12820 NE 100th Street Abbreviated Plan
Technical Information Report

Prepared for:
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October 2014

PWE Project #14-543

PacWest Engineering LL

Technical Information Report
12820 NE 100TH Street Abbreviated Plan, Kirkland, WA

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ENGINEER'S CERTIFICATION

I hereby certify that this Technical Information Report for the 12820 NE 100th Street Abbreviated Plan has been prepared under the supervision and direction of the undersigned, whose seal as a Licensed Professional Engineer of the State of Washington is affixed below.

10/9/14

L. BRANDON SMITH
STATE OF WASHINGTON
40424
REGISTERED
PROFESSIONAL ENGINEER

L. Brandon Smith, PE

1.0 PROJECT OVERVIEW

1.1 PROJECT OVERVIEW

This Technical Information Report (TIR) has been prepared in conjunction with the submittal of the 12820 NE 100th Street Abbreviated Plan. The 2009 King County Surface Water Design Manual (KCSWDM) is used as a guideline in the preparation of this report. A copy of the King County TIR Worksheet has been included in **APPENDIX A TIR WORKSHEET**.

The proposed project lies in a portion of the southeast quarter of Section 33, Township 26 North, Range 5 East of the Willamette Meridian, City of Kirkland, King County, Washington. The project is located off of NE 100th Street and is surrounded by residential properties. The project is on parcel 3326059153. A vicinity map taken from the City of Kirkland GIS is shown below:

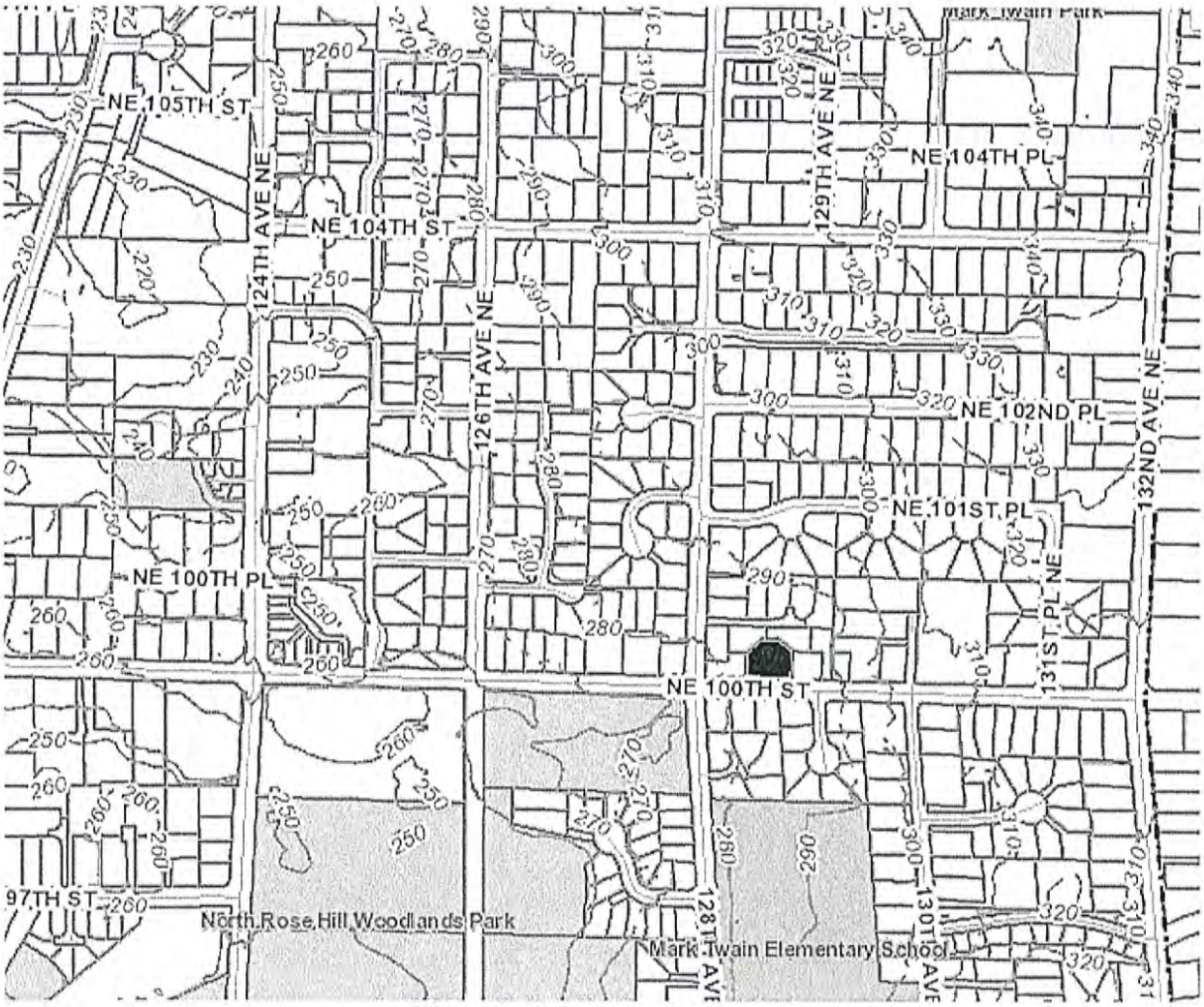


Figure 1.1-vicinity map

NTS

1.2 PREDEVELOPED CONDITIONS

The project site is approximately 0.34 acres in size. Onsite there are one (1) existing single family residential structure and one (1) out building. The existing site's vegetation is landscaping with some trees, shrubs, and grass. The topography of NE 100th Street slopes from the east to the west, and the property is relatively flat and slopes from the center to all sides ranging between 1 and 4 percent. The site's southern property line is the project's frontage along NE 100th Street and along its northern property line.

1.3 DEVELOPED CONDITIONS

The existing home will be removed, a short plat will be done creating two lots, and two single family residences will be constructed. The project's frontage has existing curb gutter and sidewalk. The proposed residence's driveways will access off of NE 100th Street. The new/replaced impervious surfaces on NE 100th Street are negligible, however, will be collected with a gutter and conveyed downstream to an existing closed conveyance.

1.4 SOILS

The onsite soils are classified as AgC – Alderwood gravelly sandy loam, 6-15% Slopes, per NRCS Web Soil Survey of King County. These soils are considered to have low erosion potential and are SCS soil type B. A NRCS Soils Map can be found in **APPENDIX C NRCS SOILS MAP.**

Pacwest Engineering will perform any required on-site testing when the final design is completed.

2.0 CONDITIONS & REQUIREMENTS SUMMARY

This Technical Information Report (TIR) is part of the site plan application for the 12820 NE 100th Street Abbreviated Plans. According to City policy D-2 the project requires a Small Project Drainage Review Type II since we are constructing between 2,000 and 10,000 square feet of new impervious surfaces.

Additionally, based upon Policy L-2, Feasibility of stormwater low impact development (LID) for full drainage review projects it was determined that the BMP Area requirement is case 1, for lots up to 11,000 SF, requiring only 10% of each lot area to be controlled utilizing an approved BMP. For this site Full Infiltration was selected.

2.1 CORE REQUIREMENT #1 - DISCHARGE AT THE NATURAL LOCATION

The site will directly connect to the City's closed conveyance system within NE 100th Street. 10% of the site area will be controlled by infiltration shown in Appendix D.

2.2 CORE REQUIREMENT #2 – OFFSITE ANALYSIS

The frontage improvements consist of an approach and removing and replacing sidewalk. 10% of the site is mitigated through the installation of infiltration trenches. The remaining stormwater runoff is connected to the existing conveyance system in NE 100th Street.

2.3 CORE REQUIREMENT #3 - FLOW CONTROL

This requirement is not required according to Table 1.1.2.A of the King County Surface Water Design Manual, 2009.

2.4 CORE REQUIREMENT #4 - CONVEYANCE SYSTEM

As shown in Appendix D, a 6 inch collection pipe will be routed through two yard drains and connected into the back of the catch basin within the street.

2.5 CORE REQUIREMENT #5 - TEMPORARY EROSION AND SEDIMENT CONTROL

A CSWPPP has been prepared and can be found in Section 8.0 of this report.

