ENVIRONMENTAL OVERLAY ZONE MAP CORRECTION PROJECT

VOLUME 2, PART G:

Boring Lava Domes,
Natural Resources Inventory
and Protection Decisions

PROPOSED DRAFT
June 2020

Bureau of Planning and Sustainability
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City of Portland, Oregon

How to Testify

You may submit comments to the Portland Planning and Sustainability Commission on the Proposed Draft Environmental Overlay Zone Map Correction Project in the following ways:

Use the Map App:
Go to www.portlandmaps.com/bps/mapapp
Click on "Ezone Project" and then click the "Testify" button.

By U.S. Mail
Planning and Sustainability Commission
Ezone Map Correction Project Testimony
1900 SW 4th Avenue, Suite 7100
Portland, Oregon 97201

In person at the public hearings
The hearing, on July 28, 2020 will be held virtually. The meeting starts at 4 p.m. Please check the PSC calendar at https://beta.portland.gov/bps/psc a week in advance to confirm the time of this agenda item. You can use a computer, mobile device or telephone to testify during the hearing.

To testify during the hearing, please visit the project website to register: *www.portland.gov/bps/ezones* .You will receive a confirmation email containing information about joining the virtual hearing. The deadline to sign up for the July 28 PSC hearing is Monday, July 27 at 4:00 p.m. Individuals have two minutes to testify, unless otherwise stated by the Commission Chair at the meeting.

Acknowledgements

This plan is the culmination of two years of work across the City of Portland. Many thanks to the thousands of stakeholders, property owners, renters, business owners and interested people who attended dozens of neighborhood and community meetings and invited staff to their homes and businesses to perform site visits.

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A. INTRODUCTION

Volume 2, Part AG, includes the results for Boring Lava Domes geography (see Map 1). For each resource site the following is presented:

1. Verification riparian corridors and wildlife habitat features, functions and classifications pursuant to Metro Rule 3.07.1320 and Table 3.07-13d, and OAR 660-023-0110.
2. Confirmation of Habitat Conservation Areas, pursuant to Metro Rule 3.07.1320 and Table 3.07.13a.
3. Economic, Social, Environmental and Energy analysis pursuant to OAR 660-023-0110 for areas that are not Habitat Conservation Areas.
4. Program implementation recommendations pursuant to Metro Rule 3.07.1330 and 3.07.1340, and OAR 660-023-0110. Program implementation is presented in Volume 1, Part B.

B. HOW TO USE THIS DOCUMENT

Below is a description of how to use the information found in this volume during quasi-judicial reviews.

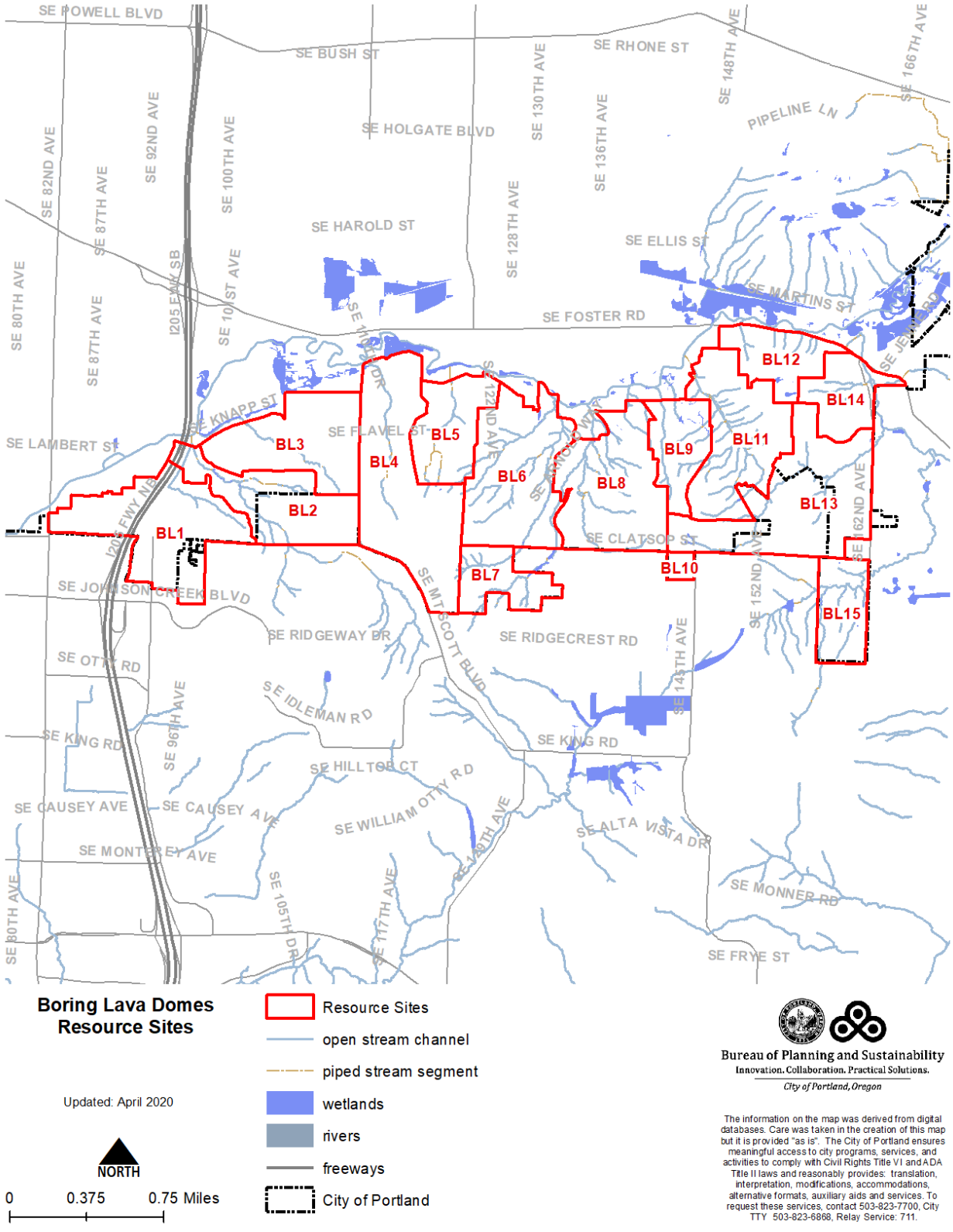
Area Descriptions

Volume 2, Part G, begins with an overview of the area's features, functions and conditions, including land use patterns. This information is provided for context but is also applicable to each resource site and should be used in conjunction with resource site-specific maps and descriptions during quasi-judicial reviews.

Natural Resource Features and Classification Maps

Metro Title 13 and Statewide Planning Goal 5, wildlife habitat, rules require verification of natural resource features and classifications. Natural resource features include rivers, streams, wetlands, flood area, vegetation (forest, woodland, shrubland and herbaceous), steep slopes and Special Habitat areas. The methodology used to identify and map these features and the functions (also referred to as "functional values") they provide is document in in Volume 3, Natural Resources Inventory. The methodology to verify the classifications is documented in Volume 4, Title 13 and Goal 5 Compliance.

Each Resource Site begins with maps that document the location and extent of natural resource features, functions and classifications. The decisions regarding which natural resources to protect are based on the mapped features. The natural resource features maps can be updated at any time based on current conditions and additional factual data, such as a wetland delineation performed by a qualified professional. The environmental overlay zone boundaries may be corrected based on new topographic feature data through 33.885.070, Correction to the Official Zoning Maps, or through 33.430.250.D, Modification of Zone Boundaries.



Map 1: Boring Lava Domes Resource Geography

Habitat Conservation Area and ESEE Decision Maps

Metro Title 13 requires confirmation of Habitat Conservation Areas; the methodology used to determine Habitat Conservation Areas is documented in Volume 4, Title 13 and Goal 5 Compliance. For natural resources that are not a Habitat Conservation Area, and for which Portland intends to protect the resources, Statewide Planning Goal 5 OAR 660-023-0110 must be followed to show the ESEE decisions; the methodology used to make the ESEE decisions is documented in Volume 4, Title 13 and Goal 5 Compliance. The Habitat Conservation Area determinations and ESEE decisions are the legislative intent regarding which resources should be protected and to what level of protection. The legislative intent should be consulted during quasi-judicial review for clarifications.

Natural Resource Features and Functions Descriptions

Descriptions of the natural resource features and functions are not required by Metro Title 13 or Statewide Planning Goal 5. However, Portland Zoning Code Title 33 requires that impacts to natural resources be fully mitigated to address both features and functions (also referred to as "functional values" in the zoning code). The functions provided by the resources are mapped based on the NRI methodology and further described in the narrative. The area description provided as the beginning of this document also provide information about functions that pertain to each resource site. Both the resource site descriptions and area description should be used to asses natural resource impacts and required mitigation during quasi-judicial reviews. Additional factual information about the resource functions may be provided by a qualified professional.

Economic, Social, Environmental and Energy Analysis

The general ESEE analysis and recommendations are found in Volume 3. For wildlife habitat that is not a Habitat Conservation Area within each resource site, the general ESEE analysis and recommendations are affirmed, clarified or modified based on resource site-specific information. An ESEE decisions is made for each resource site that contains wildlife habitat that is not a Habitat Conservation Area. The ESEE decision describes which significant natural resource features and functions should be protected from the impacts of conflicting uses. ESEE decisions are the legislative intent regarding which resources should be protected and to what level of protection. The legislative intent should be consulted during quasi-judicial review for clarifications.

Note – Habitat Conservation Areas are addressed under Metro Title 13 rules. No local ESEE is required for Habitat Conservation Areas. Resource sites where all of the natural resources are Habitat Conservation Areas will have no ESEE decision because it is not required.

Implementation

The results of the Metro Title 13 and Statewide Planning Goal 5 steps are updates to the official zoning maps and zoning code. Those results are presented in Volume 1, Part B.

C. NATURAL RESOURCE DEFINITIONS

The natural resource definitions are part of the citywide Natural Resources Inventory (see Volume 3) and used to explain how resources are mapped and classified. These are not regulatory definitions.

Waterbodies

Stream: A stream is a channel that has a defined bed and bank and carries water continuously for a week or more during at least the wet season (October through April). Streams may be naturally occurring or may be a relocated, altered or created channel. Streams may contribute water into another waterbody or the water may flow into a pipe or culvert. Streams may flow for some distance underground. Streams are also referred to as *drainageways, ditches,* or *drainages* in other City of Portland reports, codes and rules or by other agencies including but not limited to Oregon Department of State Land or US Army Corps of Engineers. Streams include:

- the water itself, including any vegetation, aquatic life or habitat;
- the channel, bed and banks located between the top-of-bank; the channel may contain water, whether or not water is actually present;
- intermittent streams, which flow continuously for weeks or months during the wet season and normally cease flowing for weeks or months during dry season;
- sloughs, which are slow-moving, canal-like channels that are primarily formed by tidal influences, backwater from a larger river system, or groundwater;
- oxbows and side channels connected by surface flow to the stream during a portion of the year; and
- drainage from wetlands, ponds, lakes, seeps or springs, which may or may not form a defined bed and bank.

Drainage: A drainage is an area on the land that conveys flowing water for only hours or days following a rainfall. If a drainage drains water from a wetland, pond, lake, seep, or spring even if it does not have a defined bed and bank, then it is classified as a stream.

Roadside Ditch: A roadside ditch is a constructed channel typically parallel and directly adjacent to a public or private road. A roadside ditch is designed to capture and convey stormwater runoff from the road and is routinely cleaned (i.e., mechanically scoured or scraped of vegetation and debris) to maintain water conveyance capacity. Naturally occurring streams and drainages that have been relocated due to the construction of a road are not considered a *roadside ditch*.

Wetlands: Areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions; although due to landscaping, seeding, mowing or grazing wet-adopted vegetation (hydrophytes) may not be present.

Flood area: The combination of the FEMA 100-year floodplain (those areas with a 1% or greater chance of flooding in any given year) and areas that were inundated with water during the February 1996 floods. (The FEMA designation for the 100-year floodplain is Special Flood Hazard Area.)

Floodway: The floodway consists of the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood (100-year flood) without cumulatively increasing the water surface elevation more than one foot.

Vegetation

Vegetation Patch: An area of contiguous vegetation greater than ½ acre in size containing a distinct pattern, distribution, and composition of vegetation relative to surrounding vegetated and non-vegetated areas.

Forest: Trees with their crowns overlapping, generally forming 60-100% of cover.

Woodland: Open stands of trees with crowns not usually touching, generally forming 25-60% of cover. Tree cover may be less than 25% in cases where it exceeds shrubland and herbaceous vegetation.

Shrubland: Shrubs generally greater than 0.5 m tall with individuals or clumps overlapping to not touching, generally forming more than 25% of cover with trees generally less than 25% of cover. Shrub cover may be less than 25% where it exceeds forest, woodland, and herbaceous vegetation. Vegetation dominated by woody vines (i.e., blackberry) is generally included in this class.

Herbaceous: Herbs (graminoids, forbs, ferns and shrubs less than 0.5m tall) dominant, generally forming at least 25% of cover. Herbaceous cover may be less than 25% where it exceeds forest, woodland and shrubland vegetation. This includes shrubs less than 0.5 m tall.

Land: The ground itself and any features associated with or located on the ground including but not limited to flood area, vegetation, rip rap, paved areas, structures, buildings, trails, etc.

Steep slopes: Land with a 25% or greater slope.

Riparian Corridors: Rivers, streams, wetlands and flood areas plus the areas bordering the waterbodies; the width of the riparian corridor varies by waterbody size, as well as the vegetation and slopes surrounding the waterbody.

Wildlife Habitat: Waterbodies, flood areas, land, vegetation and other features that support fish and wildlife during one or more life cycle phase; manmade features may provide wildlife habitat.

Special Habitat Areas: Habitats designated by the City of Portland in accordance with Metro's Urban Growth Management Functional Plan Title 13, Nature in Neighborhoods, criteria for Habitat of Concern. These are areas that contain or support special status species, sensitive/unique plant populations, or other unique natural or manmade habitat features.

D. RESOURCE SITE BOUNDARIES

Portland established resource sites through previously adopted conservation and protection plans in accordance with Statewide Planning Goal 5. OAR 660-023-0010 defines resource site, or site, as "a particular area where resources are located. A site may consist of a parcel or lot or portion thereof or may include an area consisting of two or more contiguous lots or parcels."

Metro Title 13 does not require the designation of resource sites. However, because there is significant wildlife habitat throughout Portland that is not a Habitat Conservation Area, and therefore subject to Goal 5 OAR 660-023-0110, resource site will continue to be used.

This project is remapping resource site boundaries to be more consistent and easier to implement. The resource sites were remapped in the following way:

1. The previous resource site boundaries were used to the maximum extent practicable. The intent is to maintain consistency between the past plans and this project.
2. Resource site boundaries were expanded to capture contiguous or similar and adjacent natural resource features.
3. Resource site boundaries were expanded to eliminate unnecessary gaps between resource sites.
4. Very small resource sites, with similar natural resource features and functions, were consolidated into one single larger resource site.
5. Resource site boundaries were adjusted to include entire properties within a single resource site. In some cases, adjacent lots under the same ownership may be in different resource sites; however, in these situations the resource site boundary follows lot lines.
6. Centerlines of streets, bridges, railroad tracks or other transportation facilities are often used to delineate resource site boundaries.
7. The City Boundary or Urban Service Boundary is used along the edges of Portland to provide the outer edge of resource sites.

E. RESULTS

The results begin with a general description of Boring Lava Domes natural resources. The general description is applicable to each resource site. Following the general description are results for the resource sites. For each resource site the following information is provided:

1. Maps
    A. Water Features – rivers, streams, wetlands and flood areas
    B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
    C. Special Habitat Areas
    D. Riparian Corridor Classifications
    E. Wildlife Habitat Classifications
    F. Urban Development Value
    G. Metro Title 13 Habitat Conservation Areas
    H. Statewide Planning Goal 5 Areas
    I. Natural Resource Protections

2. Natural Resource Description – A narrative that provides additional site-specific information about the types, quantity, quality or functionality (aka functions or functional values) of the natural resource features present in the resource site.

3. Resource Site-Specific ESEE – If there is significant wildlife habitat that is not a Habitat Conservation Area present in the resource site, then the general ESEE recommendation will be confirmed, modified or clarified based on resource site-specific conditions.

4. Decisions – At the end of each resource site section is the final decisions regarding which riparian corridors and wildlife habitat should be protected. These decisions are repeated in Volume 1; if there is a discrepancy between tables, the decisions in Volume 2, Part G take precedence.

E.1. Boring Lava Domes Natural Resources

E.1.a. Geology

Encompassing about 1370 acres, the Boring Lava Domes natural resource site is defined by a series of buttes, typically forested and steep, which are divided by perennial and seasonal streams flowing north into Johnson Creek. These buttes are volcanic in origin, formed several hundred thousand years ago, when a group of shield and cinder cone volcanoes—the "Lava Domes"—erupted across the lower Willamette Valley. These now dormant volcanoes are comprised mainly of high-alumina basalts, but locally contain ash, cinders and other materials. The basalts are similar to those of Mount Hood and other Cascade mountains and the origin of the Lava Domes is therefore believed to be tied to the uplift of the Cascade Range. The basalt underlies the Troutdale formation, a fluvial sedimentary formation. This sedimentary Troutdale formation is approximately 2 to 14 million-year-old Columbia River deposited comprised of agglomerated gravels, sands, silts, and clays (Hodge, 1938; Trimble, 1963). The Troutdale formation is overlaid with several feet of Cascade silt loam (Soil Conservation Services & USDA, 1983). This compressed, hardened layer restricts vertical groundwater movement. Groundwater movement is largely horizontal. When this groundwater intersects with the land surface it creates wetlands, seeps, and springs that formulate the headwater streams of Johnson Creek.

