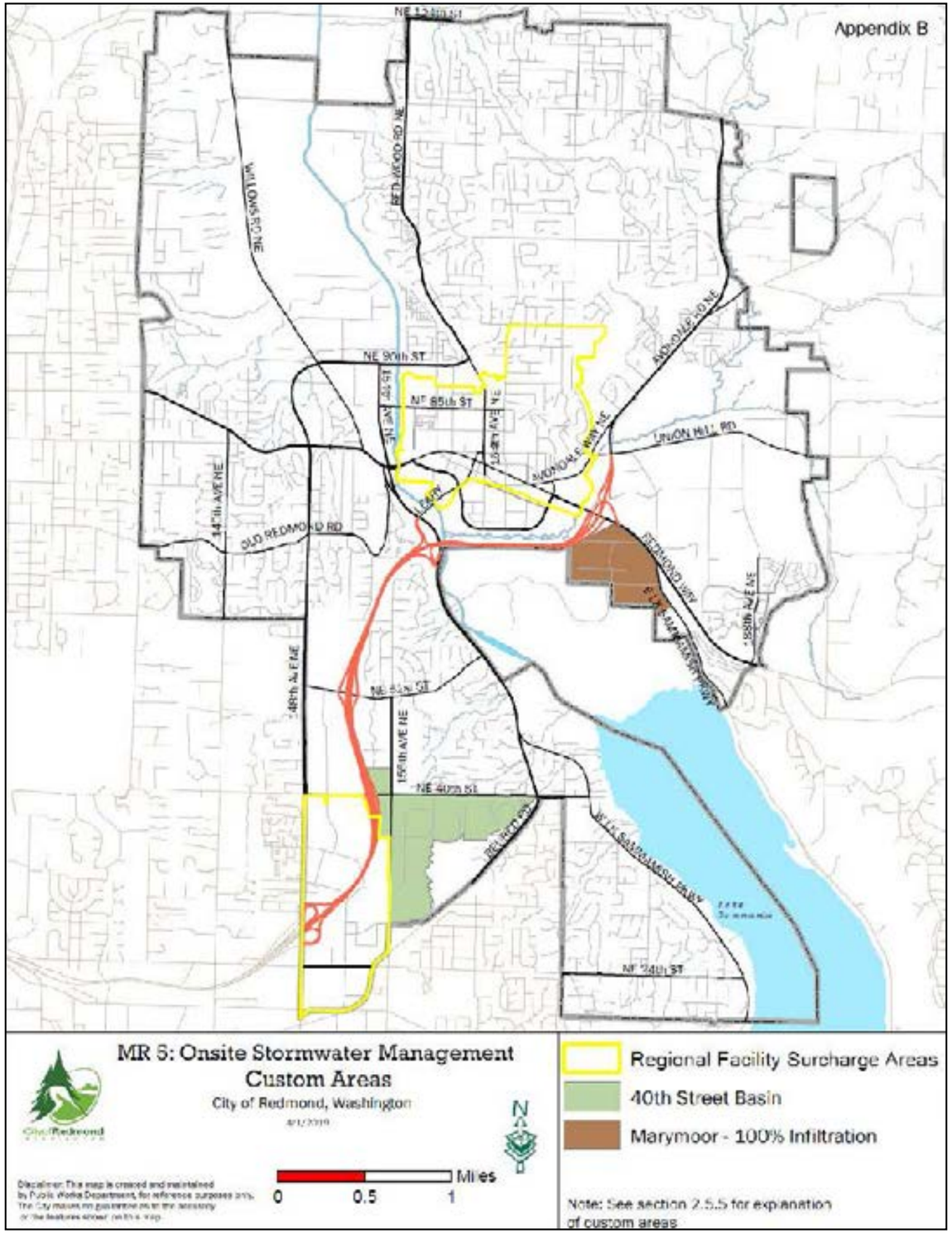
SURFACE TYPE: Other Hard Surface

For each LID BMP being evaluated, use the infeasibility criteria for each BMP in the SWMMWW to determine whether the LID BMP is infeasible for your project. You must use the first BMP that is feasible in accordance with Lists #1 and List#2 of the STN.

