



**CITY OF REDMOND  
DOWNTOWN PARK**

**Drainage Report  
60% Submittal  
April 22, 2016**

Prepared for:

**City of Redmond Public Works  
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## 1. Project Overview

The Downtown Park project proposes to construct a community park in downtown Redmond. The enhanced pedestrian environment in the park will consist of a raised great lawn and patio area, summer splash pad, art pavilion, and a single building to house restrooms and park facilities. Additionally, the park will construct pedestrian sidewalk and strolling paths, create a one way access road, provide illumination and typical utilities, as well as landscape and urban design features consisting of pockets of lawns, gardens and trees.

Having been previously cleared, the parcel is currently vacant of structures and consists primarily of grass lawn, an existing asphalt parking lot, and sidewalk located to the north, west and south. The project is located on City owned property referred to as parcel numbers 7792400190, 7792400100, 7792400111, 802700010, 7729400095, 7729400090, and 7729400089. The parcel area is bordered to the north by Redmond Way, to the west by 161<sup>st</sup> Ave NE, to the south by Cleveland Street, and mid-block between Brown Street and Leary Way.

The proposed drainage design will intercept surface flow via slot drains and area drains. Once captured, the majority of the park's stormwater flows will be conveyed to a centralized pretreatment facility to promote sedimentation prior to releasing flows into the on-site infiltration reservoir constructed beneath the great lawn. Collection areas not conveyed to the on-site infiltration reservoir, mostly comprised of on-site pollution generating impervious surface (PGIS) areas, will discharge via a direct connection to the existing stormwater conveyance system located within Redmond Way. Flows discharged from the parcel will participate in the City of Redmond Regional Facilities Program and provide treatment within the recently constructed Redmond Way Water Quality Facility.

Figure 1. Vicinity Map



## 2. Conditions and Requirements Summary

The Downtown Park project is subject to the requirements of the Department of Ecology's 2005 *Stormwater Management Manual for Western Washington* (SWMMWW), as adopted by the City of Redmond with modifications outlined in Chapter 2 of the City's February 2012 *Clearing, Grading, and Stormwater Management Technical Notebook* (Stormwater Notebook). An analysis of the applicability of the Minimum Requirements, and a summary how each requirement has been addressed by this project, is described below in Sections 2.1 and 2.2. Section 2.3 describes how the City of Redmond Capital Facilities Charge is applied to the project.

Chapter 3 of the Stormwater Notebook describes three classifications of Clearing and Grading Permits, depending on the project size and characteristics. The Downtown Park

project qualifies as a Large Project, as it exceeds Medium Projects criteria with the addition of greater than 5,000 SF of new impervious surface. Large projects trigger Minimum Requirements #1 - #9 and possibly additional requirements described in Chapters 6, 9, and 10 of the Stormwater Notebook.

The Downtown Park project is located within Wellhead Protection Zone 2 as delineated on the City of Redmond Wellhead Zone Map (see map in Appendix C). Per the Stormwater Notebook, infiltration of stormwater within Wellhead Protection Zone 2 is limited to runoff from non-pollution-generating surfaces.

## 2.1 Applicability of the Minimum Requirements

The applicability of the Minimum Requirements of the 2005 DOE SWMMWW is dependent on the size and type of project. Table 1 below contains project-specific information for the Downtown Park project that has been used to assess applicability of the requirements. The predeveloped project site has a single Threshold Discharge Area (TDA) that flows west towards the Sammamish River.

**Table 1 – Project Area Summary**

	<b>TDA</b>	<b>Notes</b>
Total Project Area	96,506 SF	
Existing Impervious Surface Area	18,831 SF	
Percent Existing Impervious Area	19.5%	< 35%; therefore does not classify as a Redevelopment Project.
New + Replaced Impervious Surface	69,103 SF	> 2,000 SF; therefore Min. Requirements 1-5 apply to new and replaced impervious surfaces
Replaced Impervious Surface	13,189 SF	
New Impervious Surface	55,914 SF	> 5,000 SF; therefore Min. Requirements 6-9 apply to new impervious surfaces
Existing PGIS	10,350 SF	
New PGIS	7,905 SF	> 5,000 SF PGIS

Per Figure 3.2 “Flow Chart for Determining Requirements for New Development” from the 2005 DOE SWMMWW, the project is subject to all 9 minimum requirements as the project currently contains less than 35% existing impervious surface area coverage and proposes more than 5,000 SF of new impervious surface.

An annotated version of the flowchart indicating the specific information from this project is attached in Appendix B. The following conclusions have been made from this analysis:

- Minimum Requirements 1-5 **apply** to new and replaced impervious surfaces and land disturbed.
- Minimum Requirements 6-9 **apply** for new impervious surfaces and the converted pervious surfaces.

In the developed form, the parcel will be divided into two TDAs. The majority of the park’s stormwater flows will be conveyed to a central infiltration reservoir constructed to infiltrate on-site non-pollution generating impervious surface (NPGIS) flows. Collection areas not conveyed to the on-site infiltration reservoir, mostly comprised of on-site pollution generating impervious surface (PGIS) areas, will bypass the basin and discharge via a direct connection to the existing stormwater conveyance system located within Redmond Way.

Tables 2 & 3 below contain proposed basin area summary information used to assess regional facility charges. The proposed area calculation is shown here.

$$\text{Infiltration Reservoir Area} + \text{Bypass Basin Area} = \text{Total Parcel Area}$$

$$61,800 \text{ SF} + 34,706 \text{ SF} = 96,506 \text{ SF}$$

**Table 2 – Infiltration Reservoir Area Summary**

	TDA	Notes
Total Basin Area	61,800 SF	Tributary to infiltration reservoir
Impervious Surface Area	39,640 SF	
Pervious Surface Area	22,160 SF	

**Table 3 – Bypass Drainage Basin Areas**

	TDA	Notes
Total Basin Area	34,706 SF	Tributary to Redmond Way conveyance system
Impervious Surface Area	5,663 SF	
Pervious Surface Area	29,043 SF	

## **2.2 Minimum Requirement Summary**

### Minimum Requirement #1: Preparation of Stormwater Site Plans

This drainage report, along with a Construction Stormwater Pollution Prevention Plan (SWPPP), and project plans will satisfy the requirement for a stormwater site plan.

### Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan

A Construction Stormwater Pollution Prevention Plan (SWPPP) outline will be prepared for the contractor prior to construction as a requirement of the construction contract. The awarded contractor will be required to finalize the SWPPP in compliance with the 2005 DOE SWMMWW, as well as the strenuous requirements for construction stormwater pollution prevention outline in Chapters 9 and 10 of the City of Redmond Stormwater Notebook. The SWPPP outline will be provided in a future submittal.

### Minimum Requirement #3: Source Control of Pollution

Source control of pollution will be implemented for this project as applicable through Construction and Operation BMPs. Please refer to the SWPPP for the specific BMPs applicable to this project. A construction source control pollution plan will be prepared for the project prior to construction by the contractor as a requirement of the construction contract.

Permanent source control of pollution will be provided within the proposed on-site building, which will house hazardous materials and water storage/mixing tanks as part of the water recreation quality control and daily operations of the on-site splash pad. Materials will be adequately stored in primary containment units, and the building basement will be constructed to provide secondary containment in case of a chemical emergency.

### Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

The existing project area outfalls north, connecting to the existing City of Redmond stormwater conveyance system located with Redmond Way. The proposed drainage design will infiltrate the majority of the on-site stormwater, thereby altering the natural drainage system. An over flow pipe will allow excessive flows to bypass the infiltration facility and discharge directly to the existing stormwater conveyance system located within Redmond Way. Surface areas not infiltrated on-site, including proposed on-site PGIS areas, will follow the predeveloped drainage outfall and discharge directly to the existing stormwater conveyance system located within Redmond Way.

### Minimum Requirement #5: On-site Stormwater Management

Proposed drainage will intercept sheet flow from the park surface via slot drains and area drains. Once captured, the majority of the park's stormwater flows will be conveyed to a centralized pretreatment facility in order to promote sedimentation prior to releasing flows into an on-site infiltration reservoir constructed beneath the great lawn. Because the project is located within Wellhead Protection Zone 2, infiltration is only allowed from non-pollution generating surfaces, per the City Stormwater Technical Manual. Surface areas not infiltrated on-site, including proposed on-site PGIS areas, will be directly

connected to the existing stormwater conveyance system located within Redmond Way. Discharged flows will participate in the City of Redmond Regional Facilities Program and provide treatment within the recently constructed Redmond Way Water Quality Facility. The regional facilities program capital facility charges are discussed in section 2.3.

#### Minimum Requirement #6: Runoff Treatment

As shown above in the Project Area Summary Table, Minimum Requirement #6 does apply to this project because the total amount of new pollution generating impervious surface is greater than 5,000 square feet. However, runoff treatment requirements are not required because the project is located within the Downtown Surcharge Area, and has the option to participate in the City of Redmond Regional Facilities Program as described in Redmond Municipal Code (RMC) 13.20 and Chapter 8 of the Stormwater Notebook. On-site PGIS areas will be collected and discharged directly to the existing stormwater conveyance system located within Redmond Way to participate in the City of Redmond Regional Facilities Program which will treat flows within the recently constructed Redmond Way Water Quality Facility.

#### Minimum Requirement #7: Flow Control

As shown above in the Project Area Summary Table, Minimum Requirement #7 does apply to the project because the amount of new impervious surface is greater than 5,000 square feet. However, on-site flow control requirements are not required as the majority of the Downtown Park's on-site stormwater flows will be infiltrated on-site. As discussed above, surface areas not infiltrated on-site, including proposed on-site PGIS areas, will be collected and discharged directly to the existing stormwater conveyance system located within Redmond Way to participate in the City of Redmond Regional Facilities Program.

#### Minimum Requirement #8: Wetland Protection

The discharge from the project site is not connected to existing wetlands requiring protection.

#### Minimum Requirement #9: Basin/Watershed Planning

This project is within the city's established watershed. Drainage requirements are consistent with the requirements set forth by the City.

#### Minimum Requirement #10: Operation and Maintenance

Stormwater facilities will be maintained in accordance to the City's existing Operation and Maintenance Manual.

## **2.3 Capital Facilities Charge**

The project is located within the Downtown Surcharge Area of the City of Redmond's Regional Facilities Program as described in Redmond Municipal Code (RMC) 13.20 and Chapter 8 of the Stormwater Notebook (see Appendix C for map). As described in RMC 13.20.045, the charge in the Downtown sub-basin is \$5,435.00 per impervious unit (IU)

proposed to be created by the project. An IU is described by RMC 13.20.020.C as being equal to 2,000 square feet of impervious surface area. IUs are truncated to the nearest tenth. Payment of this fee relieves the project of onsite flow control and runoff treatment requirements that would otherwise be required for total new impervious surfaces, as shown in the Project Area Summary Tables in Section 2.1. An infiltration reservoir will be used to manage on-site stormwater runoff to fully infiltrate a large portion of the project's non-pollution generating impervious surface areas. Per code, an IU credit of 80% has been applied to the 39,640 SF NPGIS area infiltrated on-site.

1. Capital Facilities Surcharge Fee Calculation based on new impervious surface area of 55,914 SF.

- Pervious area to be infiltrated: \$0
- Impervious area to be infiltrated is 20% of full IU rate:
  - $39,640 \text{ SF} / 2000 \text{ SF} / \text{IU} = 19.8 \text{ IU} * 20\% * \$5,435 = \$21,523$
- Impervious area conveyed to storm at 100% of IU rate:
  - $55,914 \text{ SF} - 39,640 \text{ SF} = 16,274 \text{ SF}$
  - $16,274 \text{ SF} / 2000 \text{ SF} / \text{IU} = 8.1 \text{ IU} * \$5,435 = \$44,024$

Total Capital Facilities Surcharge Fee =  $\$21,523 + \$44,024 = \$65,547.00$

2. Capital Facilities Charge: (connection costs – were put into effect in 1996 and this site could have credit if previous developments had paid them since they were in effect, but it does not appear to be applicable)

- Fee rate = \$958/IU
- Total new impervious surface area: 55,914 SF
- Number of IUs:  $55,914 \text{ SF} / 2000 \text{ SF} / \text{IU} = 27.9 \text{ IU}$

Capital Facilities Charge:  $27.9 \times \$958 = \$26,728.20$

3. Total Stormwater fees for the site:

- Total Capital Facilities Surcharge Fee + Capital Facilities Charge

Total Fee:  $\$65,547.00 + \$26,728.20 = \$92,275.2$

### 3. On-site/Offsite Drainage Analysis

A qualitative level evaluation was performed for the on-site and offsite drainage analysis.

Currently, stormwater runoff from within the project limits sheet flows inward towards the center of the existing parcel. Flows are captured within existing catch basins that

convey flows north towards the existing 12” to 24” City of Redmond conveyance system located within Redmond Way. Flows continue draining west within Redmond Way towards an outfall to the Sammamish River located on the north side of the Redmond Way bridge.

The project is located entirely within Redmond Watershed 550. This watershed has a total area of approximately 209 acres and is approximately 42% impervious per the Redmond Urban Watershed Initiative Report, dated October 2008. The existing outfall has been identified by the City as having flow capacity issues during the large storm events. Recently, the city completed construction of the Redmond Way Water Quality Facility located near the outfall of Watershed 550. Additionally, the City recently constructed a new stormwater trunk line along the abandoned BNSF railroad right-of-way to bypass a portion of flows from the upper watershed, thereby reducing the area tributary to the existing Redmond Way and Cleveland Street storm drainage systems.

A draft Downtown Basin map in Appendix P of the Stormwater Notebook indicates that the existing drainage system has adequate capacity downstream to the outfall. A copy of this map has been included in Appendix C.

## **4. Permanent Stormwater Control Plan**

The proposed drainage design will intercept sheet flow from the park surface via slot and area drains. Once captured, the majority of the park’s stormwater flows will be conveyed to a centralized pretreatment facility in order to promote sedimentation prior to releasing flows into an on-site infiltration reservoir constructed beneath the great lawn.

Surface areas not infiltrated on-site, including proposed on-site PGIS areas, will be directly connected to the existing stormwater conveyance system located within Redmond Way to participate in the City of Redmond Regional Facilities Program.

### **4.1. Existing Site Hydrology**

Having been previously cleared, the parcel is currently vacant of structures and consists primarily of grass lawn, an existing asphalt parking lot, and sidewalks located to the north, west and south. Existing impervious surface comprises approximately 19.5% of the site.