The site's streams are first, second, and third order, generally high gradient streams with low summer flows to high flows during the rainy months. Average channel gradients are between 10 and 12 percent, with some high elevation reaches exceeding 25 percent. As they near Johnson Creek, stream gradients drop to 2 or 3 percent. The Lava Dome hillsides, which include the side slopes of the stream ravines, can reach gradients of as much as 65 percent and occasionally more where rock cliffs and outcroppings occur.

E.1.b. Vegetation

The forest that historically covered the Boring Lava Domes was largely clear-cut in the early 1900s for agriculture, timber and cemetery uses. The Boring Lava Domes restrictive Troutdale formation, impervious surface and stormwater discharge to the streams have had direct influence on water quality and quantity on steep slopes and within the lower Johnson Creek basin, often exacerbating local flooding and increasing sedimentation and turbidity, creating incised streams with reduce instream habitat.

The Boring Lava Domes forest straddles the border between the Willamette Valley vegetation zone and the Western Hemlock zone (Franklin and Dyrness). The forest community exhibits characteristics common to both of these zones. The Douglas fir/vine maple/sword fern community is also present. Both of these communities frequently occur on north slopes such as the those that make up the Lava Domes planning area.

The Lava Domes forest generally ranges from 80 to 120-year-old second growth stands in a mid-successional stage referred to as conifer topping hardwood. Certain areas of the site, however, contain

much older forest with tree diameters reaching five feet or more. The Lava Dome area are typically comprised of a mixed conifer/deciduous forest with western red cedar, bigleaf maple and Douglas fir frequently occurring as dominant tree species. Other occasional dominant trees include red alder, western hemlock and black cottonwood. Dominant shrubs in the forest community include vine maple, western hazel, Indian plum and snowberry. On the ground layer, common herbaceous plants include sword fern and stinging nettle.

E.1.c. Surface Water

steep streams draining down the butte slope drain to Johnson Creek. Johnson Creek is listed as water quality limited for biocriteria, dichlorodiphenyldichloroethylene (DDE), dichlorodiphenyltrichloroethane (DDT), dieldrin, endosulfan, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), and water temperature on the Department of Environmental Quality's (DEQ) 303(d) list of impaired waterbodies. Water quality samples collected from Johnson Creek indicate that conditions in the stream exceed the applicable water quality criteria for these parameters.

The Oregon Department of Environmental Quality (DEQ) has developed plans to improve water quality, known as Total maximum daily loads (TMDLs), that address DDT, dieldrin, *E. coli*, and water temperature impairments in Johnson Creek (Oregon DEQ, 2006). The TMDL for DDT and dieldrin is based on the use of a surrogate measure using total suspended solids (TSS). DEQ set a TSS target of 15 mg/L for nonpoint sources to achieve the necessary DDT and dieldrin load reductions.

The 2006 temperature TMDL for the Lower Willamette basin includes nonpoint source load allocations for all perennial streams that drain to the Willamette River. The Lower Willamette temperature TMDL includes site-specific shade targets for the Johnson Creek mainstem. These site-specific shade targets were calculated as part of the TMDL modeling process and range from approximately 45 to 85%. For all other perennial streams in the Lower Willamette subbasin (including the tributaries to Johnson Creek), the applicable nonpoint source load allocation is system potential shade. DEQ defines system potential shade as the maximum effective shade possible for a stream reach. System potential shade is achieved when the riparian plant community has reached its mature, undisturbed condition in which vegetation heights are at or near their expected potential, resulting in the maximum effective shade.

The temperature TMDL identifies restoration and protection of riparian vegetation as the primary methods for increasing stream shading and bases the nonpoint source load allocations on achieving system potential shade conditions. In Johnson Creek, DEQ identified the following actions as the means of achieving the conditions necessary to meet system potential shade: (1) restoring and protecting riparian vegetation, (2) increasing instream flows, and (3) narrowing stream channel widths where appropriate.

The water quality of tributary streams flowing off of the buttes impact the health of salmonids, lamprey and other native species found in Johnson Creek. Deardorff, Clatsop and Kelley creeks include salmonids at their lowest reaches and near their confluences with Johnson Creek.

E.1.d. Fish and Wildlife

The following species and found within the Boring Lava Domes and are identified by the City of Portland as special status species, because of they are officially listed or identified as being of concern by federal, state or other entities because they are rare, declining or of special interest.

Beaver are found in Boring Lava Domes, as they are in other parts of the Johnson Creek system. Beaver provide critical aquatic habitat that support stream health and benefit salmonids and other aquatic species.

Special status bird species found within the Boring Lava Domes include: American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, bushtit, common yellowthroat, downy woodpecker, great blue heron, hooded merganser, merlin, Nashville warbler, northern harrier, olive-sided flycatcher, orange-crowned warbler, pacific-slope flycatcher, pacific wren, purple finch, Swainson's thrush, Vaux's swift, western wood-pewee, white-breasted nuthatch, willow flycatcher, Wilson's warbler, and yellow warbler.

E.1.e. Special Habitat Areas

Kelley Creek Refuge is designated a Special Habitat Area because it meets the following criteria:

- Special Status Species (S) – A habitat area or feature that supports an at-risk wildlife species on more than an incidental basis to complete one or more life history stages.
- Bottomland Hardwood Forest (B) – An area that contains remnant bottomland hardwood forest species; other tree species and vegetation may be present.
- Habitat Corridor (C) – An area that provides a wildlife movement corridor between larger habitat patches

Scouter Mountain is designated a Special Habitat Area because it meets the following criteria:

- Special Status Species (S) – A habitat area or feature that supports an at-risk wildlife species on more than an incidental basis to complete one or more life history stages.
- Habitat Corridor (C) – An area that provides a wildlife movement corridor between larger habitat patches

Johnson Creek, the channel, is designated a Special Habitat Area because it provides critical habitat for Cutthroat, steelhead and rainbow trout and Chinook and Coho salmon. In addition, Johnson Creek meets the following SHA criteria:

- Special Status Species (S) – A habitat area or feature that supports an at-risk wildlife species on more than an incidental basis to complete one or more life history stages.
- Habitat Corridor (C) – An area that provides a wildlife movement corridor between larger habitat patches.

Brookside Wetlands is designated a Special Habitat Area because it meets the following criteria:

- Wetland (W) - Wetlands and associated seeps and springs provide criteria watershed functions including improving water quality, storing water and reducing flood risks, contributing to summer in-stream flows and providing habitat for wildlife, including some at-risk species like red-legged frog.
- Migratory Stopover Habitat (M) – An area or feature used by migratory birds for nesting, resting, feeding or cover on more than an incidental basis.
- Habitat Corridor (C) – An area that provides a wildlife movement corridor between larger habitat patches

E.1.f. Stormwater Management and Habitat

Portland's stormwater system is a complex network of engineered and natural assets that provide conveyance, protect water quality, and provide and protect habitat and biological communities. In addition to hundreds of miles of pipes and ditches, and thousands of sumps and pollution reduction facilities; the city depends on the natural areas that intercept rainfall and the acres of wetlands and hundreds of miles of streams and drainageways that function as a critical part of the stormwater conveyance network.

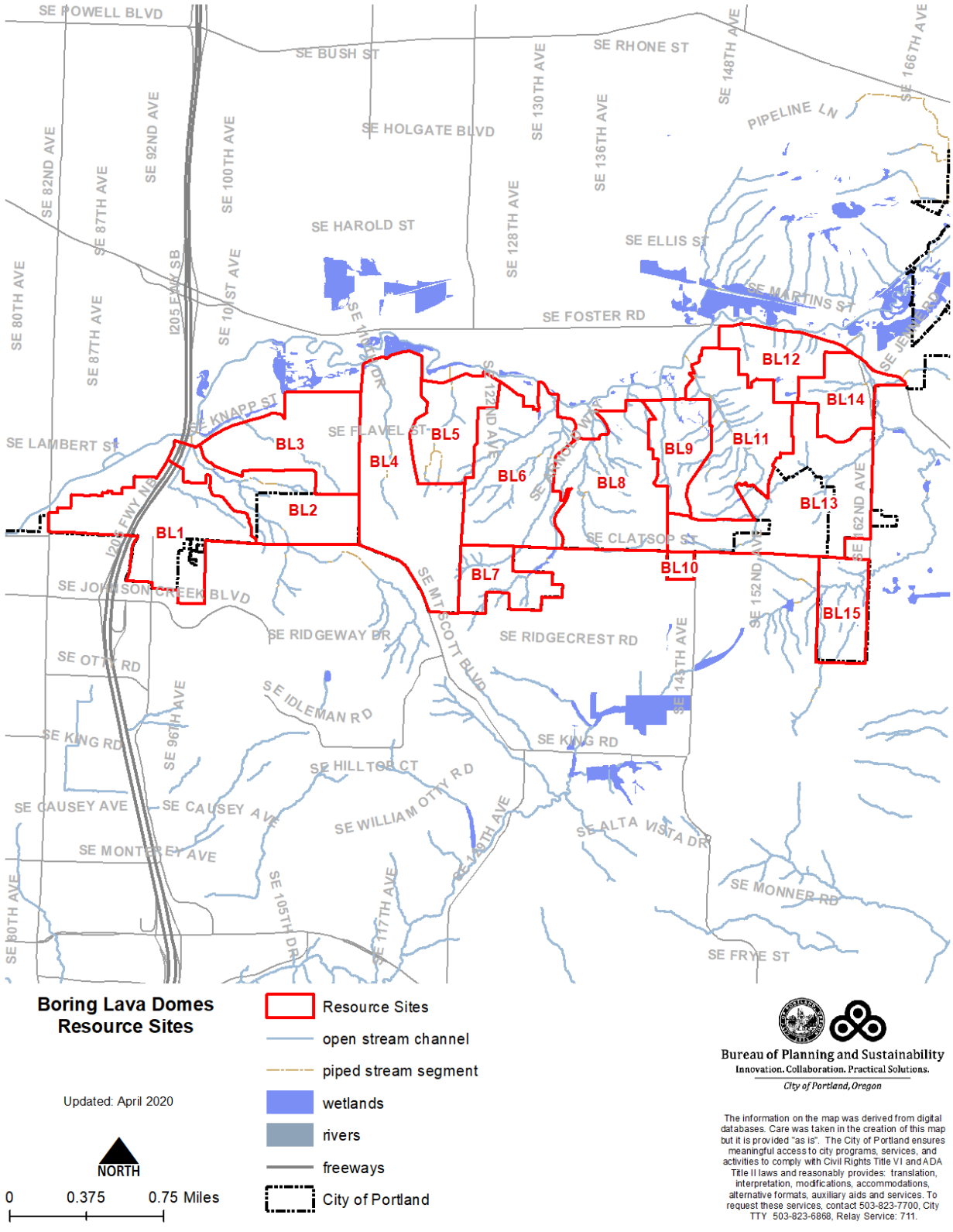
Within the City of Portland there are three methods of conveying stormwater runoff from impervious areas. When soils allow infiltration, stormwater runoff may be directed to sumps or other stormwater facilities to be infiltrated into the ground, after being treated to protect groundwater. Some portions of the City direct stormwater to the combined sewer system, which sends stormwater along with sewage to the sanitary treatment plant for processing. In the remainder of the City, stormwater is directed to a natural stream system.

When natural areas are developed, the services provided by those natural areas are lost. Many of these services are critical to the healthy functioning of natural resources and are difficult or impossible to replace. For example, forest vegetation slows and takes up runoff from precipitation, thereby minimizing erosion and allowing the forest floor to filter out sediments and nutrients as the water soaks down into groundwater or passes into streams. By decreasing runoff and increasing groundwater infiltration, the forest protects downstream neighborhoods from flooding. The forest canopy helps to maintain stream flows, filter out potential pollutants, and moderate stream temperatures, thereby sustaining habitat for fish, amphibians and aquatic organisms as well terrestrial wildlife. Replacement of these functions through built stormwater management measures can only address a subset of the service provisions provided by natural systems.

Natural resources found within urban boundaries are vulnerable to negative impacts from unmanaged or inadequately managed stormwater. Pavement, roofing, and other impervious surfaces prevent infiltration of stormwater into the ground and increase the amount of runoff during storm events. This can disrupt the natural hydrologic cycle and increase pollution levels of stormwater washing into rivers, streams, wetlands and groundwater resources. Significant problems can result from urbanization and inappropriately managed stormwater:

- Stormwater collects pollutants and sediment from impervious surfaces and carries those materials to streams, rivers and groundwater. Particulates and pollutants from streets, autos, landscaping, roofs, animal waste and other sources can harm ESA-listed salmon, other native fish and aquatic species.
- Increased in-stream erosion and decreased groundwater recharge occurs due to changes in the timing, routing and amount of runoff. As a result, streambanks can be undercut, impacting stream health and potentially damaging buildings, roads and bridges. Streams become “flashy” – rising and falling very quickly – increasing flood risks during wet weather and resulting in very low stream flows in the summer.
- Landslide risks can be exacerbated by deficient or inadequate stormwater management.
- Problems with incomplete or ineffective stormwater system could be made worse with climate change due to increases in temperature and changes in precipitation patterns. This could further impact water temperatures in rivers and streams, a serious problem in Portland streams, which exceed temperature standards in the summer. More intense storm patterns can also increase the risks of erosion, landslides and flooding.
- Reduced groundwater and aquifer recharge due to impervious surfaces also negatively impacts water availability during dry periods, which are expected to increase with climate change.

E.2. Resource Sites



Map 2: Boring Lava Domes Resource Sites

Resource Site No.: BL1 **Resource Site Name:** Cottonwood Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30a

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

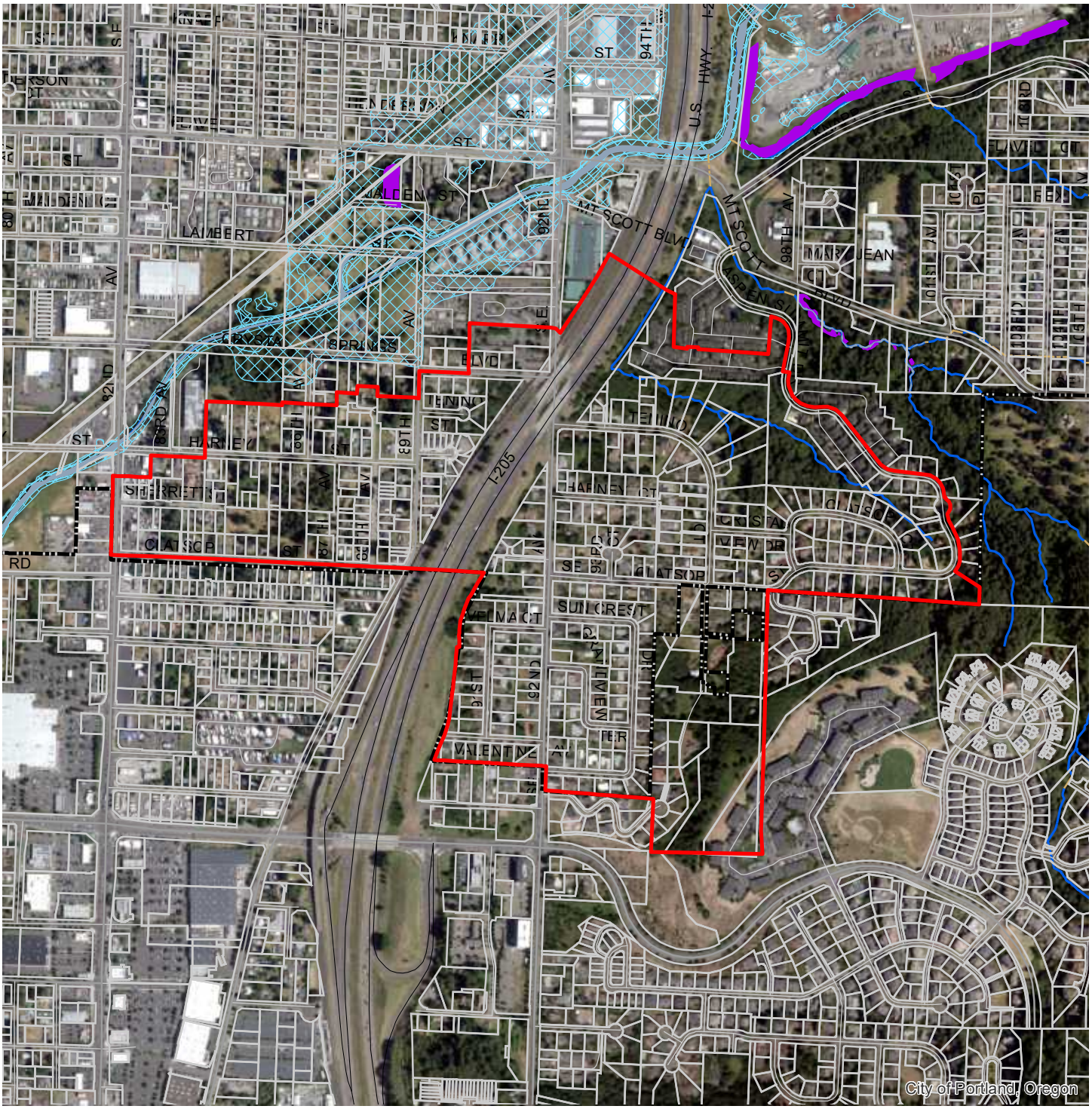
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL1 includes the following base zones (acres):