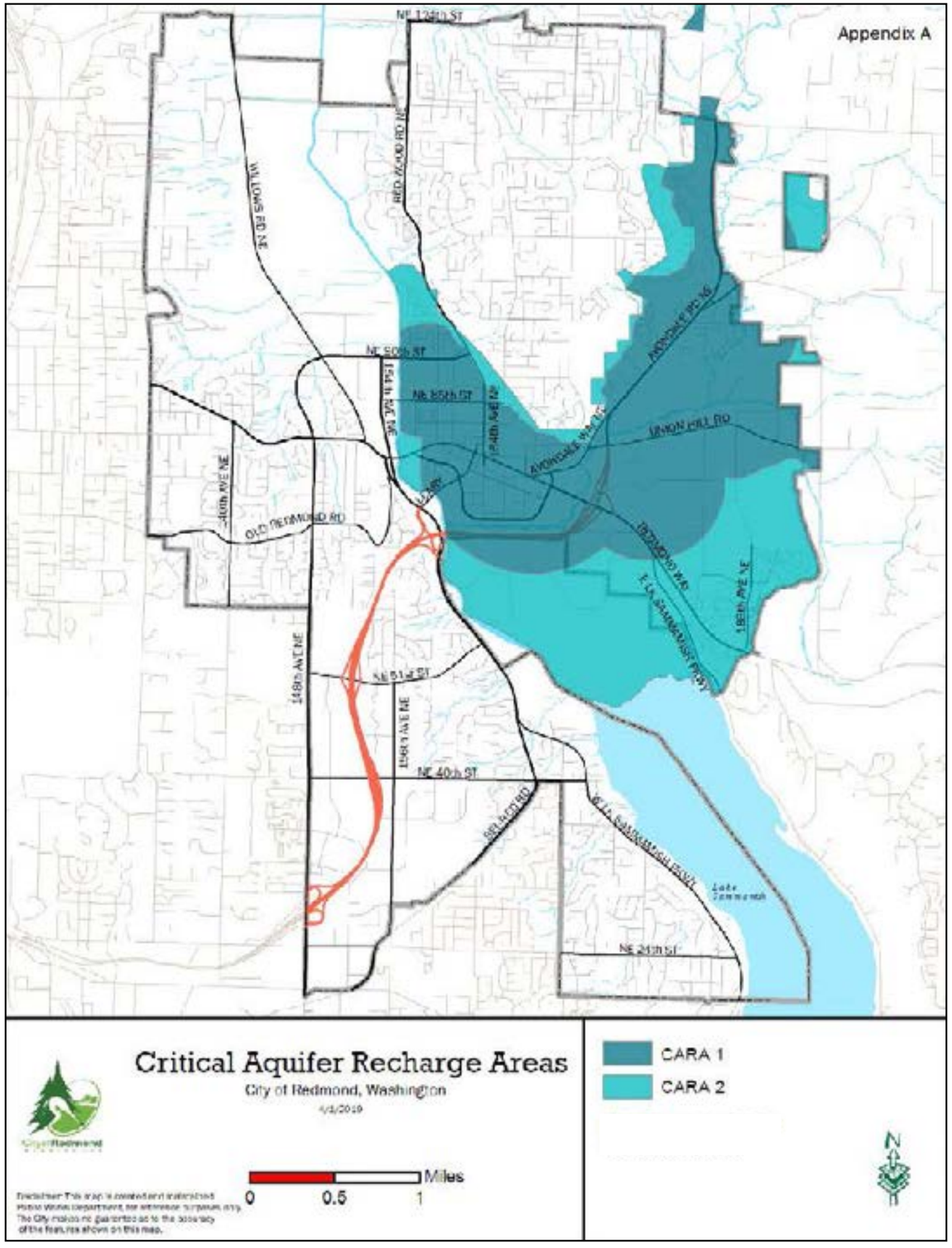
	FEASIBILITY/INFEASIBILITY EVALUATION			
	FEASIBLE	INFEASIBLE	NOT APPLICABLE/ NOT KNOWN	If infeasible provide justification as stated by the Infeasibility Criteria in the SWMMWW
Post Construction Soil Quality and Depth	○	○	●	Hard Surface
Full Dispersion[1]	○	○	●	Flow Control Exempt Area
Downspout Full Infiltration (Roofs, only)	○	○	●	Not roof surface
Rain Gardens/Bioretention[1]	○	○	●	Flow Control Exempt Area
Permeable Pavement or Functional Equivalent[1]	○	○	●	Flow Control Exempt Area
Downspout Dispersion	○	●	○	No Downspouts to disperse
Perforated Stubout Connection (Roofs, only)	○	○	●	No Downspouts
Sheet Flow Dispersion	○	●	○	Flow paths not attainable in urban setting
Concentrated Flow Dispersion	○	●	○	Flow paths not attainable in urban setting