Per the Geotechnical Engineering Services Report produced by GeoEngineers for the Redmond Downtown Park, soils within the proposed project area consist of fill overlying alluvial deposits and recessional outwash, with intermittent peat layers underlying portions of the site. A ground water exploration was performed, and shows ground water fluctuates between 10 to 12 feet below existing site grades. For additional soils information, please refer to the GeoEngineers Geotechnical Report.

Currently, stormwater runoff from within the project limits sheet flows inward towards the center of the existing parcel. Flows are captured within existing catch basins that

convey flows north towards the existing 12” to 24” City of Redmond conveyance system located within Redmond Way. Flows continue draining west within Redmond Way towards an outfall to the Sammamish River located on the north side of the Redmond Way bridge.

#### ***4.2. Conveyance System Analysis***

The proposed Downtown Park drainage layout is provided in Appendix A.

Since the majority of the project’s stormwater flows will be infiltrated on-site, and the drainage trunk along Redmond Way is not known to have conveyance capacity problems, no hydrologic or hydraulic analysis of the existing conveyance systems have been performed as part of this project submittal.

#### ***4.3. Pretreatment Facility and Infiltration Reservoir***

As previously discussed, proposed drainage will intercept sheet flow from the park surface via slot drains, and area drains. Once captured, the majority of the park’s stormwater flows will be conveyed to a centralized pretreatment facility; also referred to as a hydrodynamic separator.

##### **Hydrodynamic Separator – Pretreatment Facility**

The hydrodynamic separator will function to trap and retain trash, debris, and sediment from stormwater runoff prior to releasing flows into the on-site infiltration reservoir constructed beneath the great lawn. Use of the pretreatment facility will help prevent unwanted sediment buildup within the infiltration reservoir.

The Pretreatment Facility was sized using the developed 100-yr flow rate of from the contributing basin. The unit has been chosen from the Department of Ecology approved device list of technologies that have received a general use level designation (GULD).

##### **Infiltration Reservoir**

The infiltration reservoir, located beneath the great lawn area, will function to infiltrate the majority of the Downtown Park’s non-pollution generating surface areas and lawn and garden areas. Per the WWHM calculations, the reservoir will be a minimum of 5,625 SF in size with a total reservoir depth of 30 inches.

The infiltration reservoir is designed using GeoEngineers recommended long term design infiltration rate of 2-inches per hour.

**Design Criteria**

The pretreatment facility and infiltration reservoir calculations have been performed using the Department of Ecology approved Western Washington Hydrology Model (WWHM) continuous hydrologic modeling software.

WWHM sizing calculations, as well as predeveloped and developed basin area maps are provided in Appendix D.

**5. Construction Stormwater Pollution Prevention Plan**

A Construction Stormwater Pollution Prevention Plan (SWPPP) will be required prior to the construction of this Project. The awarded contractor will be required to finalize the SWPPP and Erosion and Sedimentation Control (ESC) plans in accordance with this report, the Contract Plans, and City requirements. The SWPPP will also describe BMP measures to limit erosion, including phasing based on their sequence of construction.

A full SWPPP example will be provided in the final submittal package.

**6. Special Reports and Studies**

The following special reports have been referred to for this project:

- Geotechnical Engineering Services (Draft), GeoEngineers, 9/29/2015

**7. Other Permits**

The following permits are identified as required, or anticipated to be required, for this project:

- Construction Stormwater General Permit
- Clearing and Grading Permits

**8. Operations and Maintenance Manual**

The proposed public drainage facilities will be maintained by the City of Redmond, per their maintenance standards and schedules.

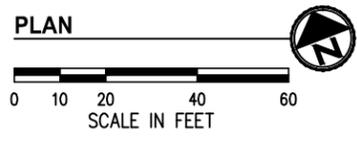
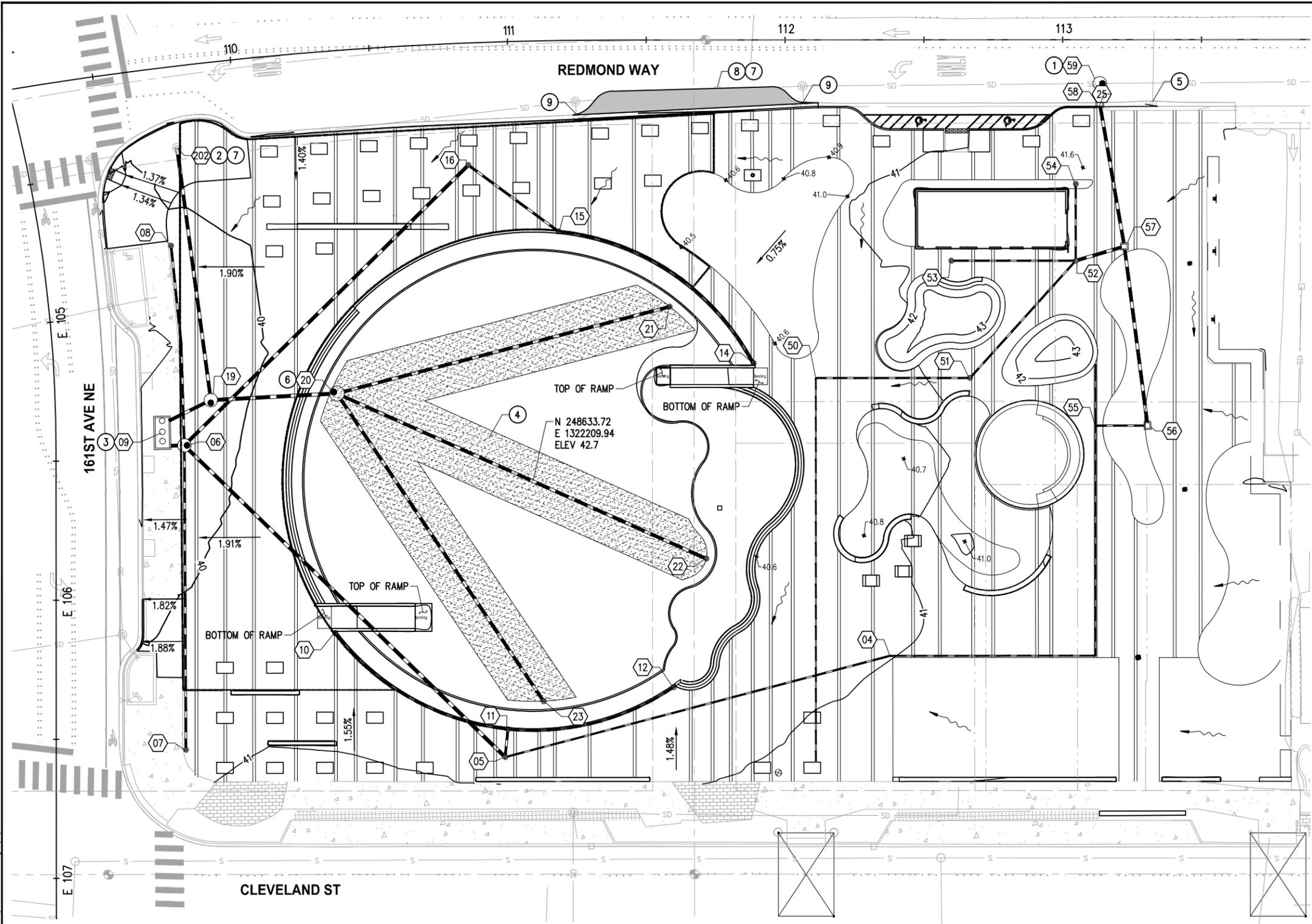
**9. Bond Quantities Worksheet**

A bond quantities worksheet will be prepared by the awarded contractor prior to construction as a requirement of the construction contract.