EG 2	4.1
IG2	1.2
OS	22.2
R5	0.9
R7	140.3
RM1	11.5



Map A: Water Features

Resource Site: BL1

Updated: June 2020

NORTH

0 462.5 925 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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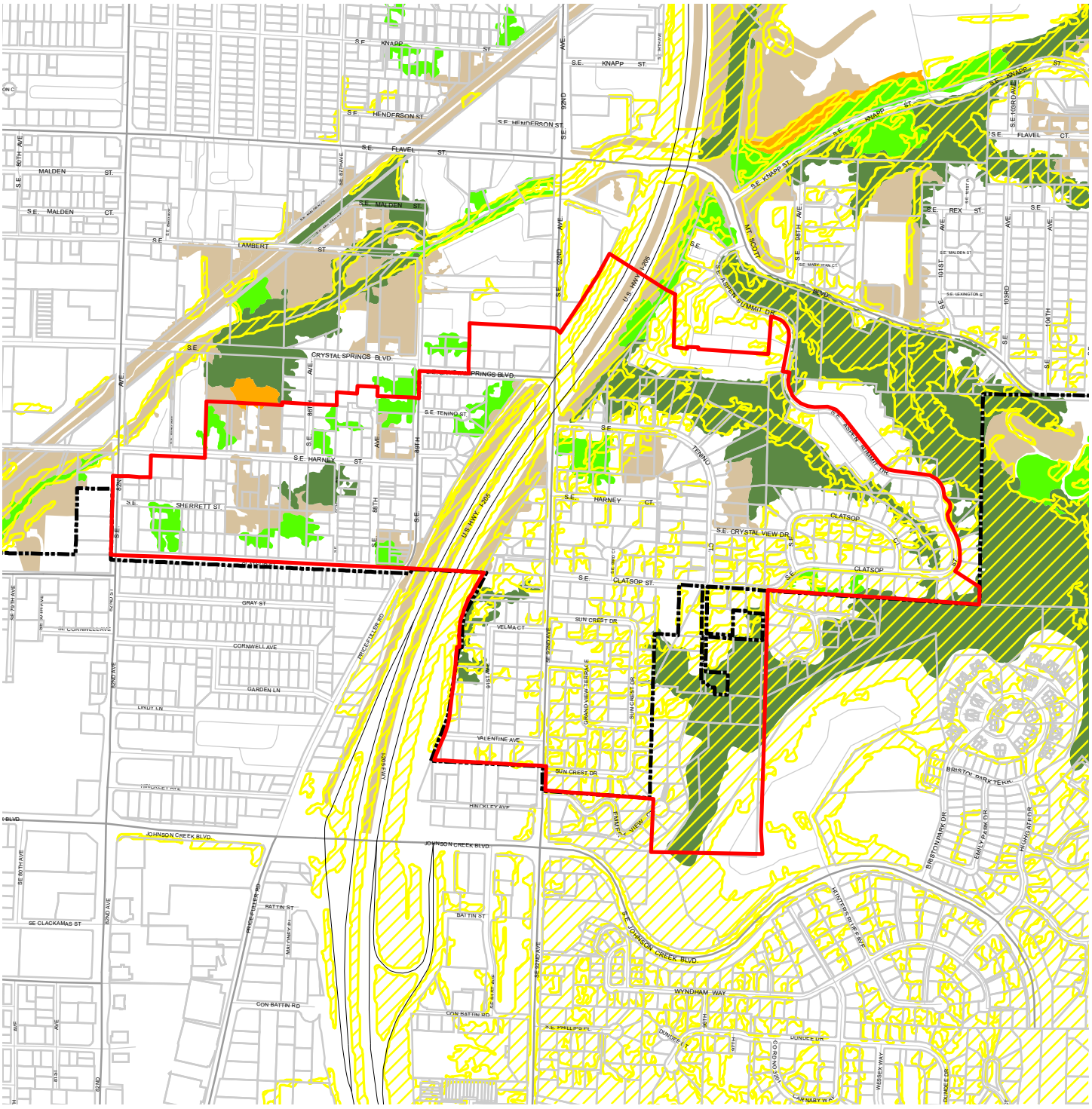
June 2020



Map B: Vegetation and Steep Slopes

Resource Site: BL1

Updated: June 2020

NORTH

0 462.5 925 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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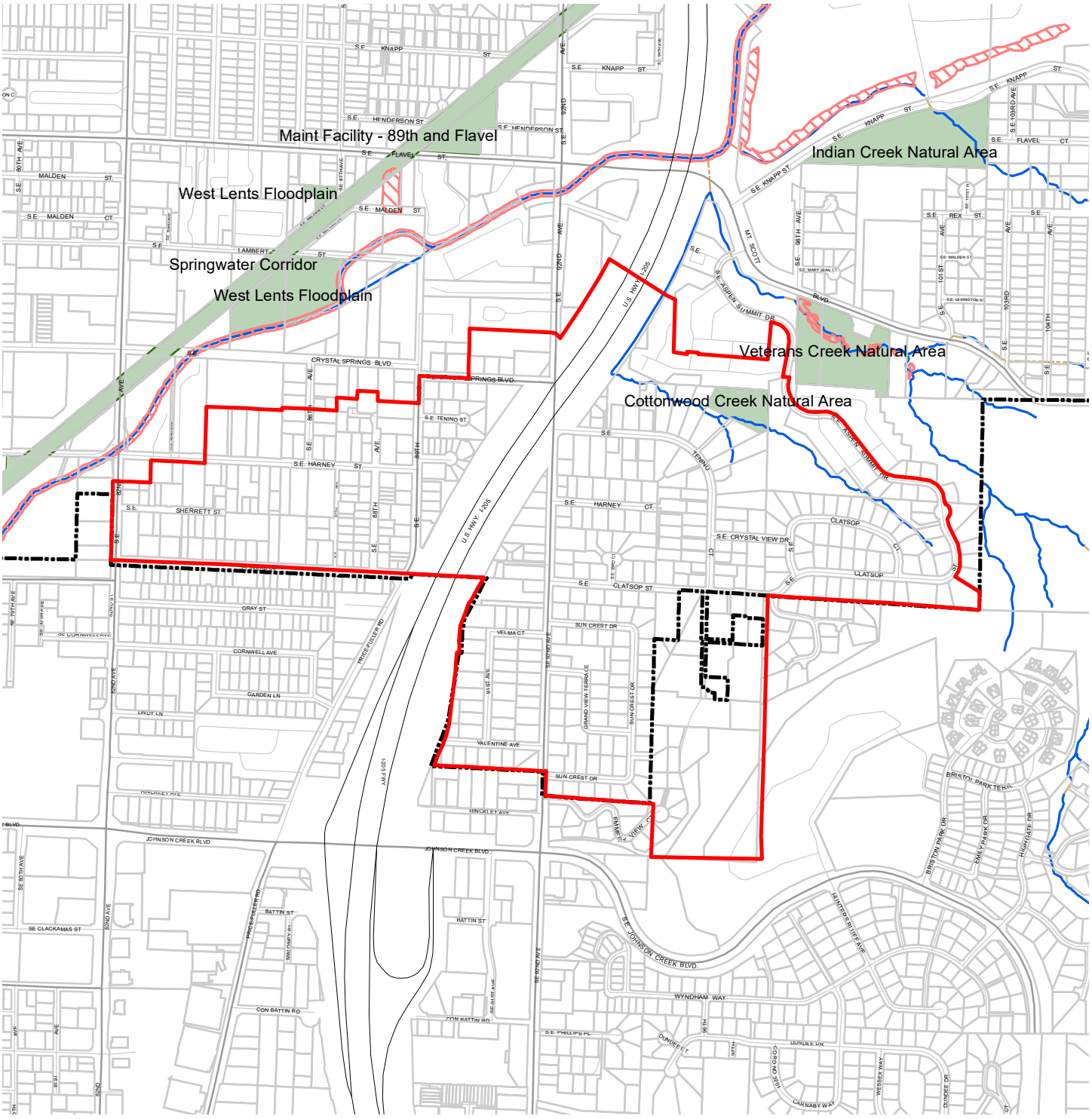

Map C: Special Habitat Areas

Resource Site: BL1

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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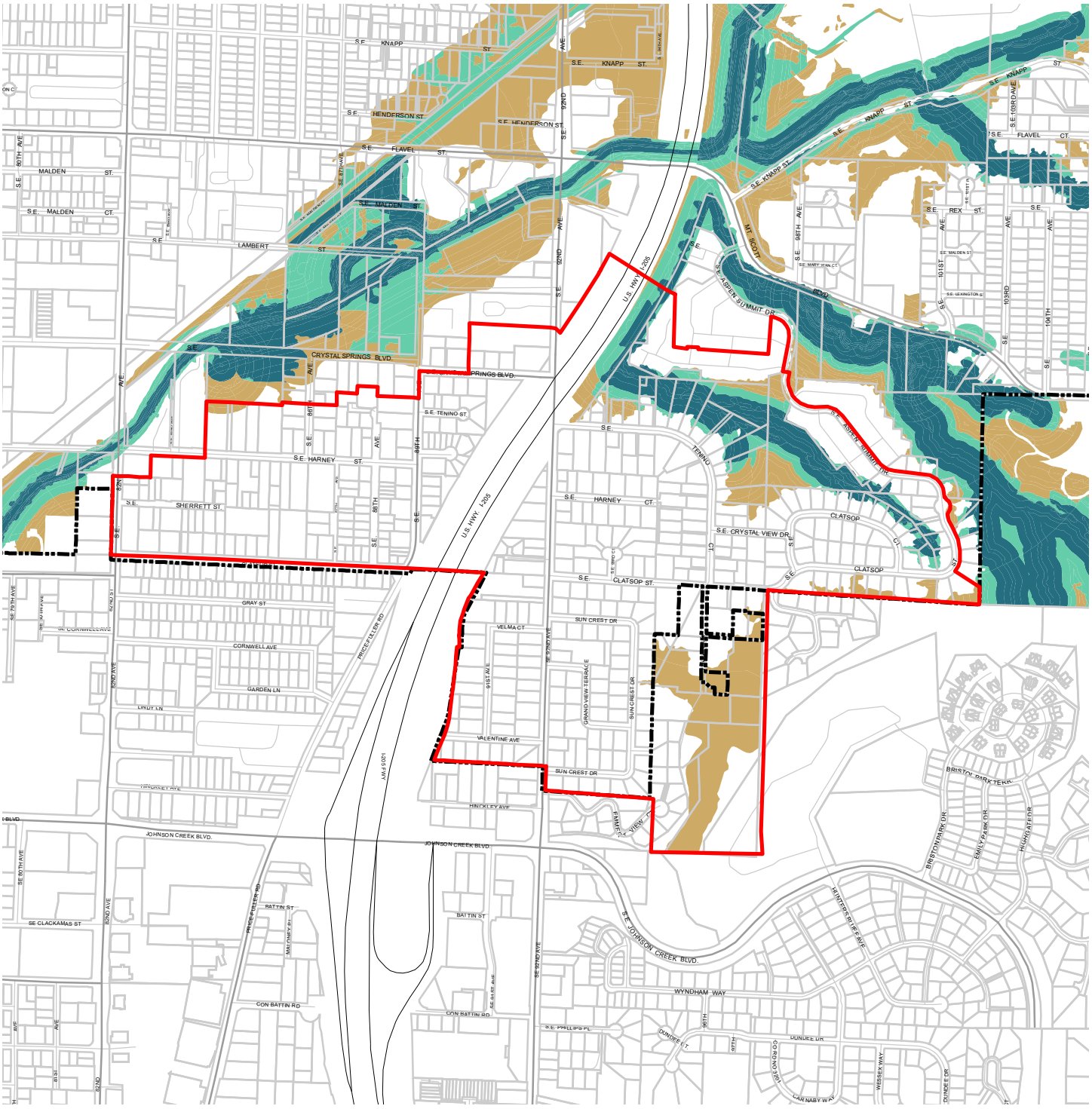
June 2020



Map D: Riparian Corridors Habitat Classification

Resource Site: BL1

Updated: June 2020

NORTH

0 462.5 925 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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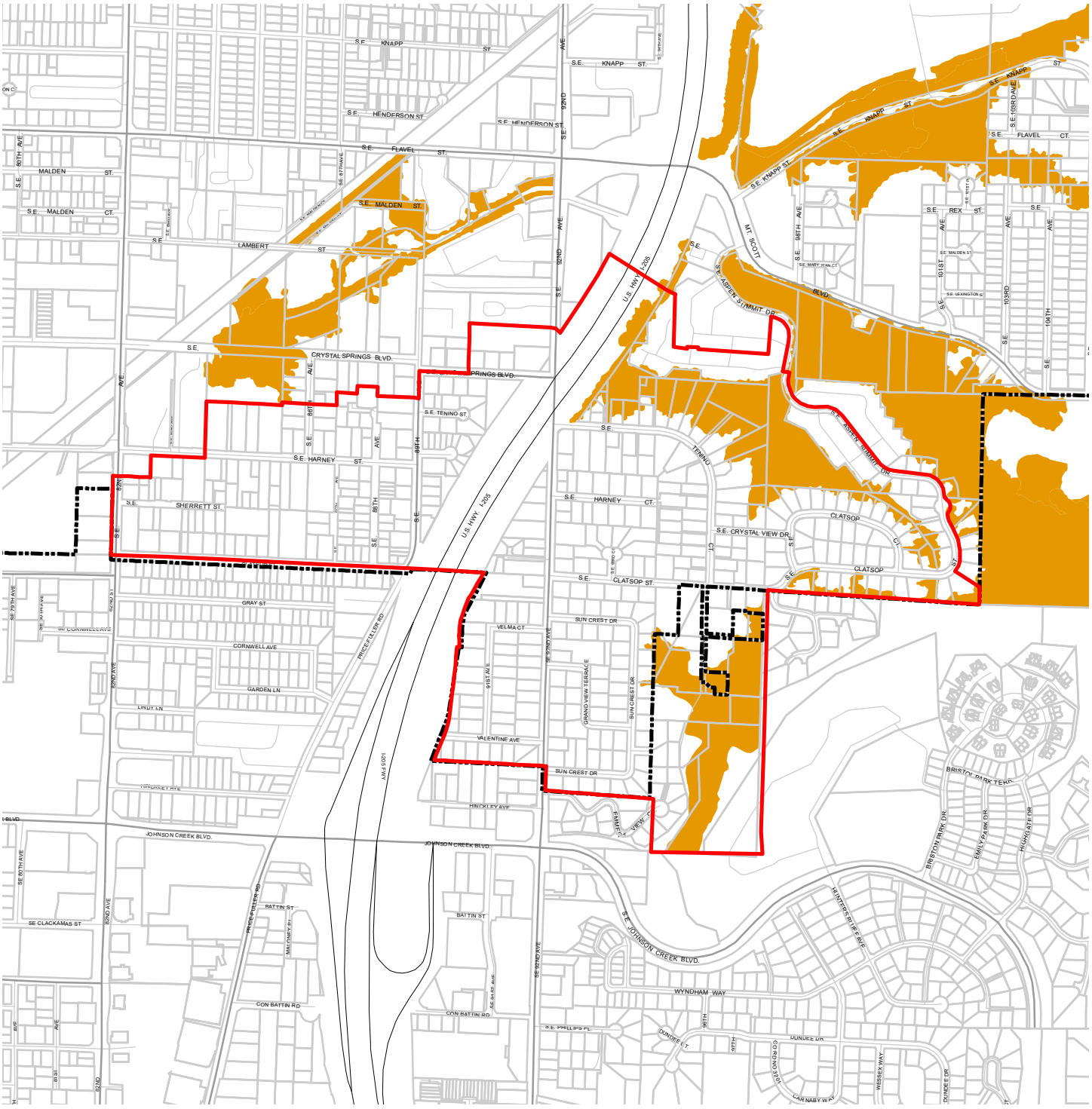