[1]Not Required in Flow Control Exempt Areas

Map 1: Onsite Stormwater Management Custom Areas



Map 2: Critical Aquifer Recharge Areas



ATTACH COMPLETED SITE COMPOSITE MAP HERE.

Infiltration facility: 7' setback from PL 0' setback from buidling

Project Boundaries: Property lines and work associated with the ROW.

Foundation drains to surround building garage, unless noted otherwise by project geotechnical engineer

Existing building limits

Proposed building limits

Proposed below grade building limits

LEARY WAY

159TH PLACE NE

GRAPHIC SCALE

30 0 15 30

(IN FEET)

1 inch = 30 ft.

PROJECT NAME: 7440 159TH PL NE	PROJECT NO: 19012-0002	BY: G. ABBAS DATE: 03/16/20	SHEET NO: C-100

818 STEWART STREET • SUITE 1000
SEATTLE, WASHINGTON 98101
PHONE: (206) 332-1900 • FAX: (206) 332-1600
WEBSITE: www.dci-engineers.com
CIVIL / STRUCTURAL
DCI ENGINEERS

TITLE: SITE COMPOSITE MAP

Appendix E: Downstream Drainage System

Downtown Basin Map

PROJECT SITE

DOWNSTREAM PATH TO POND FACILITY, POND FACILITY DISCHARGES TO SAMMAMISH RIVER

Need to update this stormwater system map to reflect drainage reconfiguration. [Can be addressed during CCR.]

STORMWATER SYSTEM MAP

City of Redmond
WASHINGTON

LEGEND

Redmond MH	Valve	Redmond Underdrain	Pump
Redmond CB	Cleanout	Non-Redmond Underdrain	City Limits
Redmond MH CS	Redmond Pipe	Redmond Vault	Ponds
Redmond CB CS	Non-Redmond Pipe	Non-Redmond Vault	Streams
Redmond Unknown	Non-Redmond Culvert	Redmond Bioswale	Contours
Redmond Inlet/Area Drain	Redmond Culvert	Non-Redmond Bioswale	
Non-Redmond Chambers	SW SideSewer		

N

0 90 180 270

SCALE: 1" - 200'

NE 1/4 SEC. 11 , T. 25 N., R. 05 E

3E3S	3E2S	4E3S
3F4N	3F1N	4F4N
3F4S	3F1S	4F4S

GRID NUMBER
3F1N

DATE
5/18/2015

FOR INFORMATION ONLY

THIS MAP AND RELATED DATA IS INTENDED TO ASSIST IN FIELD LOCATIONS AND IS NOT GUARANTEED TO BE ACCURATE. FIELD VERIFICATION IS REQUIRED FOR ALL DEVELOPMENT OR CONSTRUCTION PLANS.