# **APPENDIX A**

## Drainage Plan

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- LEGEND**
- INFILTRATION BASIN
  - STORM DRAIN
  - AREA/BASIN DRAIN
  - PRETREATMENT FACILITY
  - STRUCTURE NUMBER
  - FLOW DIRECTION

- GENERAL NOTES - GRADING**
1. ALL EARTHWORK SHALL BE PERFORMED WITHIN CITY OWNED PARK PARCEL
  2. FOR SITE PLAN SEE SHEET C2.00.
  3. FOR GRADING & DRAINAGE PLAN SEE SHEET C2.01.
  4. FOR DRAINAGE PROFILES & DETAILS SEE SHEET C3.00-C3.04.
  5. FOR IRRIGATION PLAN & DETAILS SEE SHEET C4.00-C4.02.
  6. FOR UTILITY PLAN & DETAILS SEE SHEET C5.00-C5.03.
  7. FOR SITE LIGHTING PLAN & DETAILS SEE SHEET C6.00-C6.02.
  8. FOR BUILDING PLAN & DETAILS SEE SHEET A1.00-A1.03
  9. PROTECT ALL UTILITY STRUCTURES ABOVE AND BELOW GRADE THAT ARE TO REMAIN IN PLACE
  10. MAINTAIN ALL EXISTING CURB UNLESS OTHERWISE NOTED ON PLANS

- GENERAL NOTES - DRAINAGE**
1. TYPE 1 AND TYPE 2 STORM DRAINAGE STRUCTURES SHALL BE PER CITY OF REDMOND STANDARD DETAILS.
  2. LOCATION, DEPTH, AND SIZE OF EXISTING UTILITIES ARE APPROXIMATE. CONTRACTOR TO VERIFY WITH POTHOLING PRIOR TO CONSTRUCTION.
  3. SEE STORM DRAINAGE PROFILES FOR STRUCTURE CALLOUTS. SPECIFIED STRUCTURE LOCATION IS TO CENTER OF STRUCTURE.
  4. FOR DRAINAGE PROFILES & DETAILS SEE SHEETS C3.00 - C3.05

- DRAINAGE NOTES**
- ① CONNECT EXISTING STORM DRAIN PIPE TO NEW STORM DRAINAGE STRUCTURE
  - ② CONNECT NEW STORM DRAIN PIPE TO EXISTING STORM DRAINAGE STRUCTURE
  - ③ INSTALL PRETREATMENT FACILITY PER DETAIL ON SHEET C3.04
  - ④ INSTALL INFILTRATION RESERVOIR PER DETAIL ON SHEET C3.03
  - ⑤ REMOVE EXISTING STORM DRAINAGE STRUCTURE
  - ⑥ SEE DRAINAGE STRUCTURE DETAIL ON SHEET C3.03
  - ⑦ ADJUST STORM DRAINAGE STRUCTURE TO GRADE
  - ⑧ REPLACE FRAME AND GRATE ON EXISTING TYPE 1 CATCH BASIN WITH RING AND ROUND SOLID LID COVER PER CITY OF REDMOND STANDARD DETAIL NUMBER 631
  - ⑨ ROTATE TOP SLAB ON EXISTING TYPE 1 CATCH BASIN TO ENSURE GRATE REMAINS IN GUTTER FLOW LINE

- LEGEND**
- HMA PAVEMENT, SEE DET SHT C2.10
  - DETECTABLE WARNING SURFACE



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REVISIONS

No.	Date	Details	By



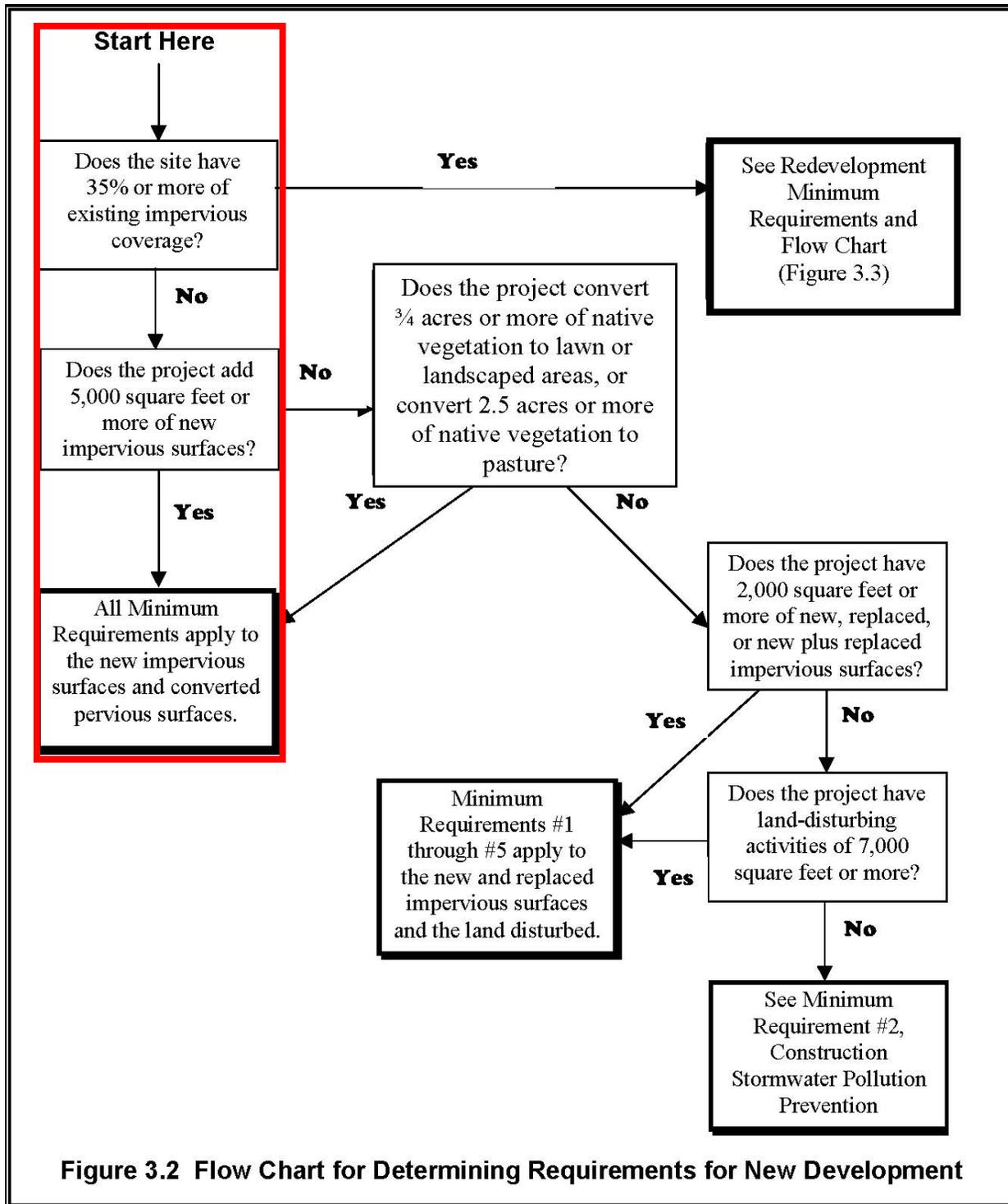
60% Set  
PROJECT  
Redmond Park

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SCALE: AS SHOWN  
DRAWING No. C2.01