Map E: Wildlife Habitat Classification

Resource Site: BL1

Updated: June 2020

NORTH

0 375 750 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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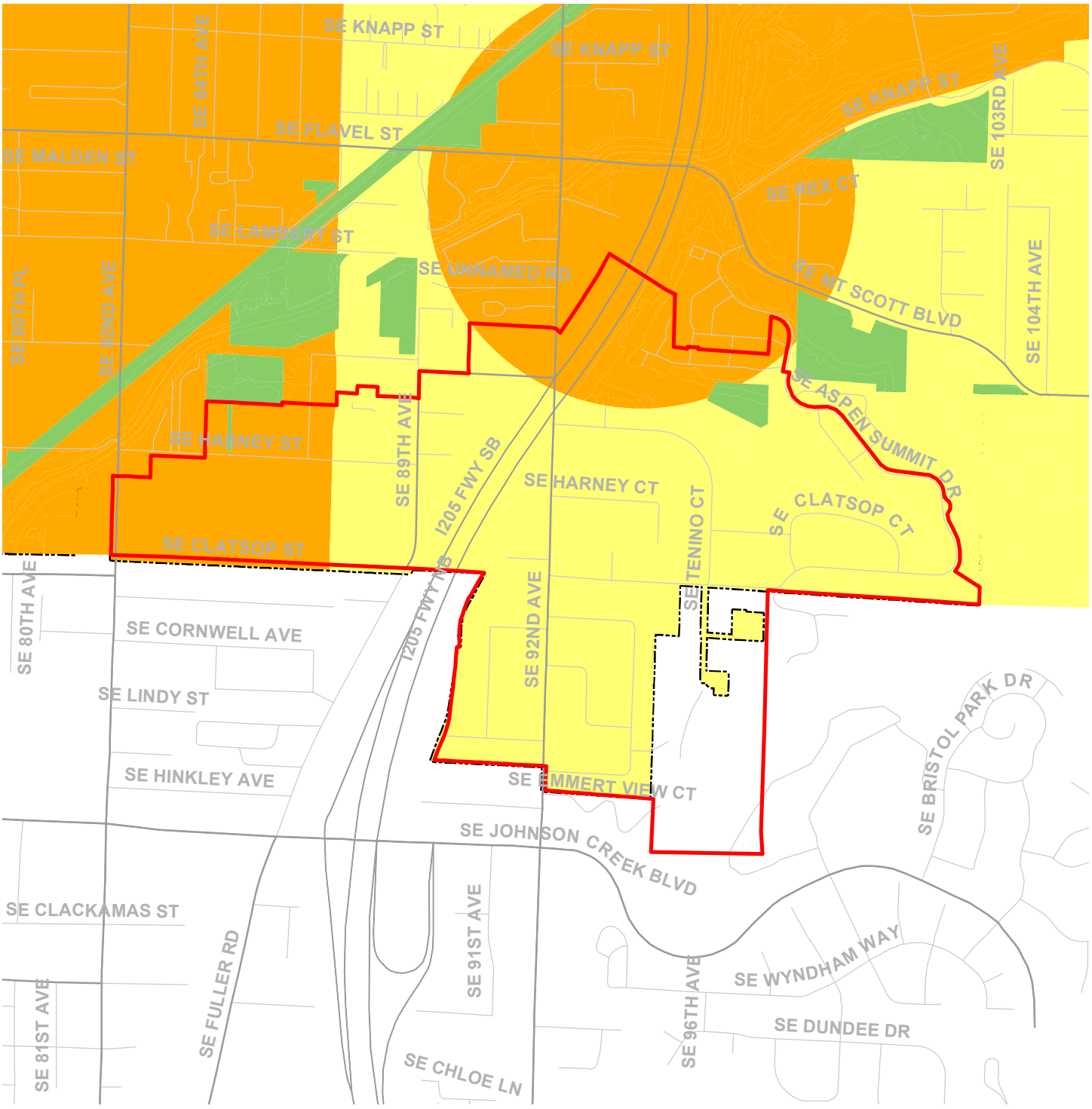

Map F: Urban Development Value (Title 13)

Resource Site: BL1

Updated: June 2020

NORTH

0 600 1,200 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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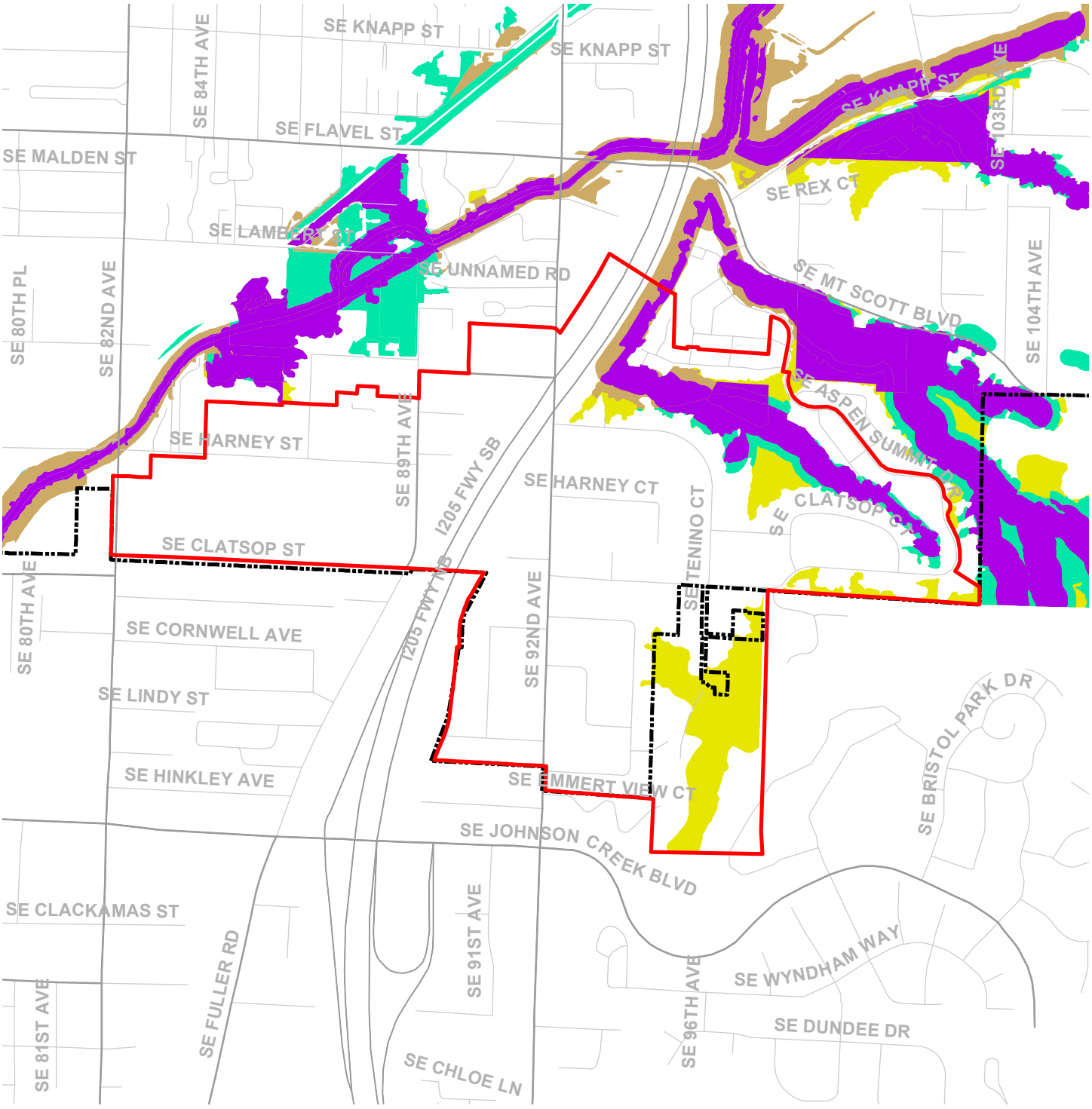

Map F: Urban Development Value (Title 13)

Resource Site: BL1

Updated: June 2020

NORTH

0 600 1,200 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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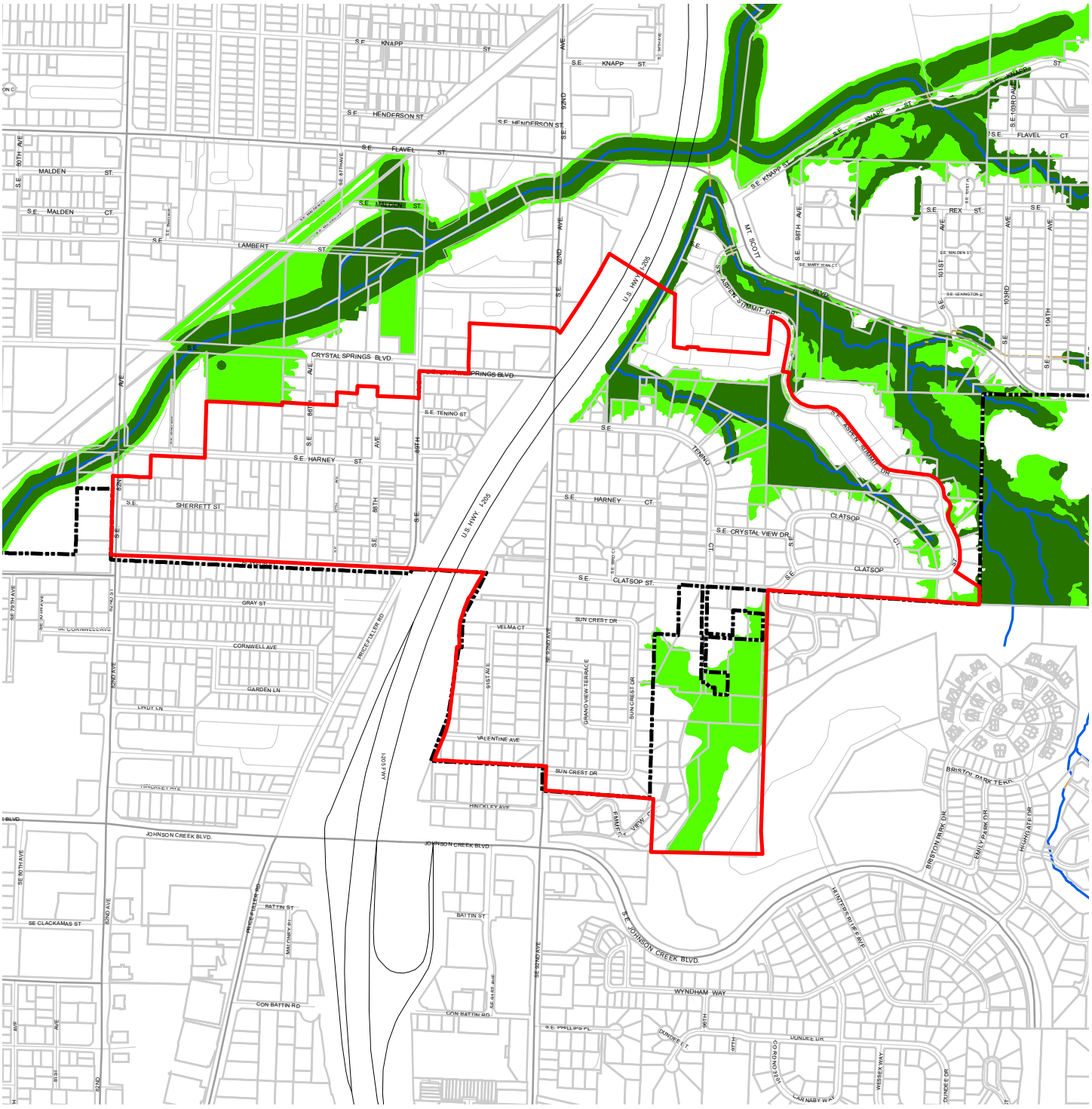

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL1

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL1 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL1**
	Study Area
Stream (Miles)	0.6
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	21.1
Woodland (acres)	9.4
Shrubland (acres)	0.1
Herbaceous (acres)	18.4
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	46.6
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This watershed is located in the western edge of the Boring Lava Domes site, at the northwestern slope of Mt. Scott. The site is primarily single-family development. The I-205 freeway runs north and south through the middle of the site. The watershed resources include Cottonwood Creek, a forested tributary that flows east to west until it reaches the I-205 right of way, where it is flows into Veterans

Creek (see BLD2). As part of building I-205, Cottonwood and Veteran's Creek were moved, channelized and piped before entering Johnson Creek. Other natural resources in this resource site include tributaries to Cottonwood Creek, habitat areas, and forested riparian and upland areas. Most of Cottonwood Creek and its tributaries flow through an area characterized by steep slopes of 25% or higher.

Special status bird species observed within or adjacent to this resource site include bald eagle, brown creeper, pacific-slope flycatcher, pacific wren, Swainson's thrush, and western wood-pewee.

Table B: Quality of Natural Resource Functions in Resource Site BL1				
Resource Site (acres) = 180				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	10.4	4.7	7.3	22.3
percent total inventory site area	5.7%	2.6%	4.0%	12.4%
Wildlife Habitat*				
acres	0.0	19.5	0.0	19.5
percent total inventory site area	0.0%	10.8%	0.0%	10.8%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	10.4	10.9	1.5	22.8
percent total inventory site area	5.7%	6.0%	0.9%	12.6%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL1, 18.1% of the total area is effectively impervious, indicating a critical level of vulnerability, with negative impacts beginning to impact natural functions, but natural processes are still in place and providing support to biologic systems.

Table C. Impervious Area within Resource Site BL1

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
203.9	49.6	36.9	18.1%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R7, R3 and R2 base zones. Employment uses area allowed in the EG2 base zone. Industrial uses are allowed in the IG2 base zone. Open space uses are allowed in the OS base zone. There is also Clackamas County zoning that

allows residential development. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL1, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL1, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank and land within 40 feet of stream top-of-bank.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank.
3. Apply a protection overlay zone (p zone) to HOA-owned natural resource tracts.
4. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL2 **Resource Site Name:** Veteran's Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30b

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

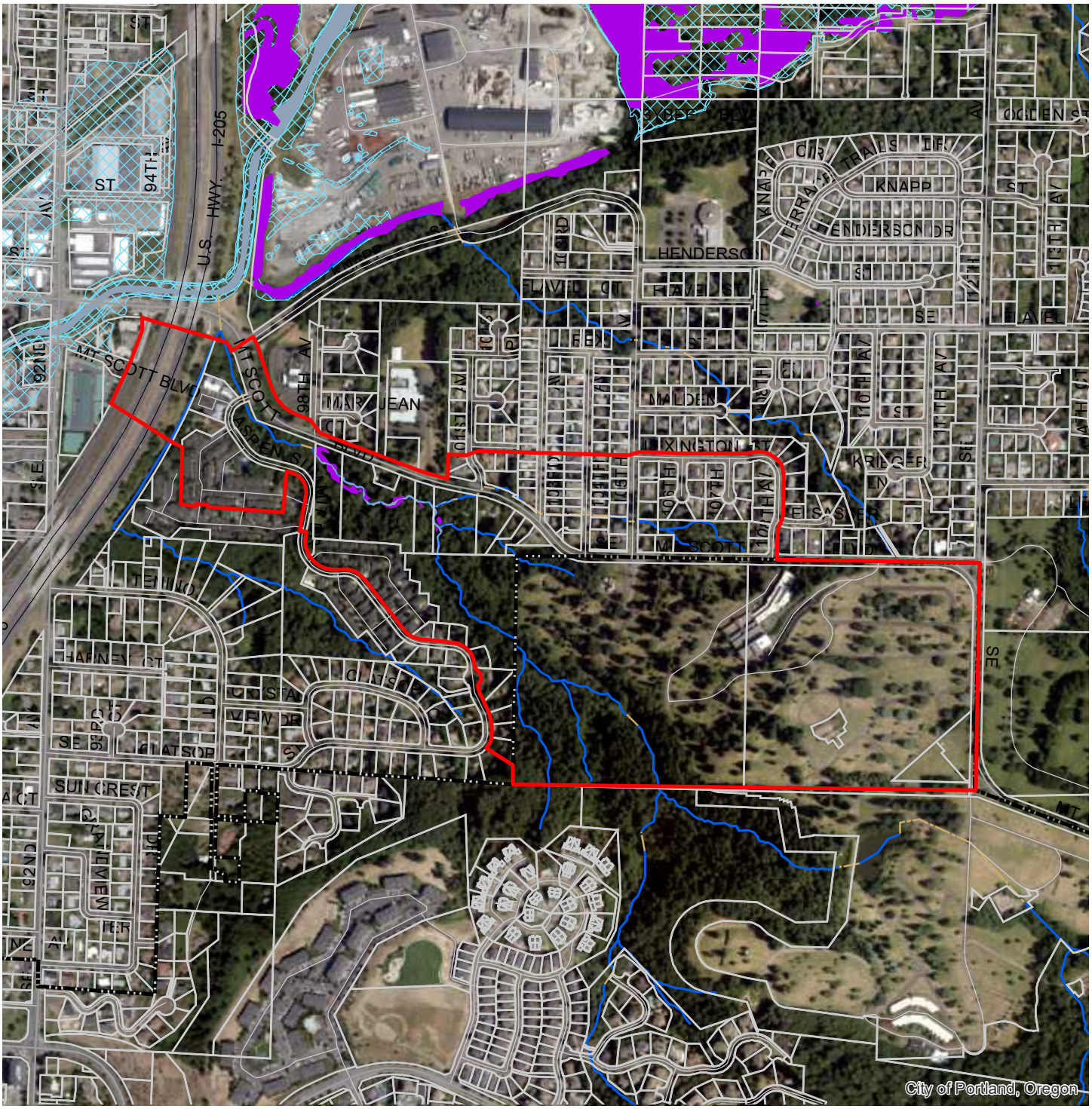
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL2 includes the following base zones (acres):

CE	2.7
CM1	0.3
EG2	0.0
OS	12.0
R10	78.2
R7	41.3
RM1	9.2



Map A: Water Features

Resource Site: BL2

Updated: June 2020

NORTH

0 425 850 Feet

Proposed Draft

- Resource Sites
- City of Portland
- Taxlots
- rivers and major streams
- wetlands
- open stream channel
- piped stream segment
- flood area
- 2019 aerial photos