2.6 CORE REQUIREMENT #6 -MAINTENANCE AND OPERATIONS

The proposed infiltration trenches to be constructed on this project will be privately maintained in accordance with required City standards

2.7 CORE REQUIREMENT #7 - FINANCIAL GUARANTEES AND LIABILITY

The owner will provide the required bond and liability assurances.

2.8 CORE REQUIREMENT #8 - WATER QUALITY

This requirement is not required according to Table 1.1.2.A of the King County Surface Water Design Manual, 2009.

2.9 SPECIAL REQUIREMENT #1 – OTHER ADOPTED AREA-SPECIFIC REQUIREMENTS

This requirement is not required according to Table 1.1.2.A of the King County Surface Water Design Manual, 1998.

2.10 SPECIAL REQUIREMENT #2 – FLOOD HAZARD AREA DELINEATION

This requirement is not required.

2.11 SPECIAL REQUIREMENT #3 – FLOOD PROTECTION FACILITIES

This requirement is not required.

2.12 SPECIAL REQUIREMENT #4 – SOURCE CONTROL

This requirement is not required.

2.13 SPECIAL REQUIREMENT #5 – OIL CONTROL

This requirement is not required.

3.0 OFFSITE ANALYSIS

A Level 1 offsite analysis is required for one (1) mile downstream. A qualitative analysis was performed as follows. The runoff from the site is proposed to connect into the existing catch basin located within the public right of way near the southwest corner of the site. The stormwater travels to the west to a point that crosses into North Rose Hill Park. From this point the stormwater is intercepted by a creek that is tributary to Forbes Lake.

3.1 STUDY AREA DEFINITION AND MAPS AND RECOURCE REVIEW

A Federal Emergency Management Administration (FEMA) Map has been included in **APPENDIX B FEMA MAP**, which illustrates that the proposed site is not located in any flood zones, wetlands, or high groundwater hazard areas.

3.2 FIELD INSPECTION

A field survey was performed by others.

3.3 DRAINAGE SYSTEM DESCRIPTION AND PROBLEM DESCRIPTION

The proposed drainage system is closed conveyance pipes that intercept gutter flows with the use of a type 1 catch basins along the project's frontage. The proposed improvements do not exceed thresholds for flow control and water quality improvements. There are no known drainage problems upstream or downstream of the proposed project site.

4.0 FLOW CONTROL & WATER QUALITY FACILITY ANALYSIS & DESIGN

The 12820 Ne 100th Street Abbreviated Plan does not require flow control and water quality BMPs as per Table 1.1.2.A of the King County Surface Water Design Manual, 2009 (KCSWDM). Only the proposed infiltration trenches that mitigate the runoff from the proposed driveway and roof top need to be sized for this project.

4.1 EXISTING SITE HYDROLOGY

The existing hydrology is not analyzed since the project is not subject to Core Requirement # 3.

4.2 DEVELOPED SITE HYDROLOGY

The proposed construction includes two single family residences. No additional conveyance piping or stormwater detention/retention basins are proposed; therefore, the onsite hydrology is not analyzed.

4.3 PERFORMANCE STANDARDS

No flow control facilities are proposed.

4.4 FLOW CONTROL SYSTEM

No flow control facilities are proposed.

4.5 WATER QUALITY SYSTEM

No water quality facilities are proposed.

5.0 CONVEYANCE SYSTEM ANALYSIS & DESIGN

The trenches are sized per Section C.2.2.3 of the KCSWDM. The soils at the trench are fine sand, loamy sand which require 75 linear feet by 2 feet wide of bottom area per 1,000 sq.ft. of tributary impervious surfaces. One foot of separation must be maintained between the trench bottom and an impermeable layer and or the seasonal high ground water table. The trenches are to be 2.50 feet deep with 6 inches of cover.

West Lot

Basin – Side Yard
The trench in the side yard mitigates 740 square feet of roof area. The runoff from this area is collected with gutters and conveyed to a new infiltration trench. Using the trench sizing ration (linear feet of trench per 1000 square feet of tributary impervious surface) results in a required trench length of 56 feet at 2 feet wide. This means the trench bottom needs a surface area of 112 square feet.