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## **APPENDIX B**

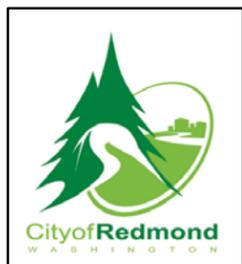
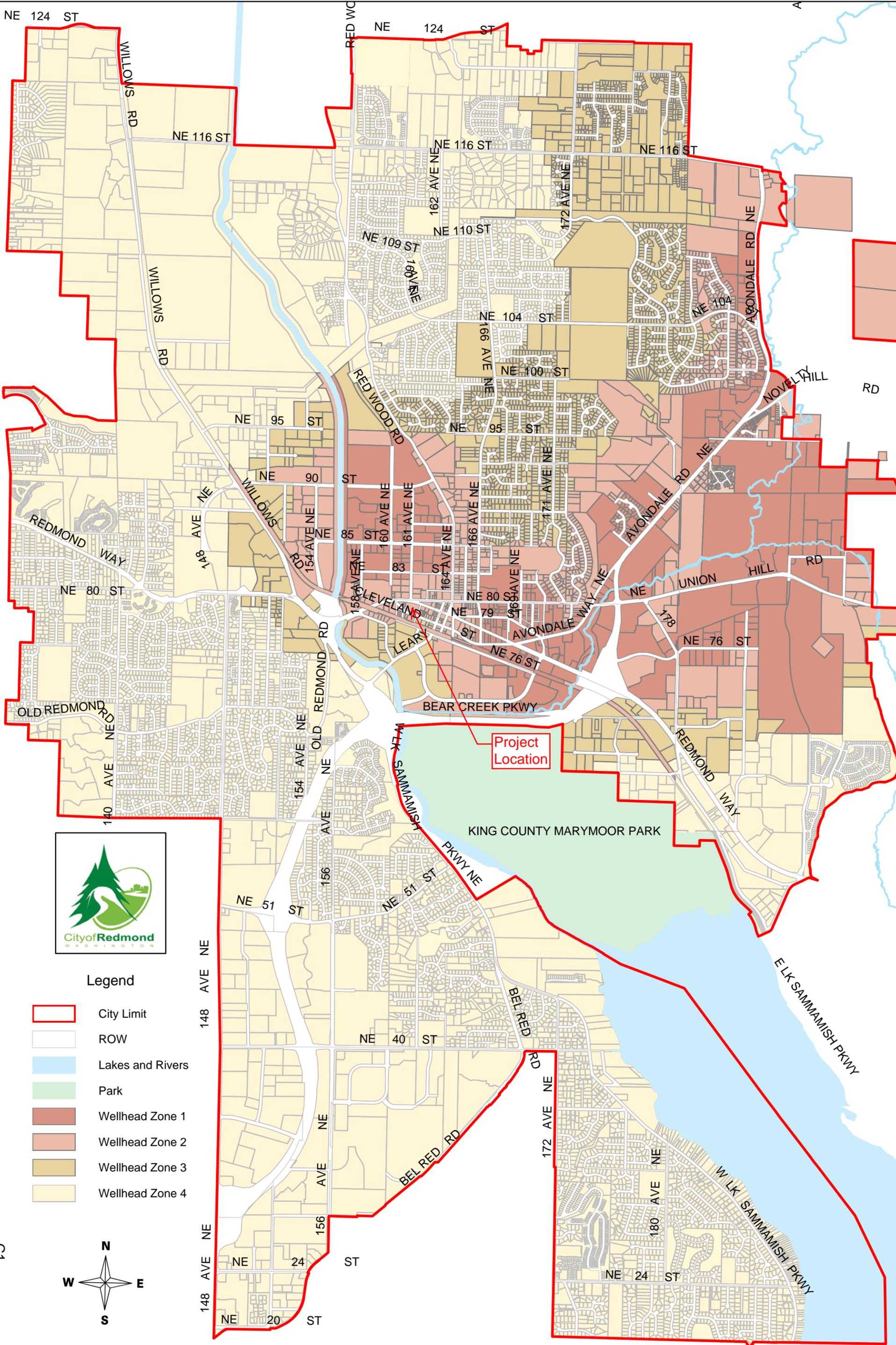
### Flow Chart for Determining Requirements for New Development



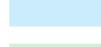
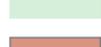
## **APPENDIX C**

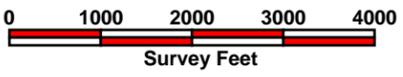
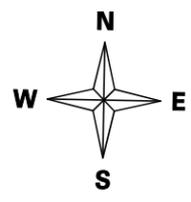
### City of Redmond Maps

- Redmond Wellhead Protection Zones Map
- Regional Stormwater Facilities Map
- Downtown Facilities Plan