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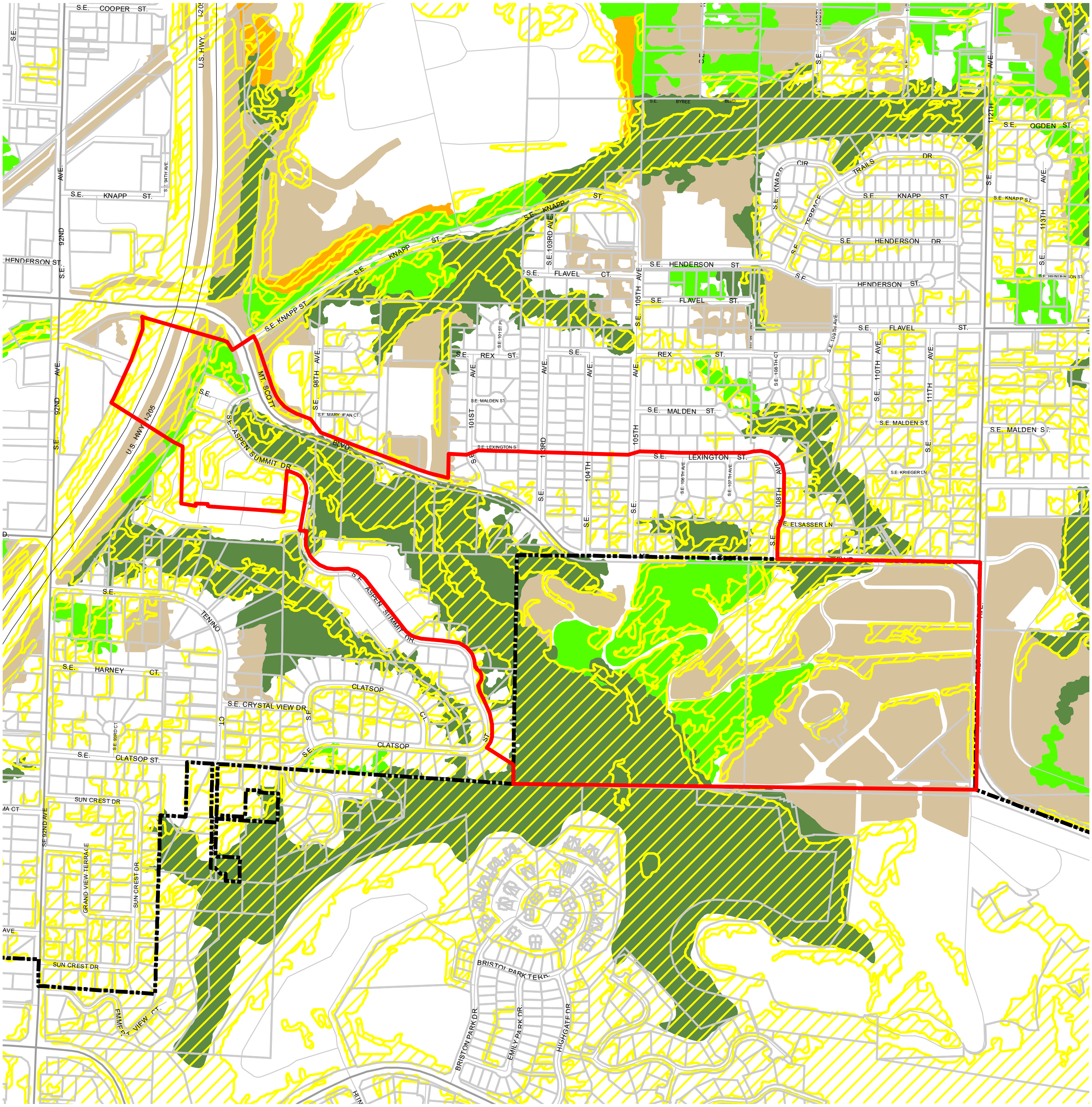

Map B: Vegetation and Steep Slopes

Resource Site: BL2

Updated: June 2020

NORTH

0 425 850 Feet

Proposed Draft

Resource Sites
slopes >25%
forest vegetation
woodland vegetation
shrubland vegetation
herbaceous vegetation
City of Portland
Taxlots

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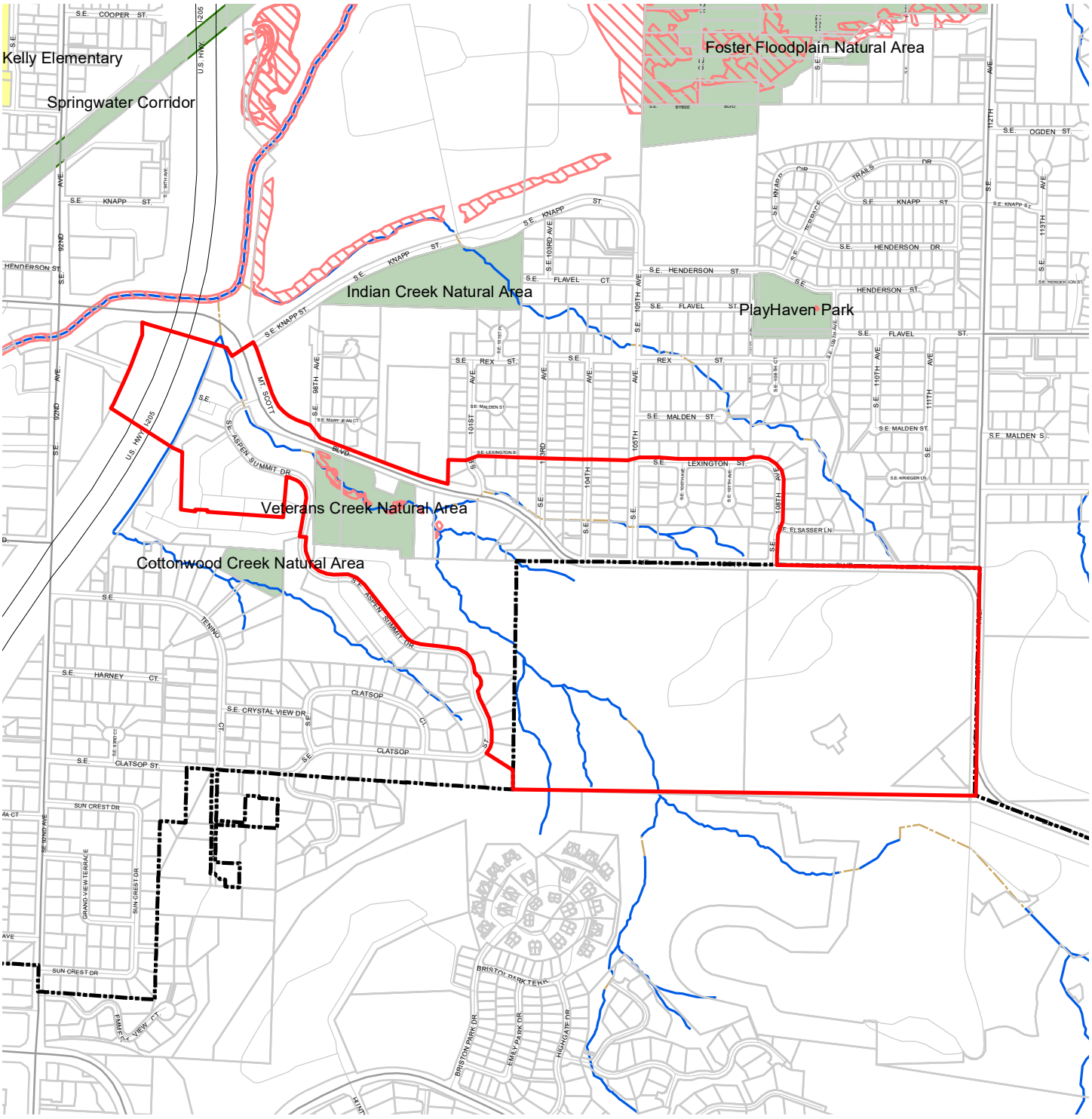

Map C: Special Habitat Areas

Resource Site: BL2

Updated: June 2020

NORTH

0 462.5 925 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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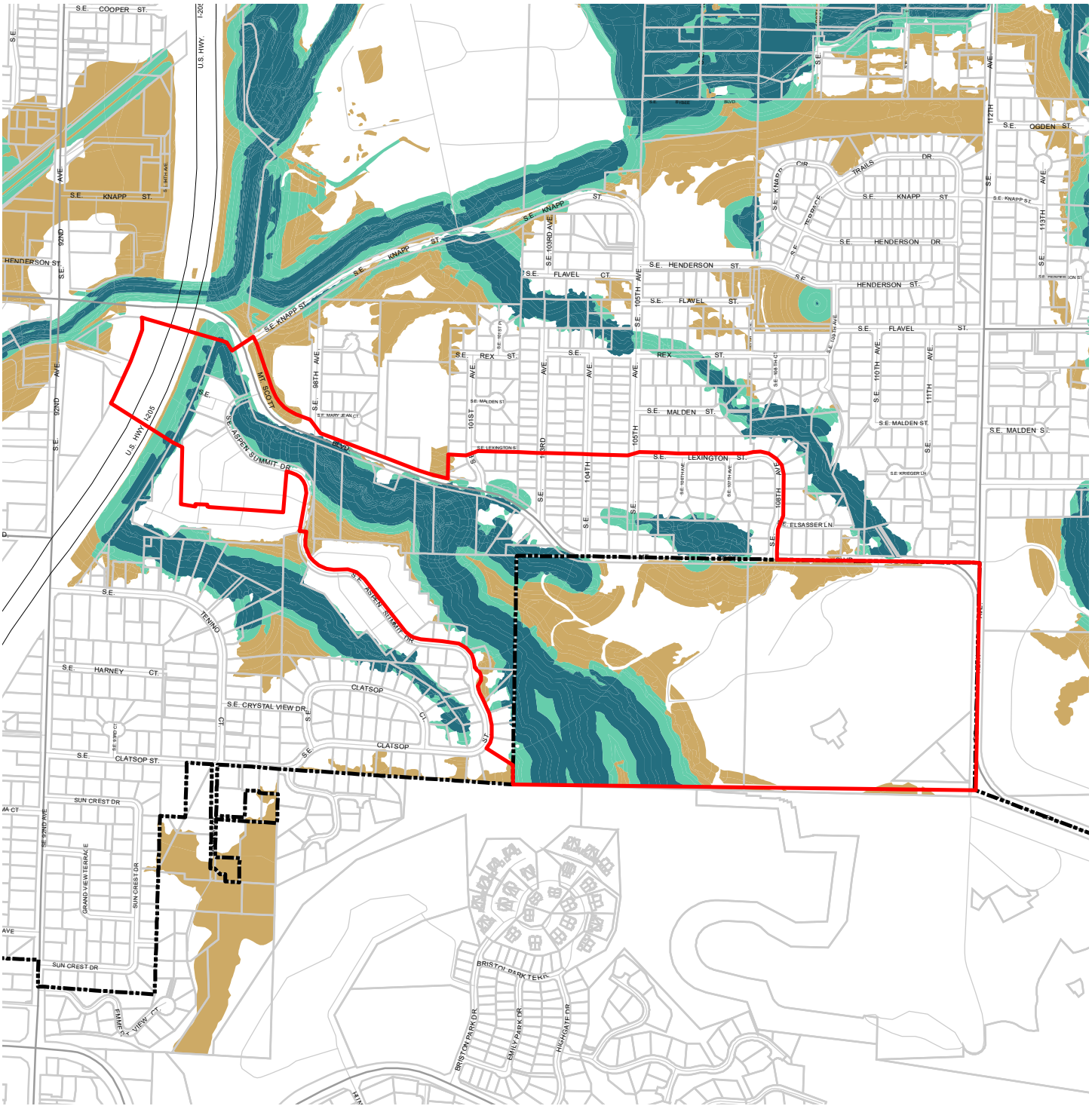

Map D: Riparian Corridors Habitat Classification

Resource Site: BL2

Updated: June 2020

NORTH

0 425 850 Feet

Proposed Draft

Resource Sites

City of Portland

Riparian Corridors

Taxlots

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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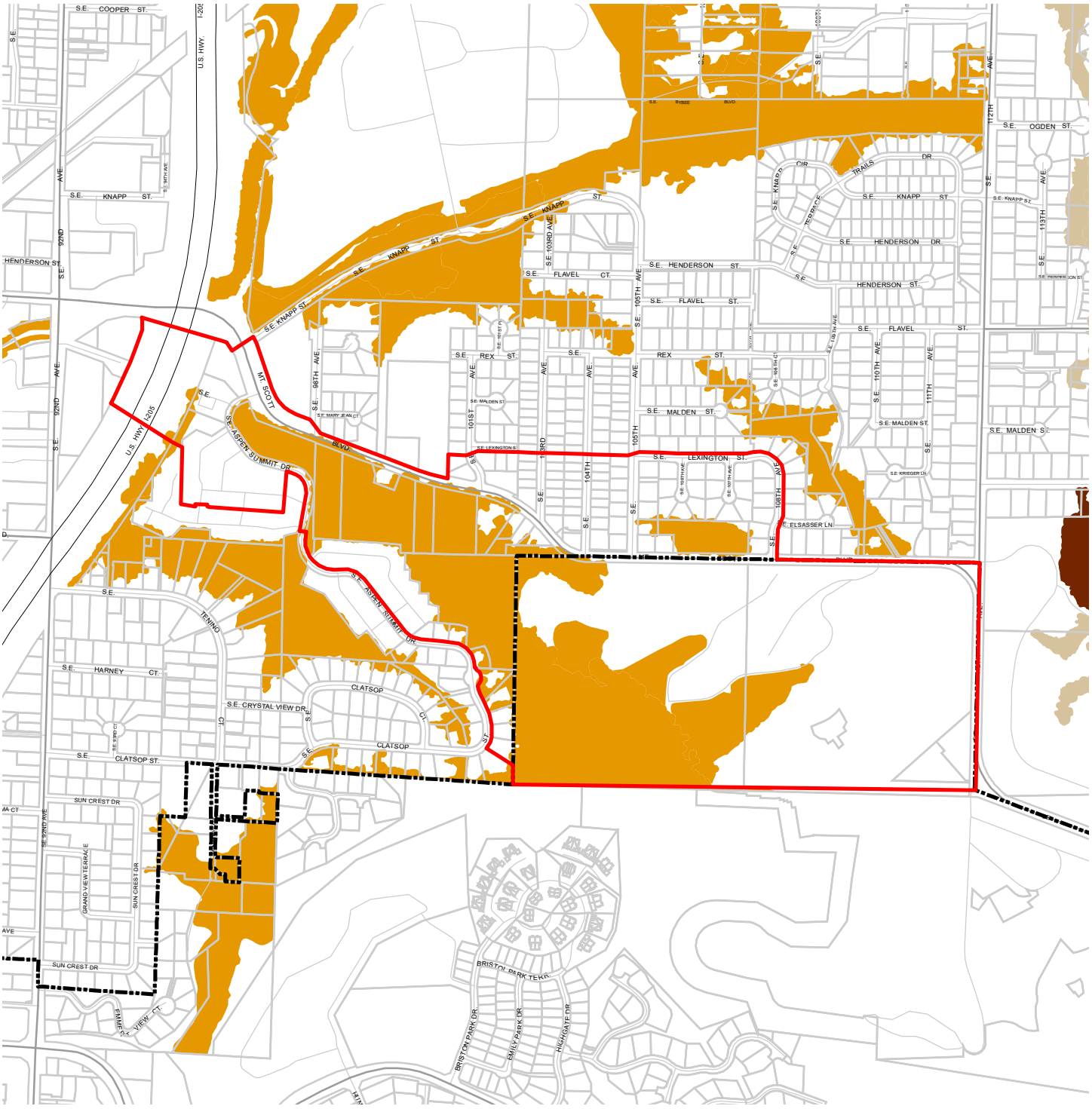