East Lot

Basin 2 – Side Yard
The trench in the side yard mitigates 750 square feet of roof area. The runoff from this area is collected with gutters and conveyed to a new infiltration trench. Using the trench sizing ration (linear feet of trench per 1000 square feet of tributary impervious surface) results in a required trench length of 56 feet at 2 feet wide. This means the trench bottom needs a surface area of 112 square feet.

6.0 SPECIAL REPORTS & STUDIES

No additional report or studies are needed for this project.

7.0 OTHER PERMITS

Permits required for this project may include application for a short plat, a building permit from the City of Kirkland, and a LSM plan. The water and sanitary sewer improvements will be permitted by the City of Kirkland.

8.0 CSWPPP ANALYSIS & DESIGN

The 12820 NE 100th Street Abbreviated Plan is relatively small is size with very little construction proposed along the frontage of NE 100th Street. The relatively small size of the project means that a minimal amount of erosion control measures are needed.

8.1 ESC PLAN ANALYSIS AND DESIGN

The 12820 NE 100th Street Abbreviated Plan is considered a small project which allows for basic BMPs like inlet protection, silt fencing, and cover measures. The following is the construction sequence provided on the plans:

1. Pre-construction meeting.
2. Post sign with name and phone number of ESC supervisor (may be consolidated with the required notice of construction sign).
3. Flag or fence clearing limits.
4. Install perimeter protection (silt fence).
5. Construct sewer, water and stormwater improvements.
6. Install catch basin protection.
7. Clear and Grade improvements and pave the frontage.
8. Maintain erosion control measures in accordance with City of Kirkland standards and manufacturer's recommendations.

9. Relocate erosion control measures or install new measures so that as site conditions change the erosion and sediment control is always in accordance with the City of Kirkland erosion and sediment control standards.
10. Cover all areas that will be un-worked for more than seven days during the dry season or two days during the wet season with straw, wood fiber mulch, compost, plastic sheeting or equivalent.
11. Stabilize all areas that reach final grade within seven days.
12. Seed or sod any areas to remain un-worked for more than 30 days.
13. Upon completion of the project, all disturbed areas must be stabilized and BMP's removed if appropriate.

8.2 SWPPS PLAN DESIGN

The potential to have major spills onsite of hazardous materials is minimal since this is a small project. If construction equipment is parked onsite they must be parked on/near the construction entrance and any fluids that are leaked by the vehicles must be contained in a constructed sump and not allowed to be discharged downstream. All spills of hazardous materials must be contained and disposed as per the County's and Health Departments standards.

9.0 BOND QUANTITIES, FACILITIES SUMMARIES, & DECLARATION OF COVENANT

The Bond Quantities Worksheet; and the Declaration of Covenant shall be submitted in subsequent submittals.

10.0 OPERATIONS & MAINTENANCE MANUAL

The proposed infiltration trenches to be constructed on this project will be privately maintained in accordance with required City standards.

APPENDIX A
TIR WORKSHEET

Stormwater Technical Information Report
For Small Sites

Project Name:

Project Address: 12820 NE 100th Street

Parcel Number(s): 3326059153

Name of Developer/Owner: Benjamin Ryan Communities

Name of Professional Preparing TIR:

Company: PacWest Engineering

Address: 10209 Bridgeport Way SW, STE C-1
Lakewood, WA 98499

Phone Number: 253-830-5960

Report Date: 10-2014

This box to be completed by COK staff	
PERMIT #	

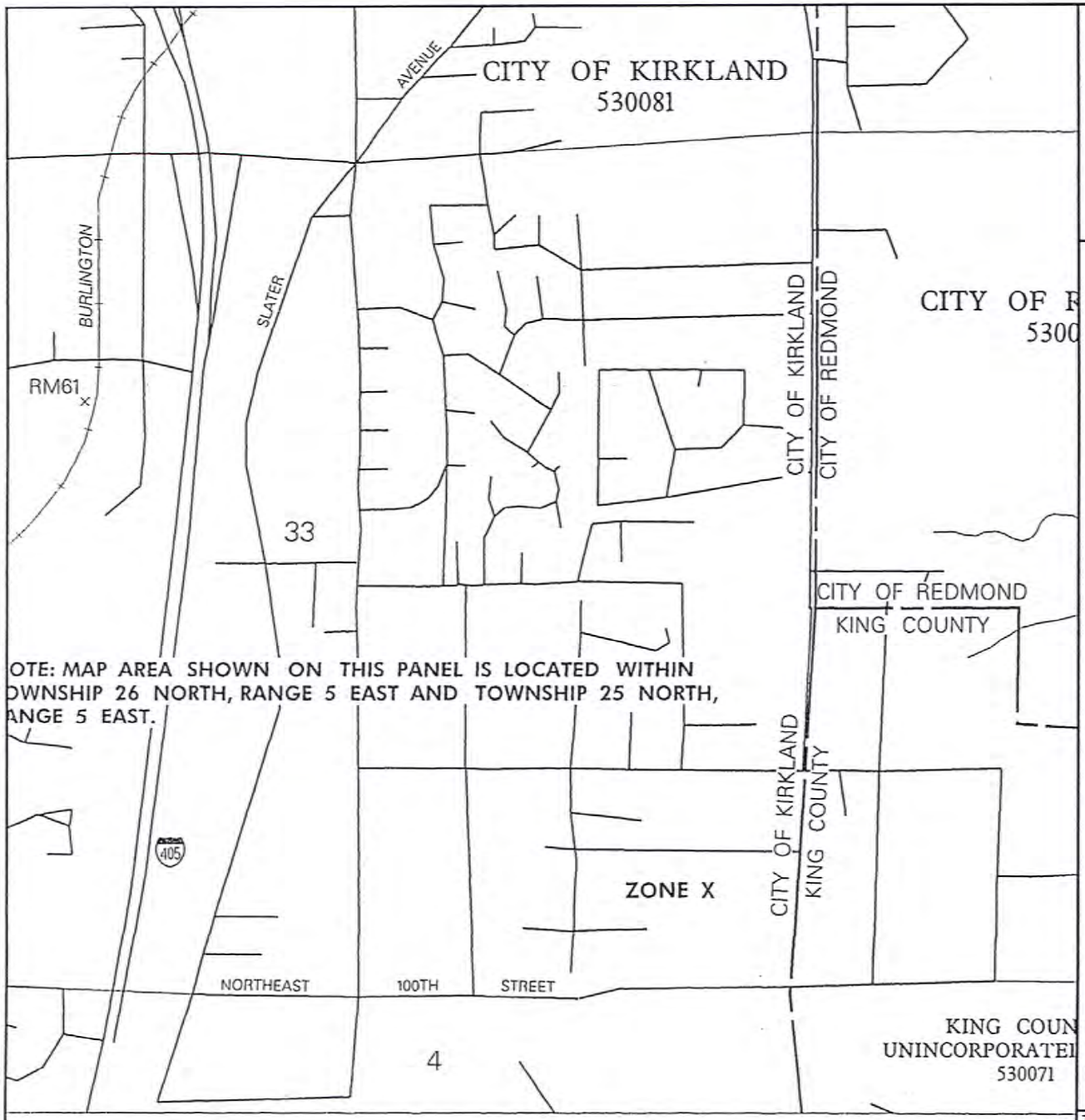
Project Overview

- General description of project vicinity
- Description of proposed project
- Site vicinity map showing location of site, nearby roads, receiving waters, and significant geographical features

Core Requirements – state how project meets each requirement

- Req. #1 – Discharge at the Natural Location
- Req. #2 – Offsite Analysis
  Include analysis of offsite flows entering the property, and downstream analysis.
- Req. #3 – Flow Control
  - Include onsite flow control BMPs.
  - Evaluate the feasibility and applicability of dispersion and infiltration, and state the low impact development BMP that will be used on this project (1 minimum). See PW Pre-Approved Plan Policy L-1.
  - Include required soil information.
- Req. #4 – Conveyance system
  Include all pipe calculations
- Req. #5 – Erosion and Sediment Control
  Small Site ESC Plan and narrative
- If O&M is different than stated in the 2009 King County Surface Water Design Manual, submit an O&M manual for the specific stormwater element, include the responsible party for maintenance, and a maintenance schedule.