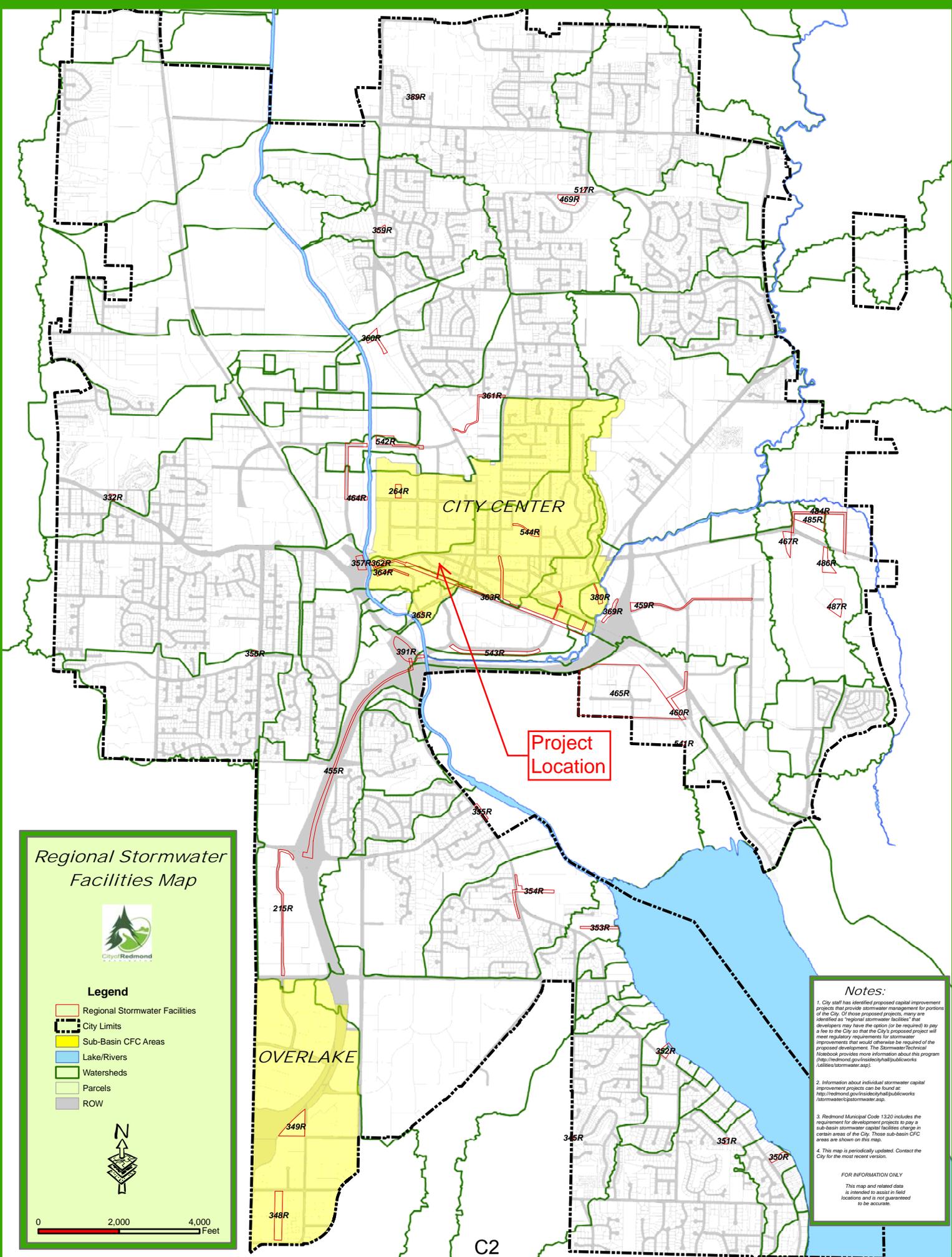


Legend

-  City Limit
-  ROW
-  Lakes and Rivers
-  Park
-  Wellhead Zone 1
-  Wellhead Zone 2
-  Wellhead Zone 3
-  Wellhead Zone 4



C1



Regional Stormwater Facilities Map



Legend

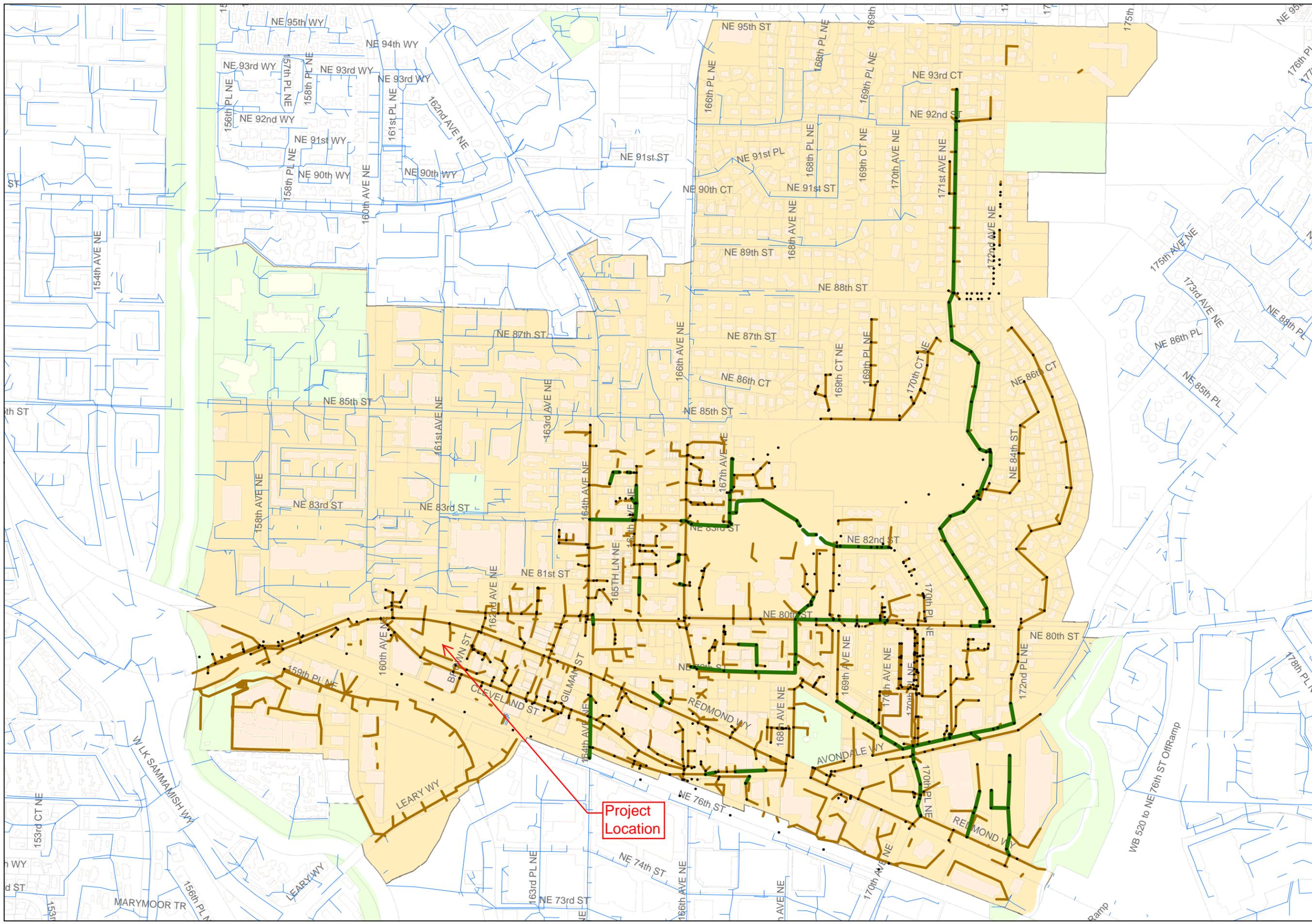
- Regional Stormwater Facilities
- City Limits
- Sub-Basin CFC Areas
- Lake/Rivers
- Watersheds
- Parcels
- ROW



Notes:

1. City staff has identified proposed capital improvement projects that provide stormwater management for portions of the City. Of those proposed projects, many are identified as "regional stormwater facilities" that developers may have the option (or be required) to pay a fee to the City so that the City's proposed project will meet regulatory requirements for stormwater improvements that would otherwise be required of the proposed development. The Stormwater Technical Notebook provides more information about this program (<http://redmond.gov/insidecty/hall/publicworks/stormwater/cip/stormwater.asp>).
2. Information about individual stormwater capital improvement projects can be found at: <http://redmond.gov/insidecty/hall/publicworks/stormwater/cip/stormwater.asp>
3. Redmond Municipal Code 13.20 includes the requirement for development projects to pay a sub-basin stormwater capital facilities charge in certain areas of the City. Those sub-basin CFC areas are shown on this map.
4. This map is periodically updated. Contact the City for the most recent version.

FOR INFORMATION ONLY  
This map and related data is intended to assist in field locations and is not guaranteed to be accurate.