Map E: Wildlife Habitat Classification

Resource Site: BL2

Updated: June 2020

NORTH

0 345 690 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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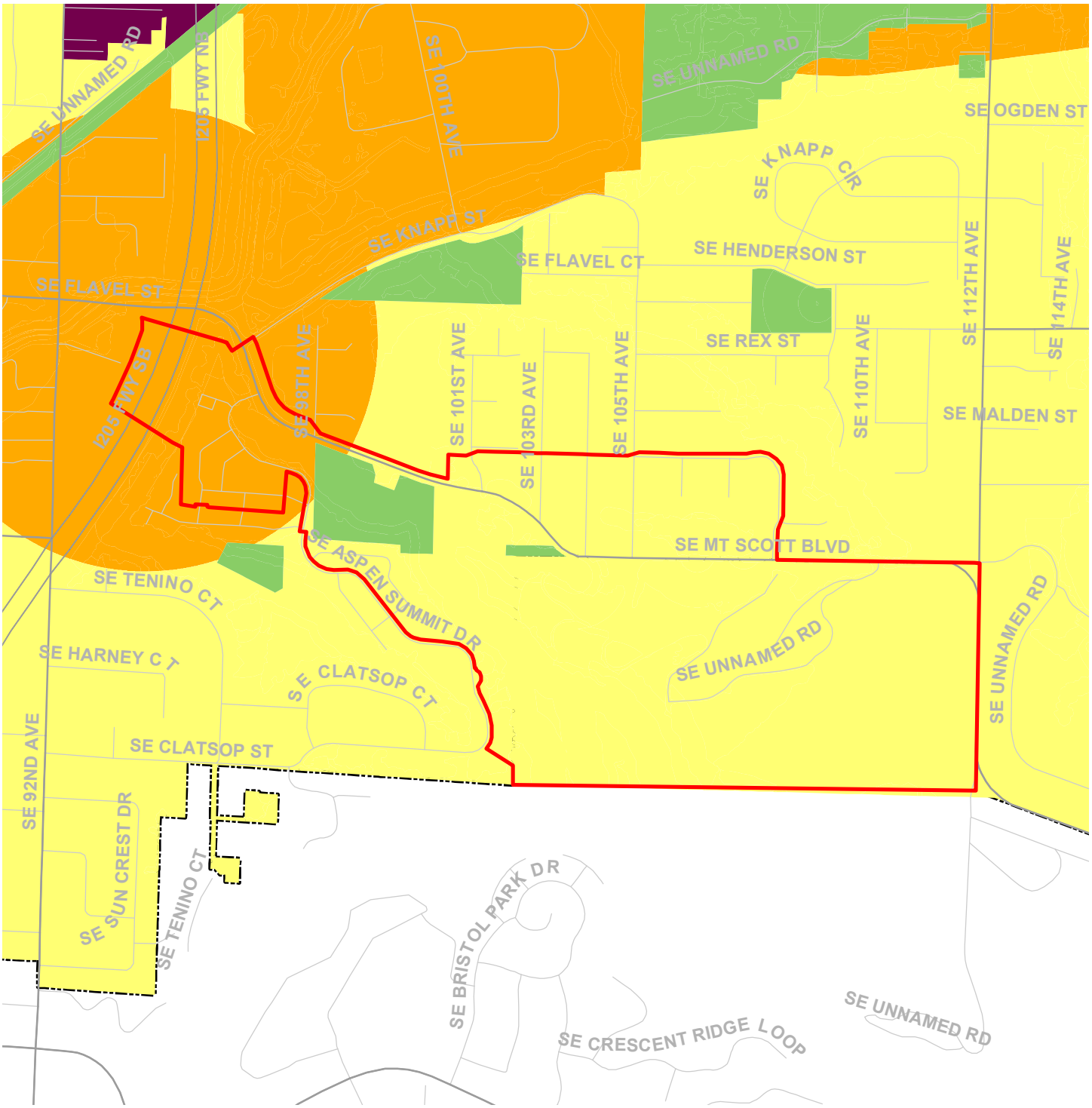

Map F: Urban Development Value (Title 13)

Resource Site: BL2

Updated: June 2020

NORTH

0 550 1,100 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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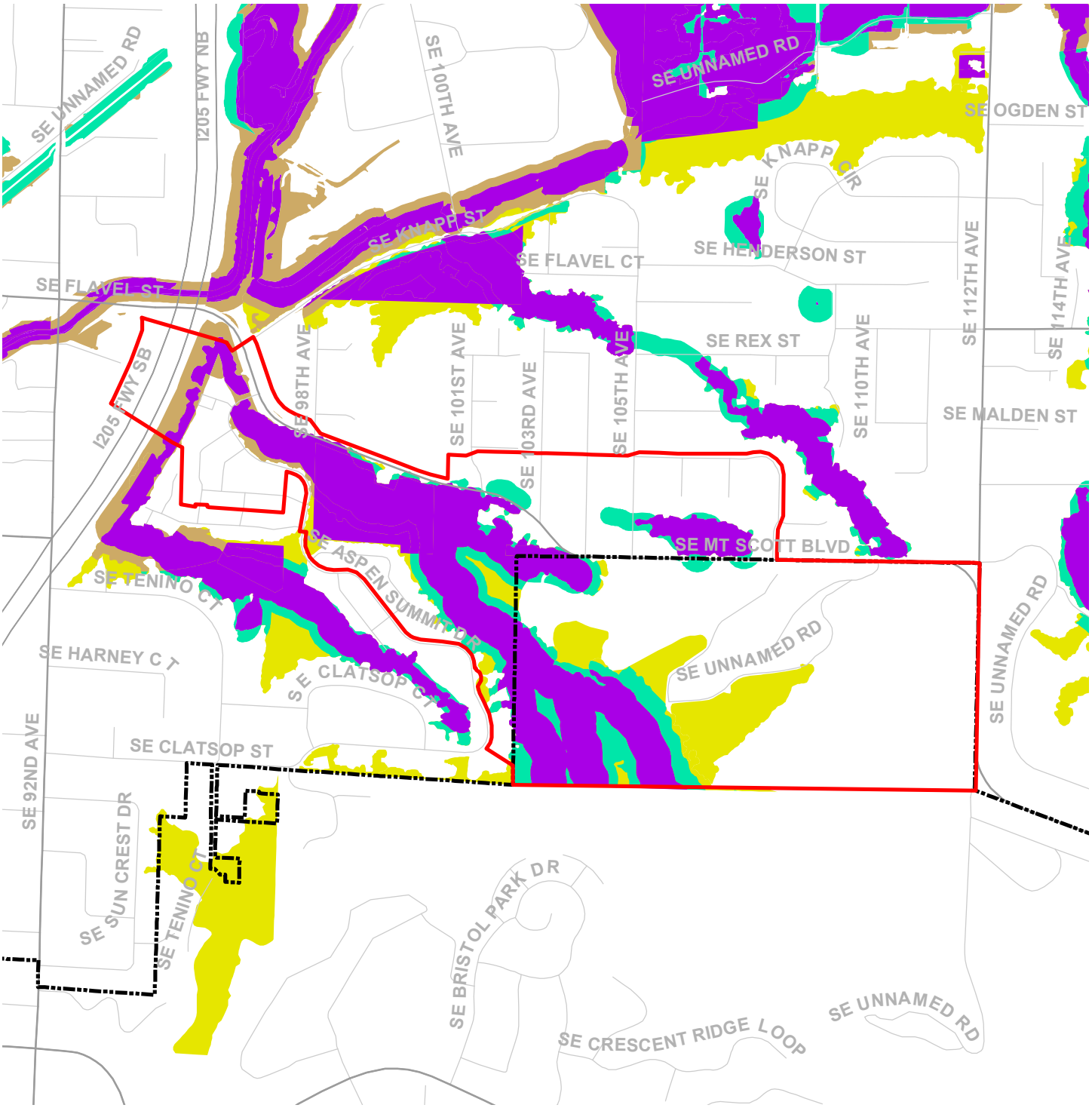
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL2

Updated: June 2020

NORTH

0 550 1,100 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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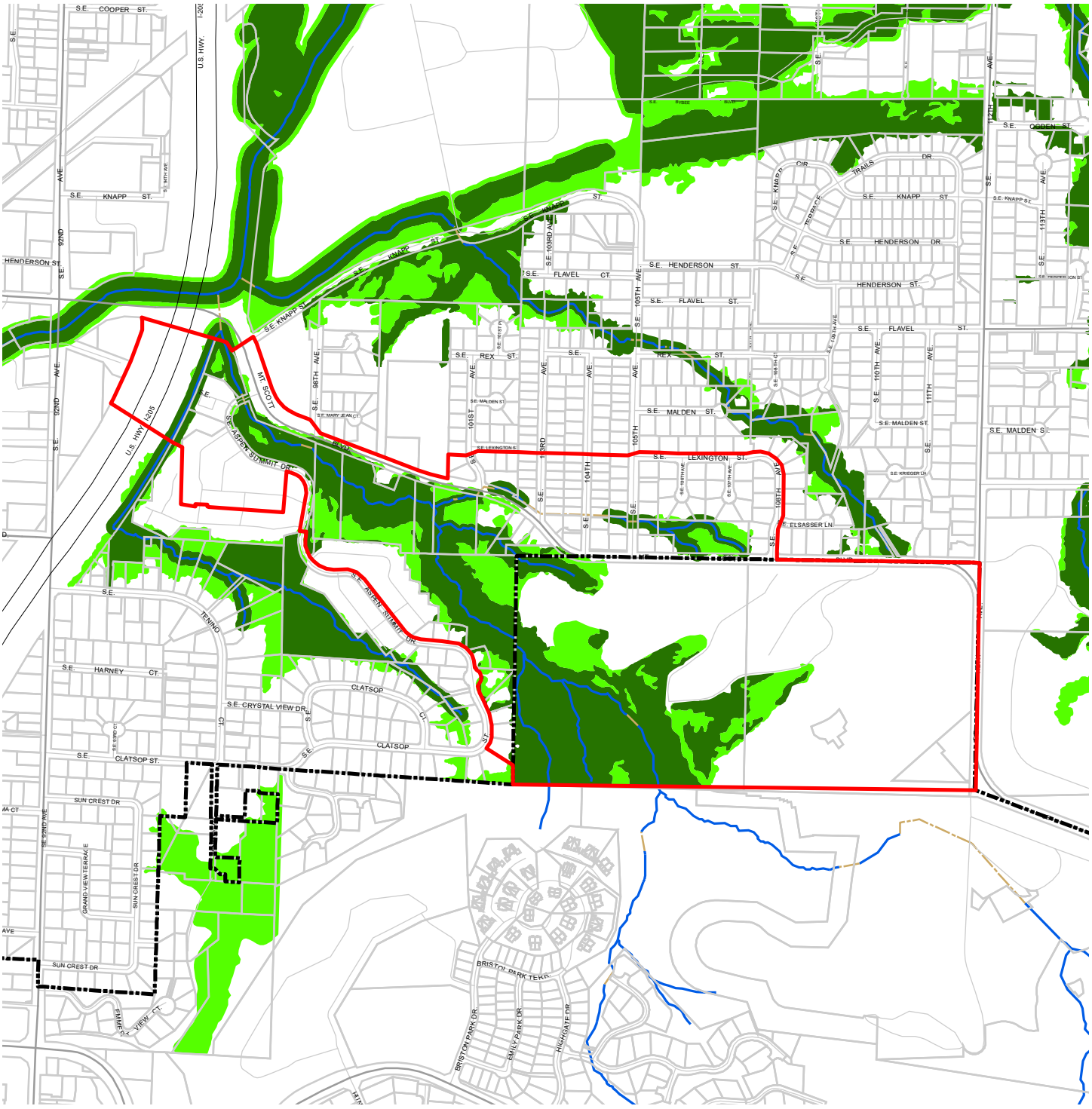
June 2020



Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL2

Updated: June 2020

NORTH

0 462.5 925 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL2 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL2**
	Study Area
Stream (Miles)	1.6
Wetlands (acres)	0.4
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	42.0
Woodland (acres)	17.0
Shrubland (acres)	0.0
Herbaceous (acres)	36.2
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	57.6
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located on the north slope of Mt. Scott. It is bounded by Mt. Scott Boulevard on the east and north, SE Aspen Summit Drive on the west and the City of Portland boundary on the south. The primary land uses are Veteran's Creek Natural Area, Lincoln Memorial Park and Cemetery, and single-family residential development. Natura resources in the watershed include Veteran's Creek and its

tributaries, wetlands, seeps, springs, and open water, habitat areas, and forested riparian and upland areas. Most of Veteran's Creek and its tributaries flow in an area characterized by steep slopes of 25% or higher.

Veteran's Creek is a perennial stream during most years. It provides cool water flows to Johnson Creek, which exceeds temperature standards set by state and federal agencies to protect Endangered Species Act-listed salmonid species. Veteran's Creek provides breeding and terrestrial habitat for endemic population of red-legged frogs, a species of concern for the state of Oregon. The ponding wetlands adjacent to the creek provide breeding and rearing habitat and the forested upland areas provide the habitat needed by adult frogs.

Cottonwood Creek flows into Veteran's Creek prior to its confluence with Johnson Creek. As part of building Interstate-205, Cottonwood and Veteran's Creek were moved, channelized and piped before entering Johnson Creek. The streams flow down a three plus foot drop before going into a pipe under SE Flavel Street. The outfall is perched several feet above the Johnson Creek base flowing over placed boulders, creating a fish passage barrier at its confluence with Johnson Creek. Due to this manipulation of these streams and high velocities from stormwater runoff in, there are no fish found in either stream.

Veterans Creek is surrounded by relatively intact riparian cover. Trees include a mix of native deciduous and coniferous species with limited non-native species. The understory is comprised a mix of native and invasive species including native willow, ninebark, skunk cabbage, slough sedge, snowberry, several species of fern, and invasive Armenian blackberry, Irish and English Ivy, and bindweed.

The northern tributary runs through residential development. It is channelized and piped and delivers high velocity runoff to Veteran's Creek during rain events.

Special status bird species observed within or adjacent to this resource site include black-throated gray warbler, brown creeper, bushtit, downy woodpecker, pacific wren, pacific-slope flycatcher, pileated woodpecker, red crossbill, Swainson's, western wood-pewee, and Wilson's warbler. Along with multiple at risk species of amphibians, special status red-legged frogs are found in this resource area.

Table B: Quality of Natural Resource Functions in Resource Site BL2				
Resource Site (acres) = 144				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	30.0	12.7	17.0	59.7
percent total inventory site area	20.9%	8.8%	11.8%	41.5%
Wildlife Habitat*				
acres	0.0	49.2	0.0	49.2
percent total inventory site area	0.0%	34.2%	0.0%	34.2%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	30.0	24.2	9.9	64.1
percent total inventory site area	20.9%	16.8%	6.9%	44.5%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called “effective impervious area.” The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL2, 3% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL2

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
144	19	4.3	3%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10, R7 and R2 base zones. Commercial uses are allowed in the CE base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL2, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife

species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL2, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank, and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands extending to 100 feet from streams or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on steep slopes that are contiguous to but more than 100 feet from stream top-of-bank or wetlands and areas of forest or woodland vegetation not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL3 **Resource Site Name:** Indian Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30c

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

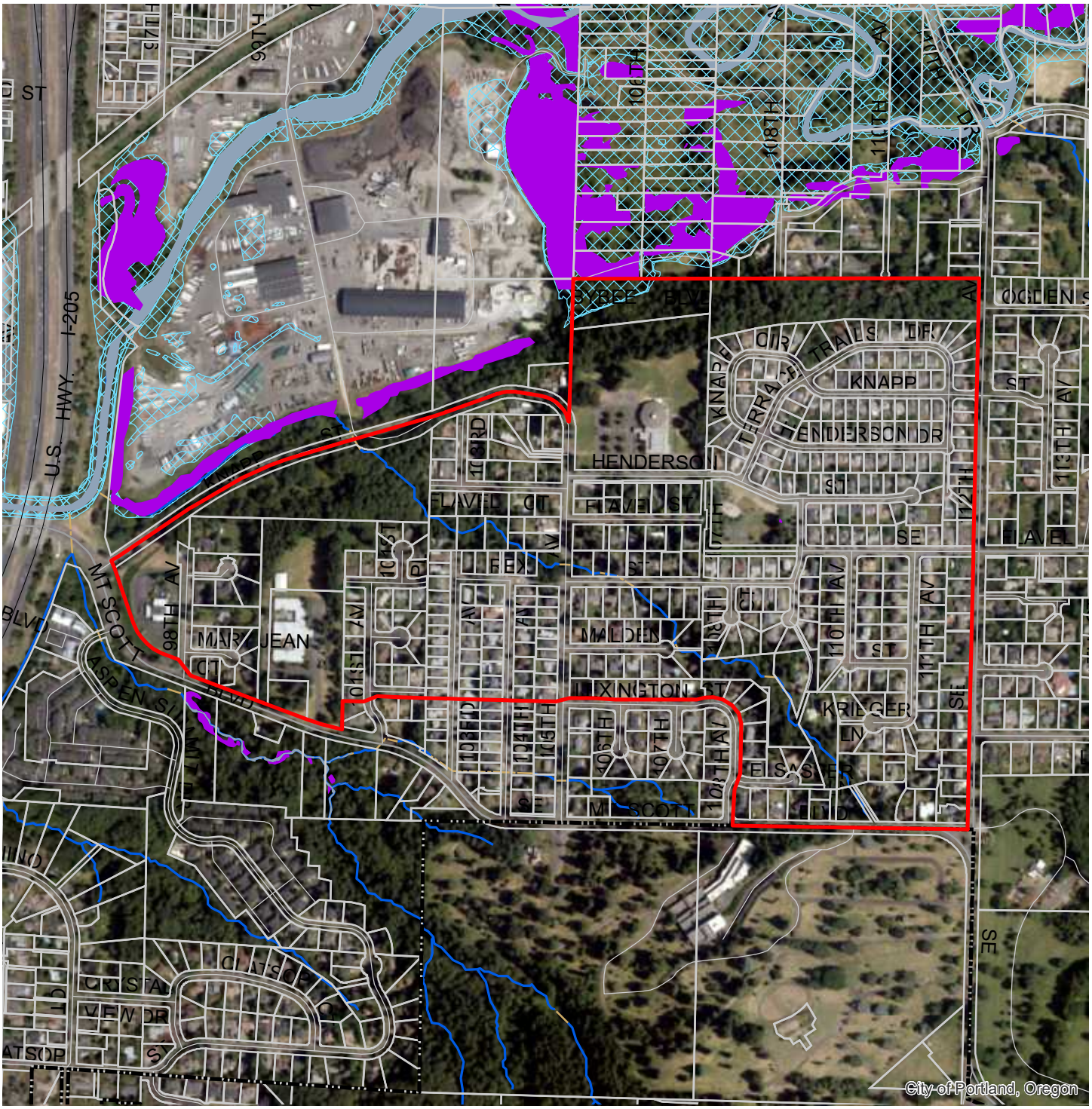
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL3 includes the following base zones (acres):