APPENDIX B
FEMA MAP



APPROXIMATE SCALE IN FEET

1000 0 1000

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

KING COUNTY, WASHINGTON AND INCORPORATED AREAS

PANEL 360 OF 1725

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BOTHELL, CITY OF	530075	0360	G
KIRKLAND, CITY OF	530081	0360	G
REDMOND, CITY OF	530087	0360	G
WOODINVILLE, CITY OF	530324	0360	G
KING COUNTY, UNINCORPORATED AREAS	530071	0360	G

MAP NUMBER
53033C0360 G

MAP REVISED:
NOVEMBER 8, 1999

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX C
NRCS SOILS MAP

Soil Map—King County Area, Washington

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 8, Dec 10, 2013

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
AgB	Alderwood gravelly sandy loam, 0 to 6 percent slopes	0.0	0.0%
AgC	Alderwood gravelly sandy loam, 6 to 15 percent slopes	8.3	100.0%
Totals for Area of Interest		8.3	100.0%

King County Area, Washington

AgC—Alderwood gravelly sandy loam, 6 to 15 percent slopes

Map Unit Setting

National map unit symbol: 1hmsl
Elevation: 50 to 800 feet
Mean annual precipitation: 25 to 60 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Alderwood and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alderwood

Setting

Landform: Moraines, till plains
Parent material: Basal till with some volcanic ash

Typical profile

H1 - 0 to 12 inches: gravelly ashy sandy loam
H2 - 12 to 27 inches: very gravelly sandy loam
H3 - 27 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 6 to 15 percent
Depth to restrictive feature: 24 to 40 inches to densic material
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: B
Other vegetative classification: Unnamed (G002XN302WA)

Minor Components

Tukwila

Percent of map unit: 1 percent
Landform: Depressions

Norma

Percent of map unit: 1 percent
Landform: Depressions

Bellingham

Percent of map unit: 1 percent
Landform: Depressions

Shalcar

Percent of map unit: 1 percent
Landform: Depressions

Seattle

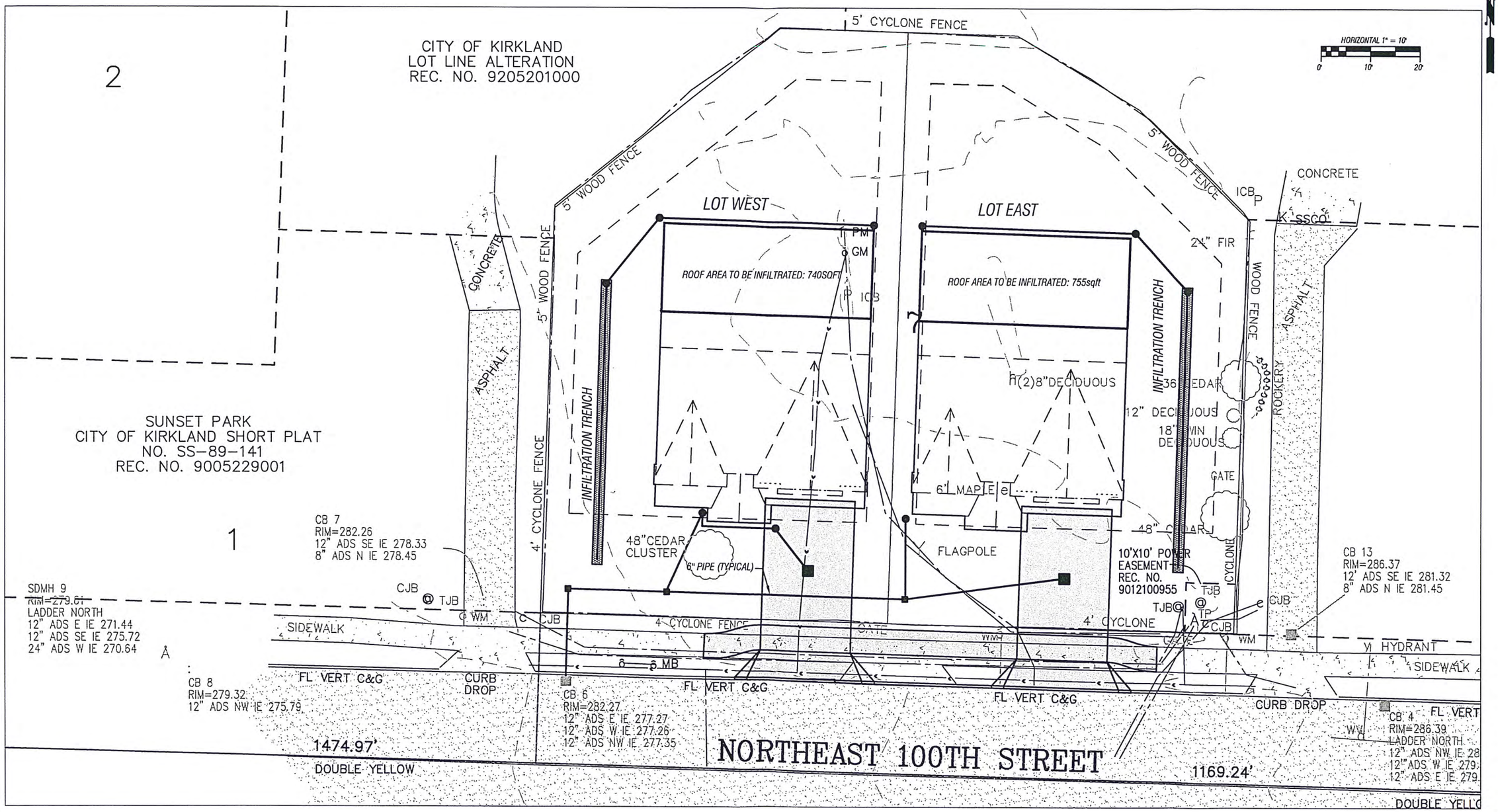
Percent of map unit: 1 percent
Landform: Depressions