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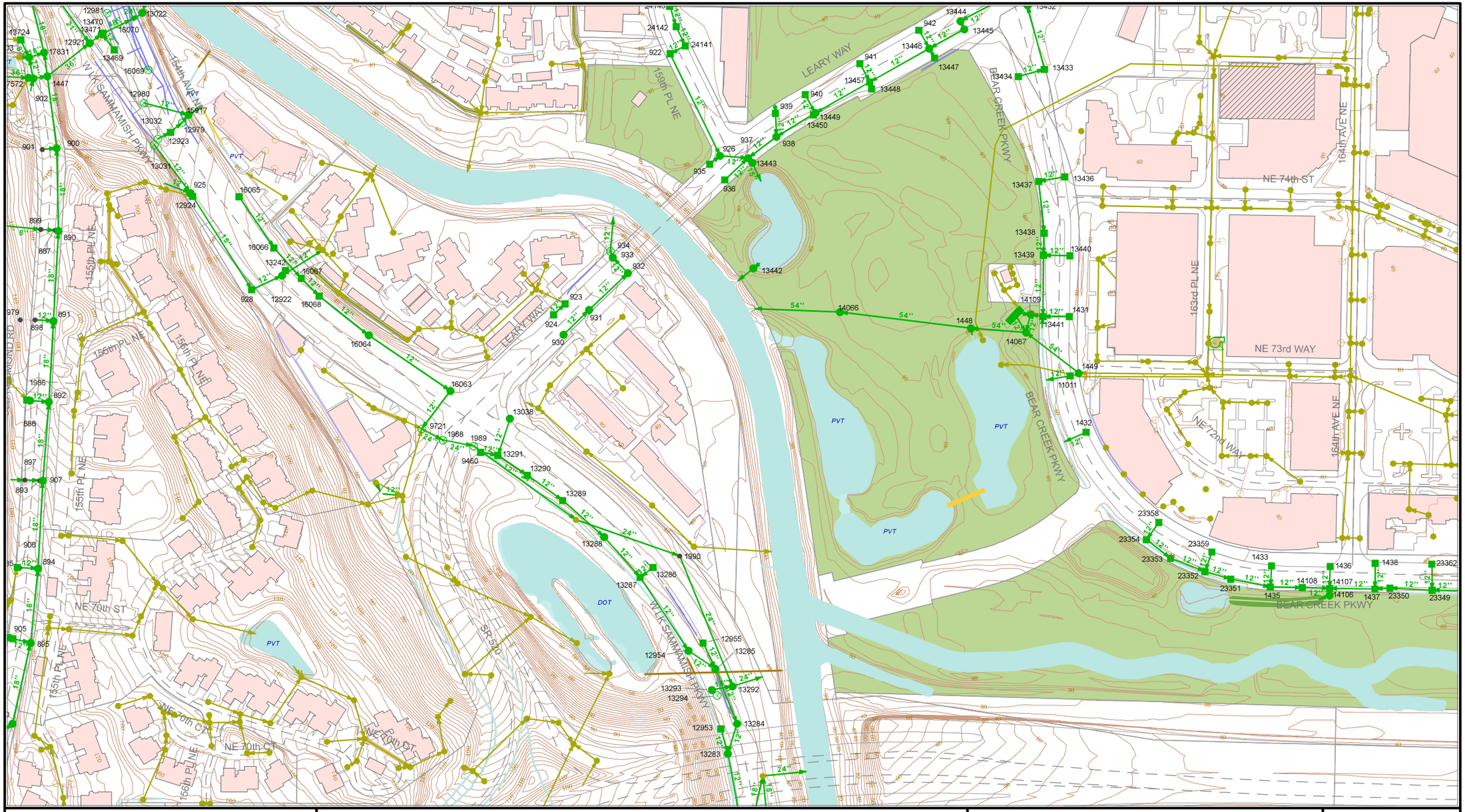

STORMWATER SYSTEM MAP

CityofRedmond
WASHINGTON

Redmond MH	Valve	Redmond Underdrain	Pump
Redmond CB	Cleanout	Non-Redmond Underdrain	City Limits
Redmond MH CS	Redmond Pipe	Redmond Vault	Ponds
Redmond CB CS	Non-Redmond Pipe	Non-Redmond Vault	Streams
Redmond Unknown	Non-Redmond Culvert	Redmond Bioswale	Contours
Redmond Inlet/Area Drain	Redmond Culvert	Non-Redmond Bioswale	
Non-Redmond Chambers	SW SideSewer		

LEGEND

0 100 200 300

SCALE: 1" - 200'

NE 1/4 SEC. 11 , T. 25 N., R. 05 E

3F4N	3F1N	4F4N
3F4S	3F1S	4F4S
3F3N	3F2N	4F3N

GRID NUMBER
3F1S

DATE
6/26/2017

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