**Legend**

- Catch Basins
- █ Inadequate Pipe Capacity
- █ Adequate Pipe Capacity
- █ Pipes Not Studied
- Surcharge Area

City of Redmond

Scale: 1" = 600'

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

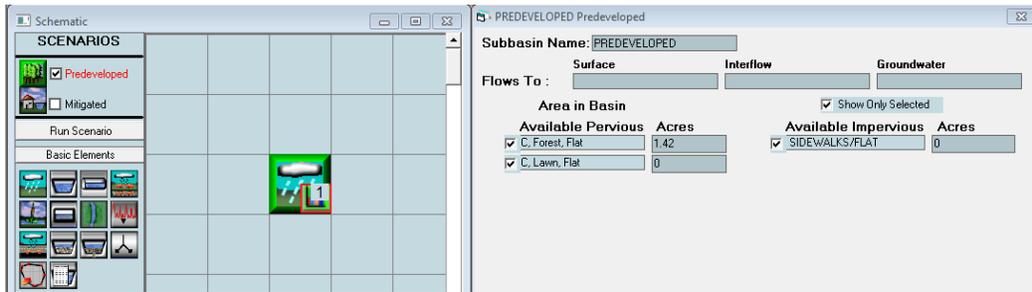
**Draft  
Downtown Basin**

## **APPENDIX D**

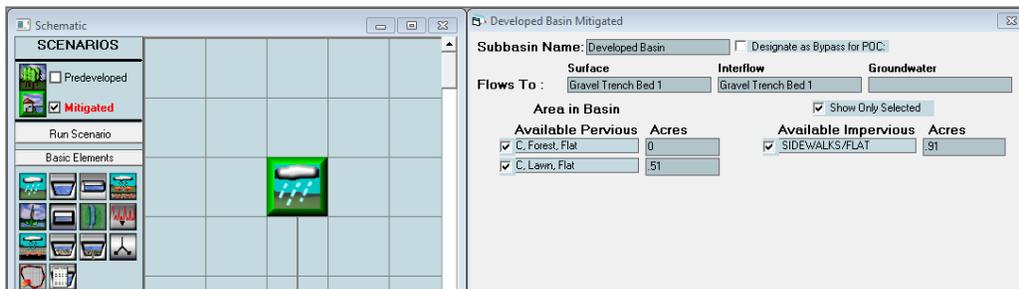
### Hydrologic Analysis

- Infiltration Reservoir and Pretreatment Facility Sizing Calculations
- Figure 2 – Existing Basin Areas
- Figure 3 – Proposed Basin Areas