Data Source Information

Soil Survey Area: King County Area, Washington
Survey Area Data: Version 8, Dec 10, 2013

APPENDIX D
BASIN MAP

12820 NE 100th STREET
BASIN MAP



10/8/14

NO.	DATE	REVISION	BY	APVD

PACWEST ENGINEERING,LLC
10209 BRIDGEPORT WAY SW, STE C-1
LAKEWOOD, WA 98499
Phone (253) 830-5960
Fax (253) 830-5999

12820 NE 100TH STREET
BASIN MAP
PREPARED FOR DEVELOPER/OWNER:
BENJAMIN RYAN COMMUNTIES

CONCEPTUAL STORM

DESIGN	B. SMITH
DRAWN	B. SMITH
CHECKED	B.SMITH
APPROVED	B. SMITH

SHEET	1 OF 1
DWG	14-543.DWG
DATE	
PROJECT	14-543

APPENDIX E
PROPERTY INFORMATION REPORT

City of Kirkland

Property Information Report

Date: October 5,2014

Information Provided by King County Assessor's Office
Parcel (PIN): 3326059153
Lot Size(sq.ft.): 14919
Year Built: 1973
Present Use: 2
Building Size(gross sq.ft.):
Land value: $203,000.00
Improvement value: $161,000.00
Grid: H1
Quarter Section-Section-Township-Range: SE-S33-T26-R5

Information Provided by the City of Kirkland	
Site Address: 12820 NE 100TH ST	
Zoning: RSX 7.2,Low Density Residential	Neighborhood: North Rose Hill
Located Within Houghton Community Council Disapproval Jurisdiction: No	
Seattle City Light Easement: No	
Design District:	
Overlay:	
Sewer District - verify that you are a current customer of: City of Kirkland	
Water District - verify that you are a current customer of: City of Kirkland	

Wind Exposure: B
Information Provided by the City of Kirkland regarding MAPPED Environmental Areas
Drainage Basin: Forbes Creek,Primary Basin Is this property within 125 feet of wetland shown on GIS? No Is this property within 100 feet of a stream shown on GIS? No Is this property within shoreline jurisdiction and within 250 feet of a wetland shown on GIS? No
Shoreline Environment: NA
Landslide: NA
Seismic: No
Floodplain: No
Bald Eagle Protection Area: No

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The information above is from the City of Kirkland's geographic information system (GIS), which has been developed from a wide variety of sources including King County Department of Assessments property records. For the property described in this report, a site visit or more detailed technical review by city staff may reveal conditions not shown in the city GIS.