CE	3.8
EG2	0.0
OS	14.5
R10	0.0
R7	143.6



Map A: Water Features

Resource Site: BL3

Updated: June 2020

NORTH

0 360 720 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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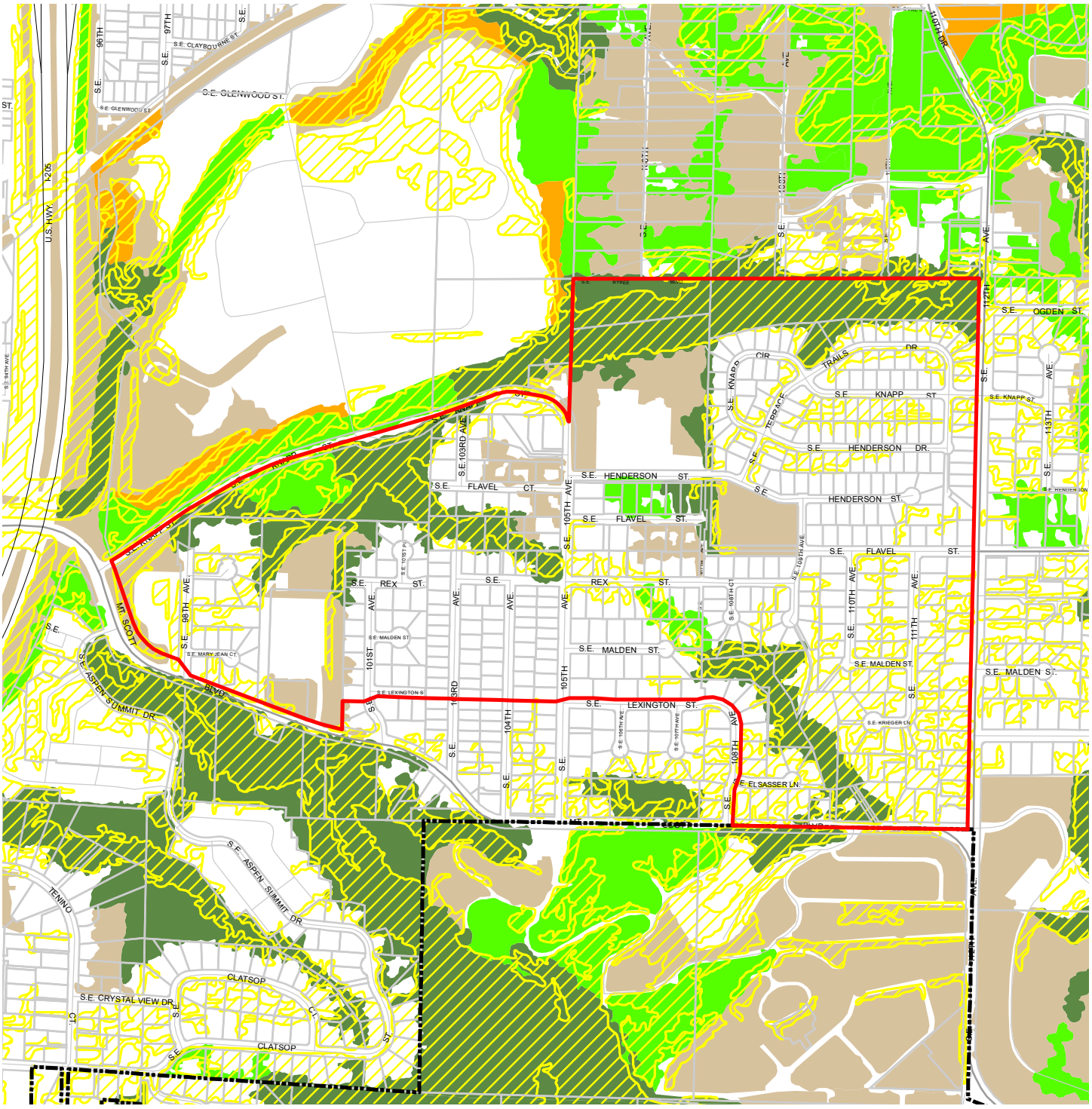
June 2020



Map B: Vegetation and Steep Slopes

Resource Site: BL3

Updated: June 2020

NORTH

0 360 720 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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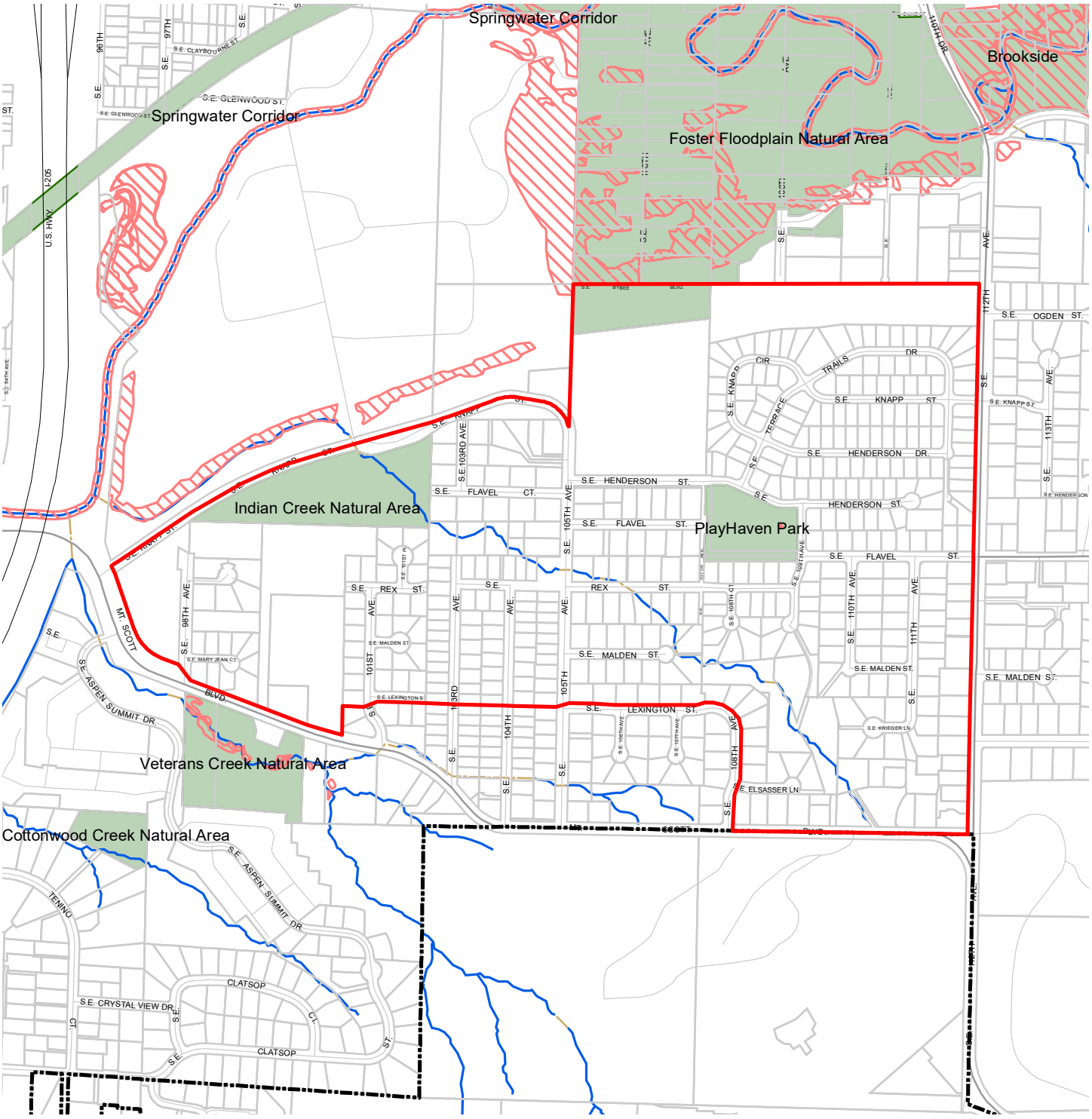

Map C: Special Habitat Areas

Resource Site: BL3

Updated: June 2020

NORTH

0 387.5 775 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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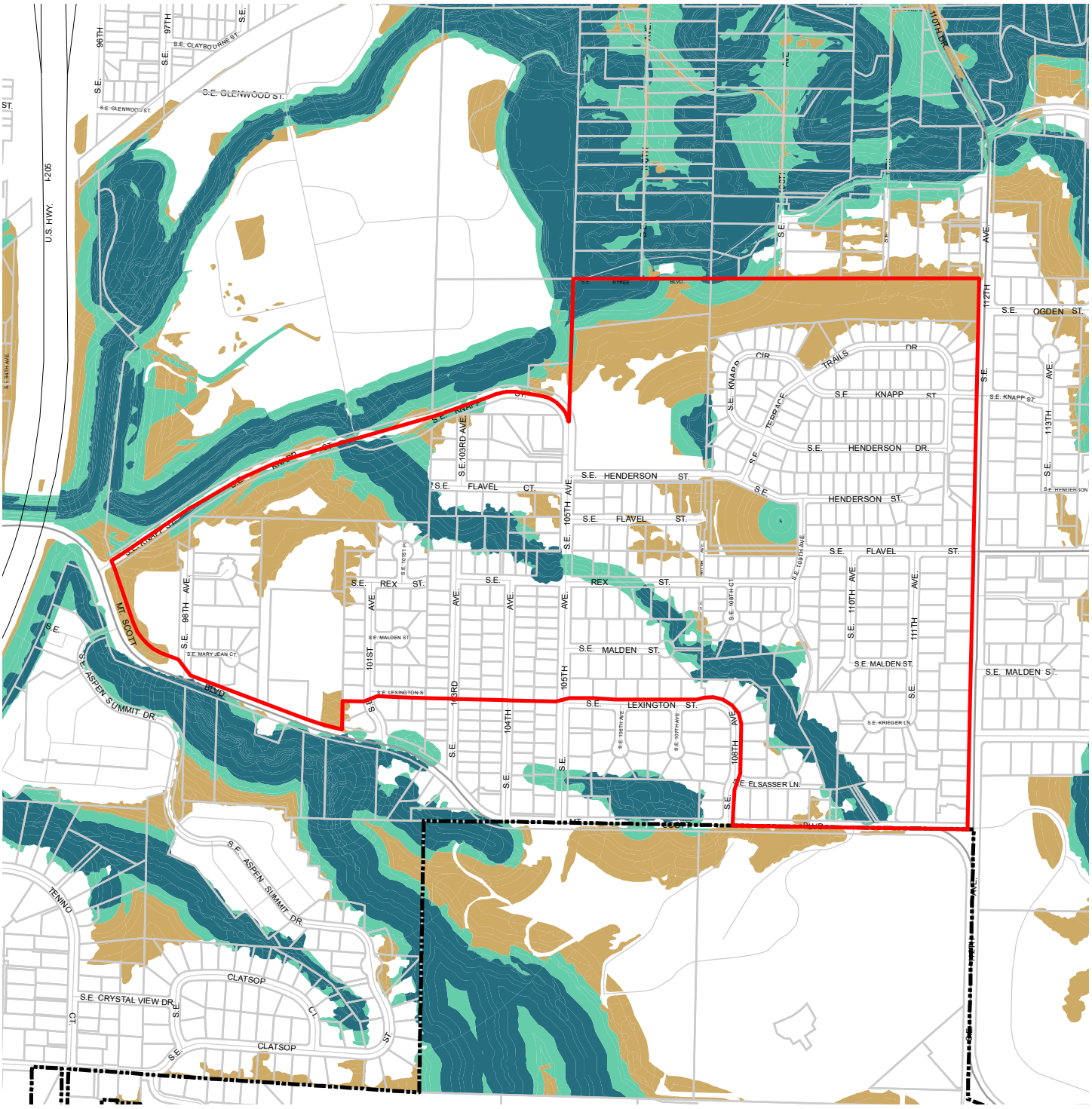

Map D: Riparian Corridors Habitat Classification

Resource Site: BL3

Updated: June 2020

NORTH

0 360 720 Feet

Proposed Draft

Resource Sites

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

City of Portland

Taxlots

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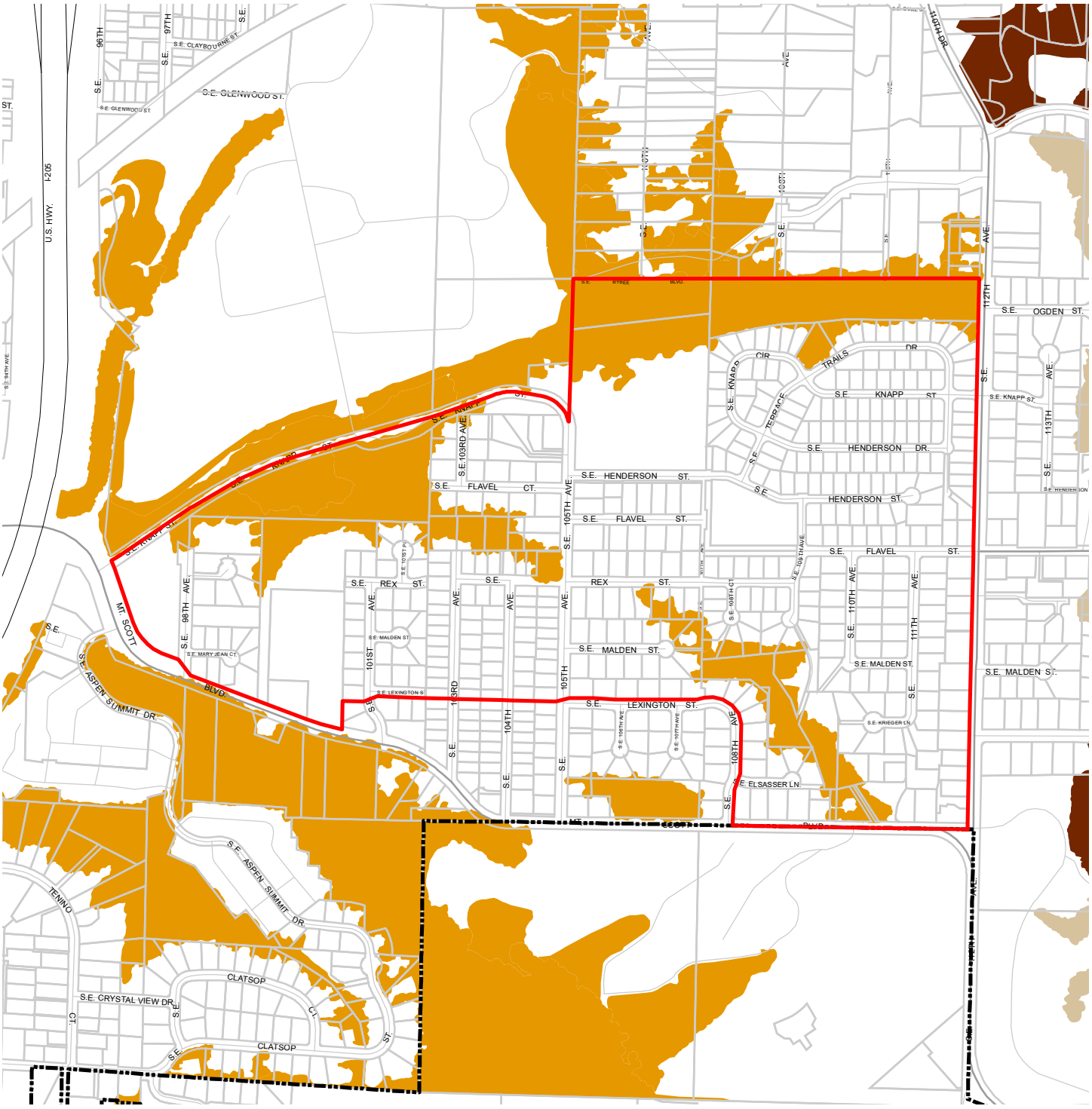