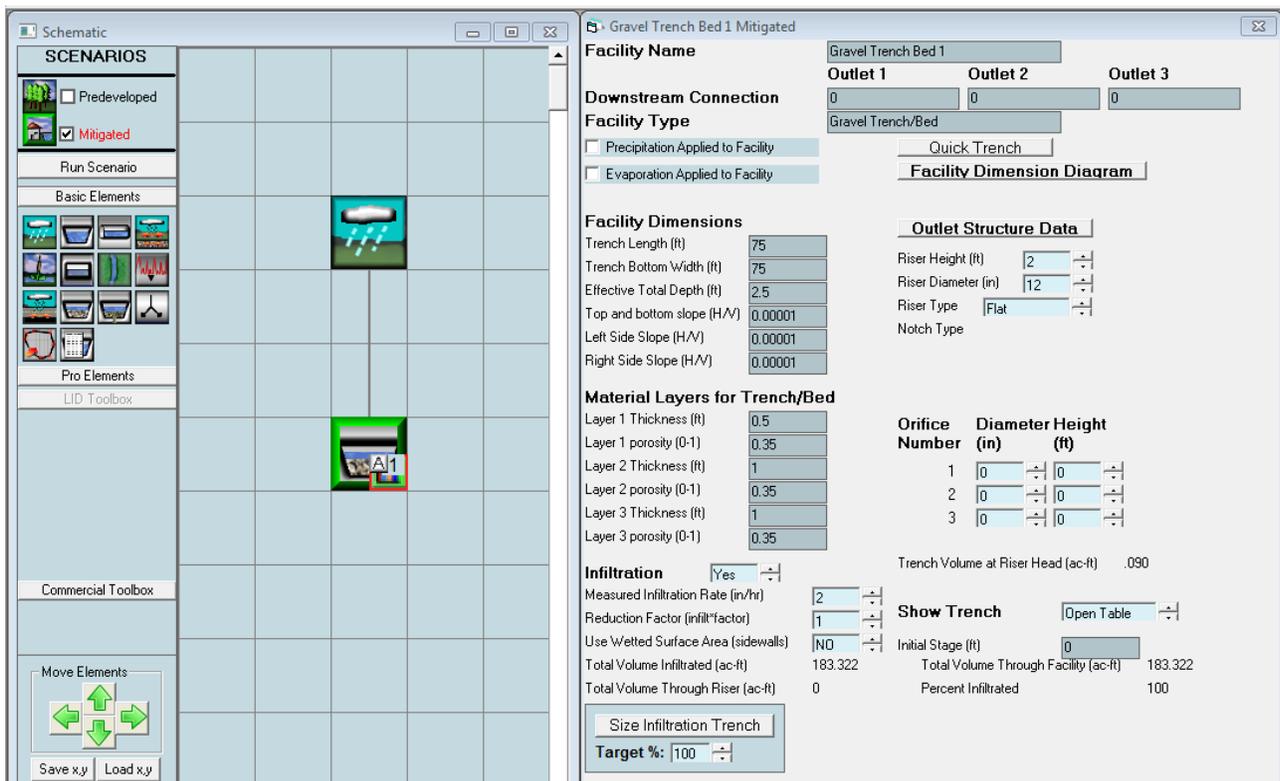
## PREDEVELOPED BASIN



## DEVELOPED BASIN



## INFILTRATION BASIN

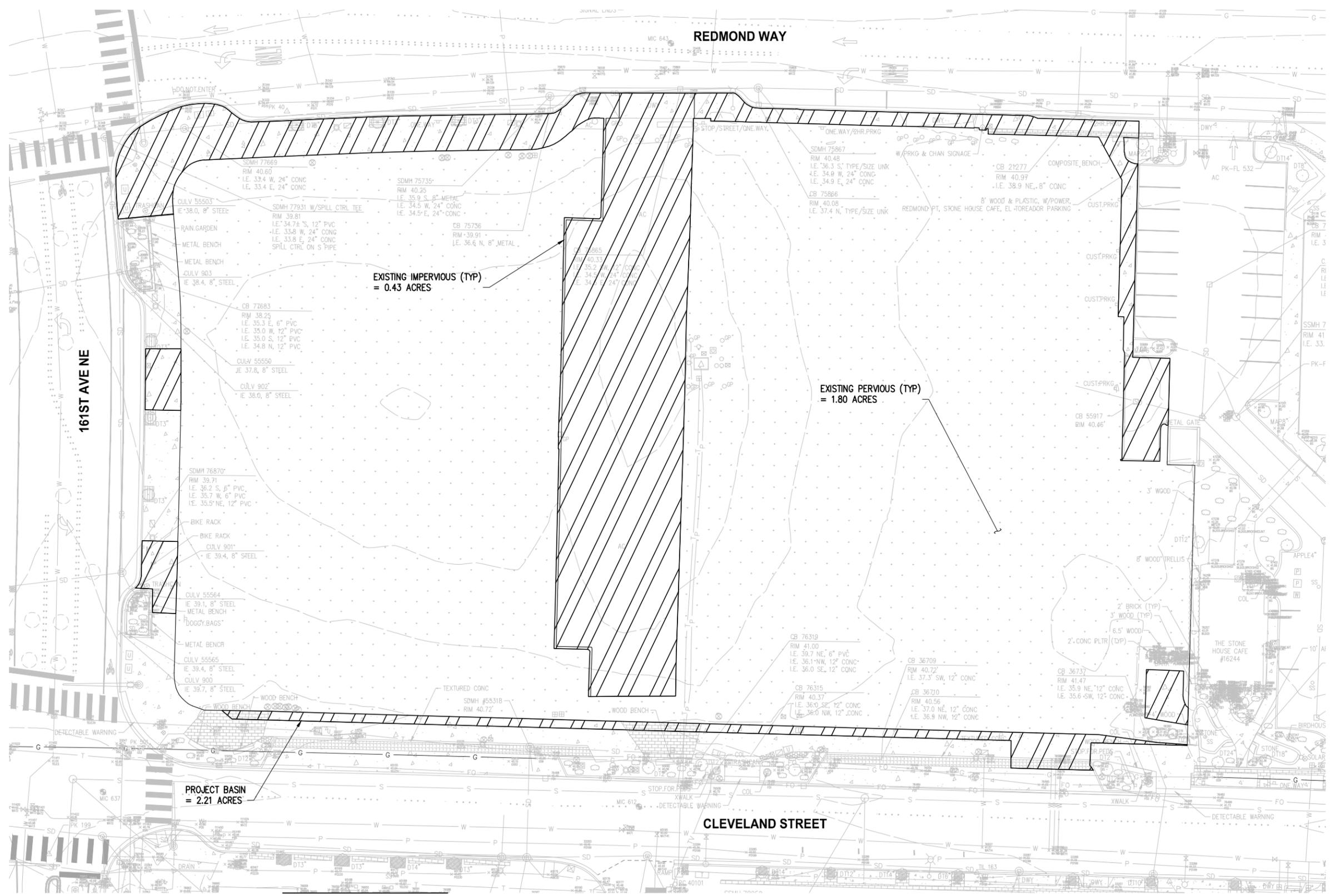


## FLOWS

Flow Frequency	
Flow(cfs)	0701
2 Year	= 0.2582
5 Year	= 0.3324
10 Year	= 0.3845
25 Year	= 0.4540
50 Year	= 0.5086
100 Year	= 0.5655

## STAGE

Stage Frequency	
(feet)	1011
2 Year	= 0.1234
5 Year	= 0.3211
10 Year	= 0.5581
25 Year	= 1.0481
50 Year	= 1.6113
100 Year	= 2.4096



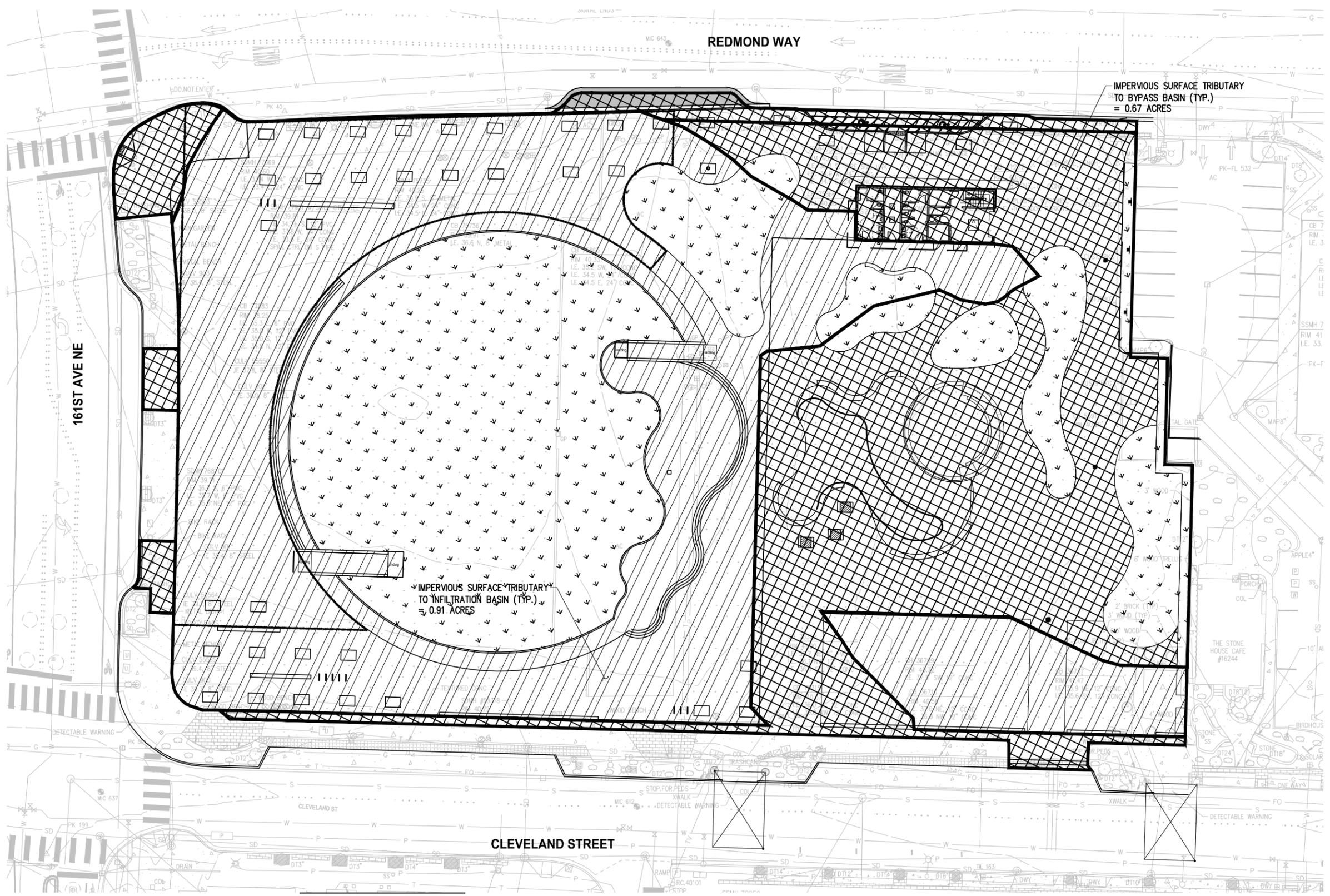
**EXISTING PROJECT AREA:**

IMPERVIOUS SURFACES	= 0.43 ACRES
PERVIOUS SURFACES	= 1.79 ACRES
BASIN AREA CHECK	= 2.22 ACRES

**BASIN PERCENTAGES**

EXISTING IMPERVIOUS	= 19.5 %
EXISTING PERVIOUS	= 80.5 %

TOTAL PROJECT BASIN AREA = INFILT. BASIN + BYPASS BASIN  
 = 1.42 ACRES + 0.80 ACRES = 2.20 ACRES



**INFILTRATION DRAINAGE BASIN AREAS  
 (FOR HYDROLOGIC MODELING)**  
 TOTAL BASIN AREA = 1.42 ACRES  
 IMPERVIOUS SURFACES = 0.91 ACRES  
 PERVIOUS SURFACES = 0.51 ACRES

**BYPASS DRAINAGE BASIN AREAS**  
 TOTAL BASIN AREA = 0.80 ACRES  
 IMPERVIOUS SURFACES = 0.13 ACRES  
 PERVIOUS SURFACES = 0.67 ACRES