Map E: Wildlife Habitat Classification

Resource Site: BL3

Updated: June 2020

NORTH

0 290 580 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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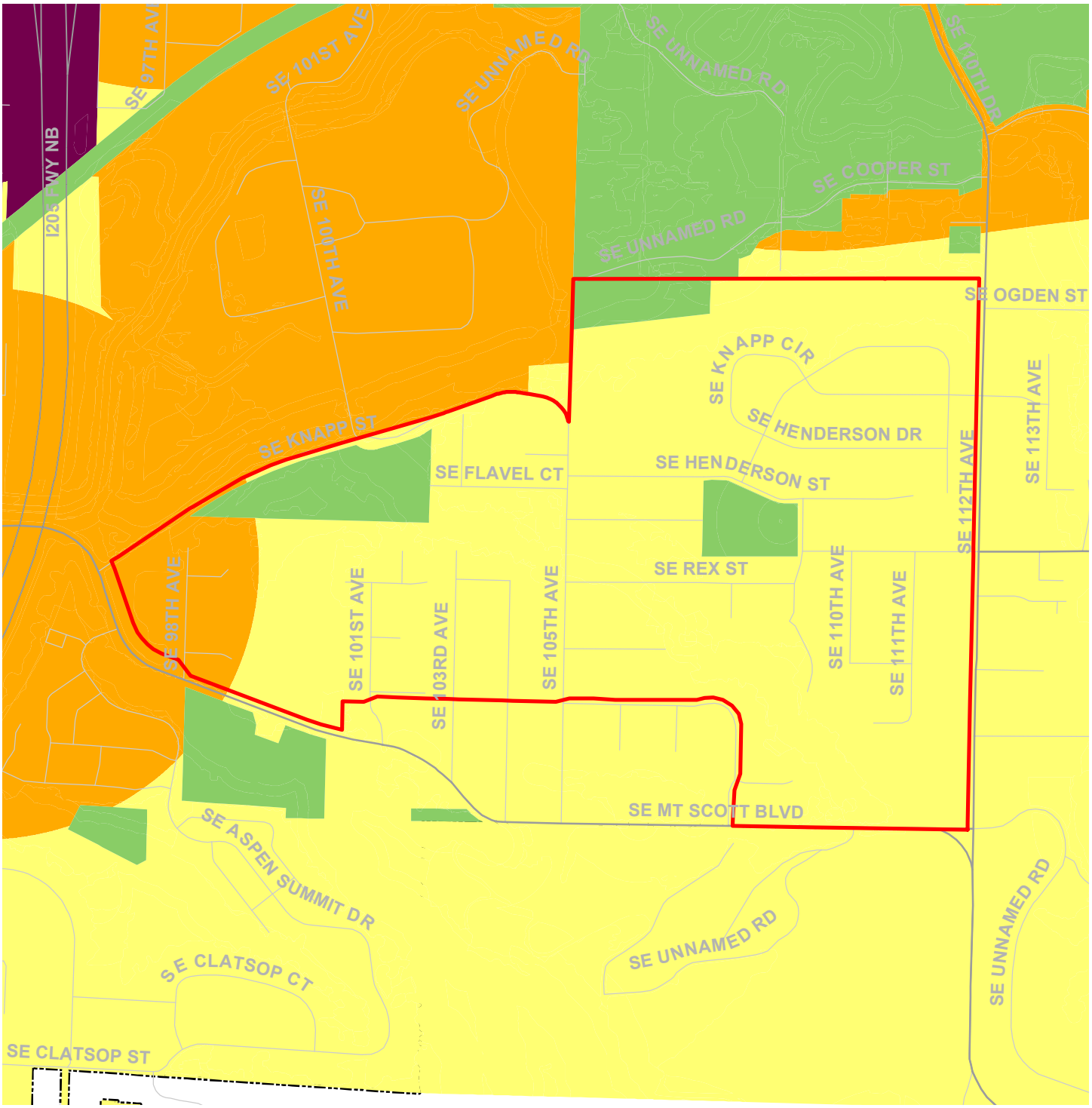

Map F: Urban Development Value (Title 13)

Resource Site: BL3

Updated: June 2020

NORTH

0 487.5 975 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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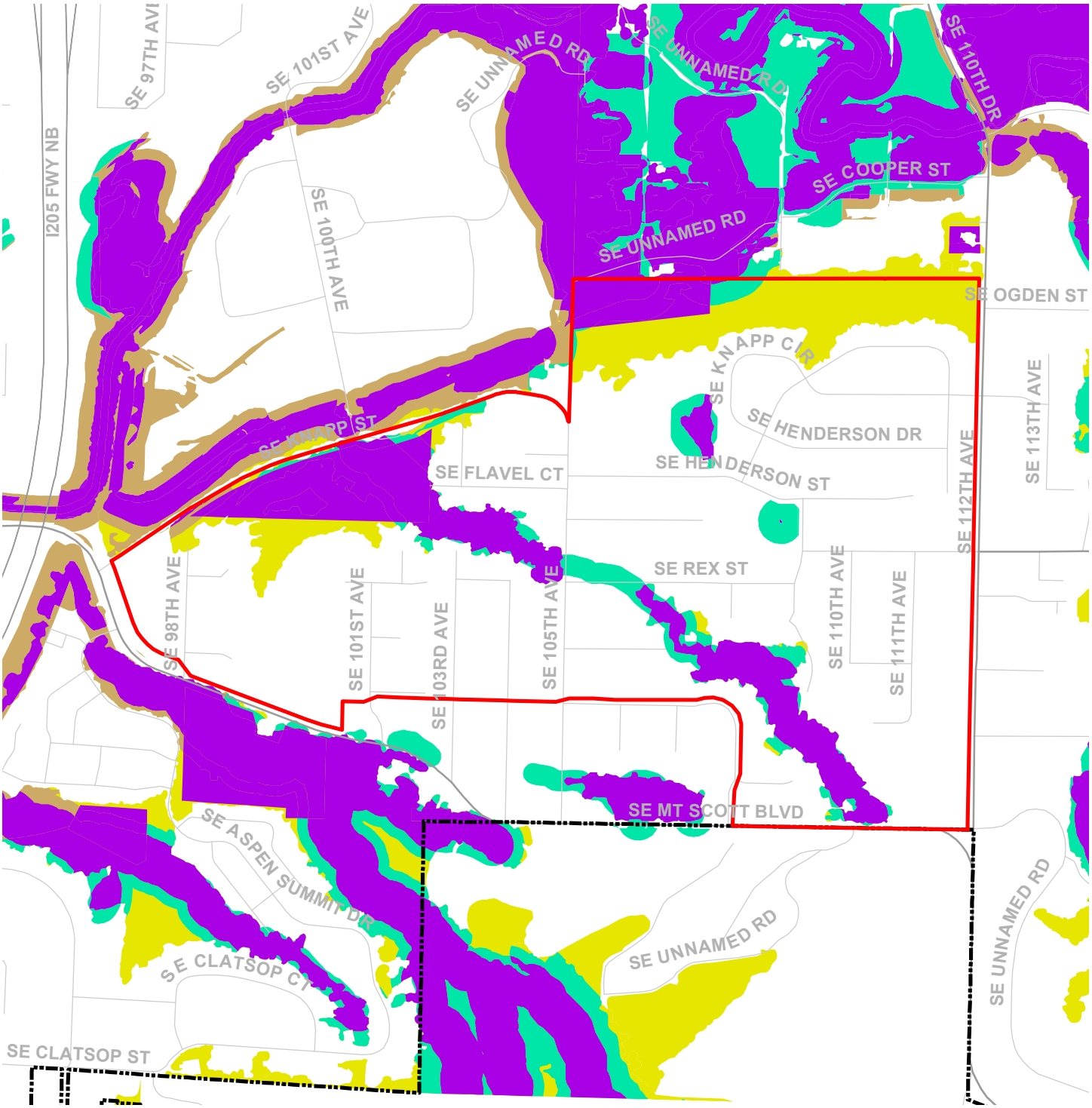

Map F: Urban Development Value (Title 13)

Resource Site: BL3

Updated: June 2020

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

NORTH

0 487.5 975 Feet

Proposed Draft

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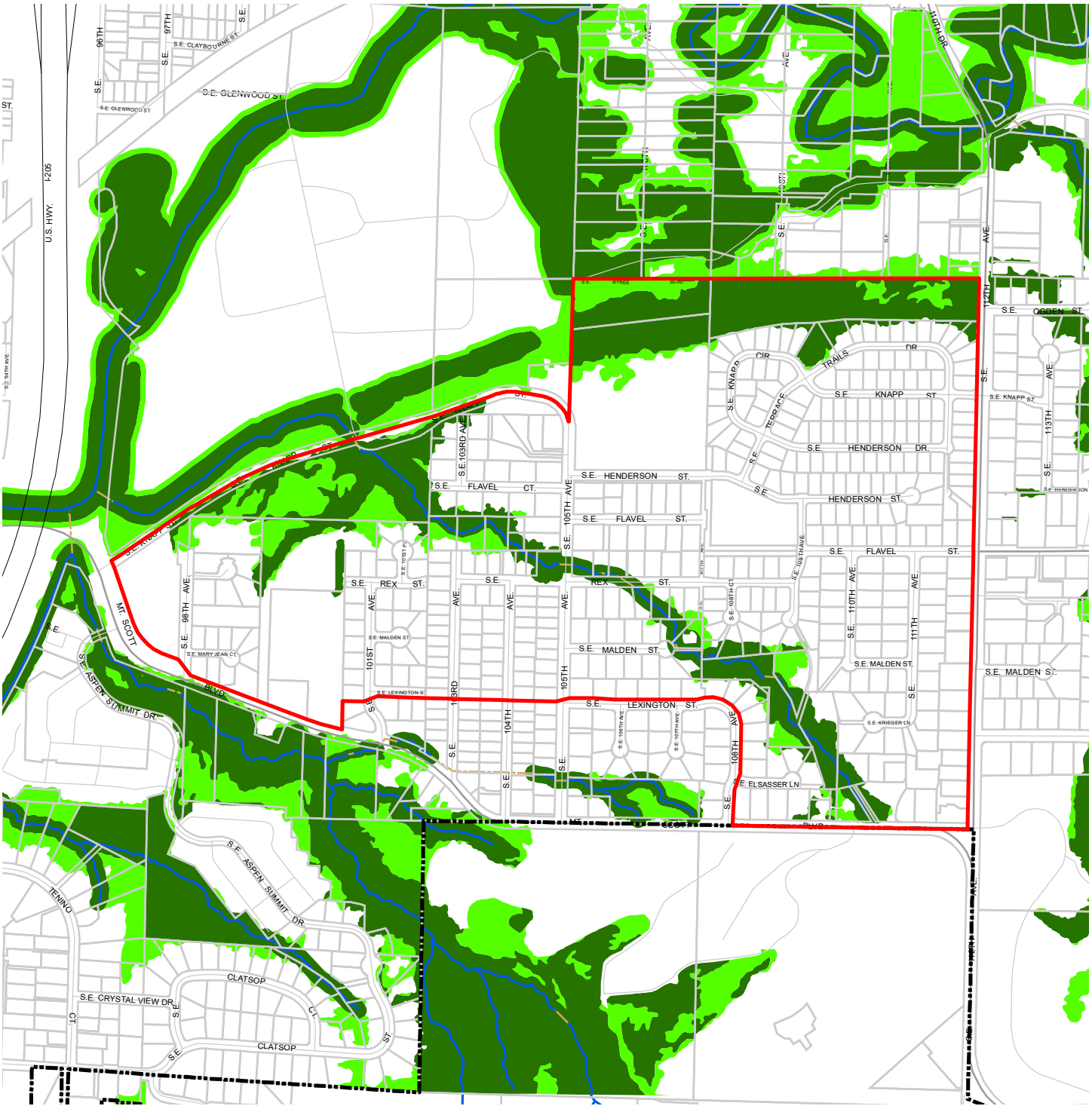

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL3

Updated: June 2020

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

NORTH

0 390 780 Feet

Proposed Draft

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Natural Resource Description

Within resource site BL3 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; flood area; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL3**
	Study Area
Stream (Miles)	0.6
Wetlands (acres)	0.2
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	33.6
Woodland (acres)	4.7
Shrubland (acres)	0.0
Herbaceous (acres)	15.2
Flood Area*	
Vegetated (acres)	1.1
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	48.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located to the west of SE 112th Ave, south of SE Knapp St and north of SE Mount Scott Boulevard. The resources in the watershed include Indian Creek, habitat areas, heritage areas, and forested riparian and upland areas. Land use in the area is predominantly single-family residential.

Indian Creek Natural Area and PlayHaven Park are located in the resource site. The site is immediately adjacent to the Foster Floodplain Natural Area (see JC13), which is down slope from this site. Most of Indian Creek flows in an area characterized by steep slopes of 25% or higher.

The headwaters of Indian Creek flow from Mount Scott Boulevard and impervious roadways within the Lincoln Memorial Cemetery. The stream runs generally to the northwest through residential development, mostly as an open channel, with some segments in pipes. Runoff from the roads carries pollutants and delivers high velocity water directly to the stream causing increased erosion, delivering increased loads of TSS. High velocities have incised Indian Creek washing away instream habitat.

Riparian vegetation is narrow providing limited riparian function including reduced connection to terrestrial habitat, limited shading, limited ability for vegetation to reduce stream velocity or pollutant loading. Indian Creek flows outside of this resource area to a more gently sloped confluence with Johnson Creek surrounded by wetland habitat. Reducing runoff, pollutant loading and increasing riparian functions is required to meet the TMDL requirements established by state and federal regulations (see Water Quality section above for more information).

Special status bird species observed within or adjacent to this resource site include American kestrel, band-tailed pigeon, black-throated gray warbler, brown creeper, bushtit, common yellowthroat, downy woodpecker, great blue heron, hooded merganser, merlin, Nashville warbler, northern harrier, olive-sided flycatcher, orange-crowned warbler, pacific-slope flycatcher, pacific wren, purple finch, Swainson's thrush, Vaux's swift, western wood-pewee, white-breasted nuthatch, willow flycatcher, Wilson's warbler, and yellow warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL3				
Resource Site (acres) = 162				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	12.3	8.5	25.6	46.3
percent total inventory site area	7.6%	5.2%	15.8%	28.6%
Wildlife Habitat*				
acres	0.0	34.2	0.0	34.2
percent total inventory site area	0.0%	21.1%	0.0%	21.1%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	12.3	25.7	8.8	46.8
percent total inventory site area	7.6%	15.8%	5.4%	28.9%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called “effective impervious area.” The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL3, 9% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL3

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
162	41	14	9%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 and R7 base zones. Commercial uses area allowed in the CE base zone. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL3, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife

species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL3, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank and land within 25 feet of stream top-of-bank.
2. Apply a protection overlay zone (p zone) to areas of forest vegetation between 25 and 100 feet of top-of-bank of streams and on areas of forest and woodland on steep slopes.
3. Apply a conservation overlay zone (c zone) to land between 25 and 40 feet of stream top-of-bank that is not forested and areas of forest or woodland vegetation not on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL4 **Resource Site Name:** Frog Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30d

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

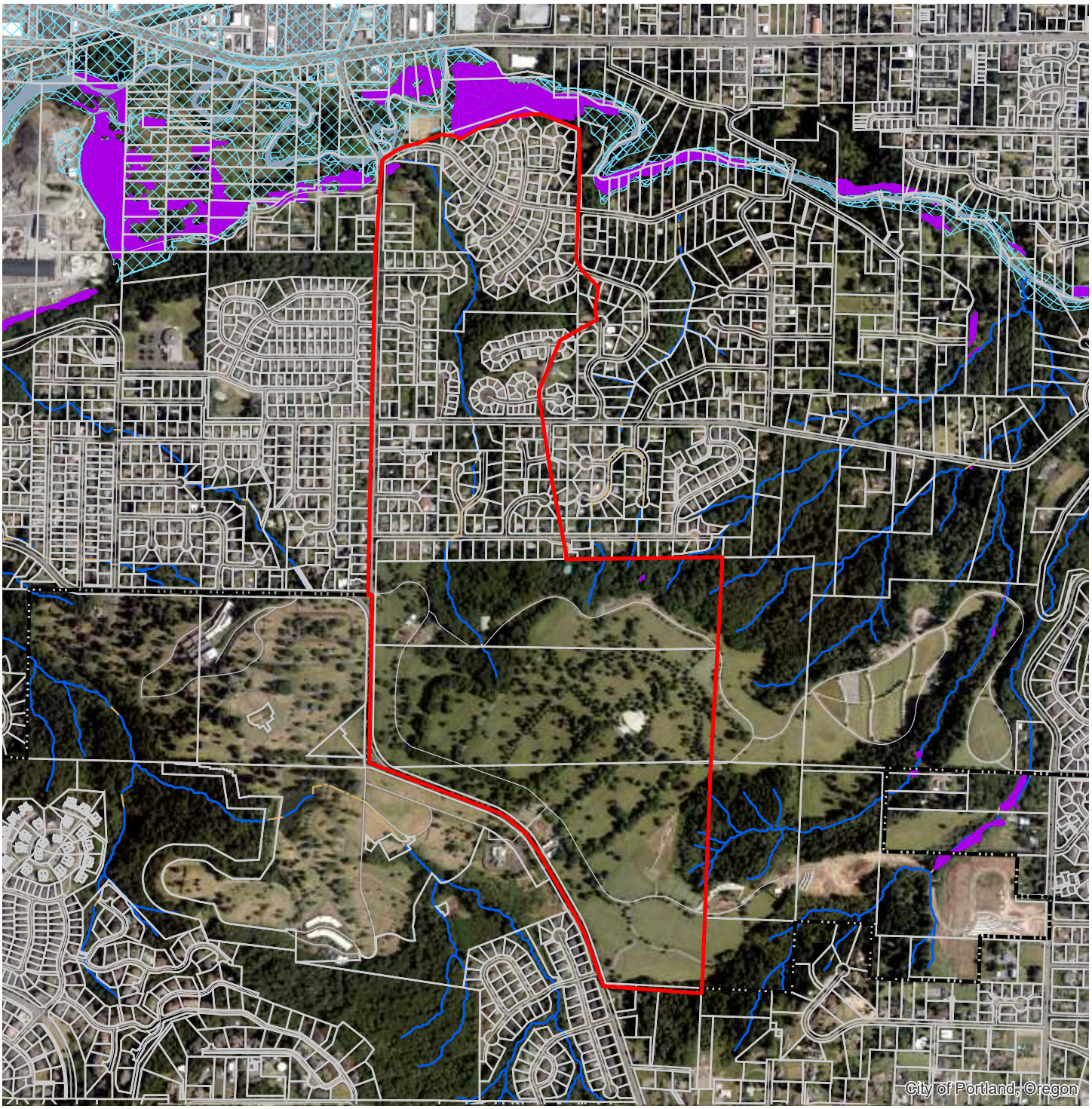
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL4 includes the following base zones (acres):

OS	148.4
R10	109.6
R7	2.1



Map A: Water Features

Resource Site: BL4

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

- Resource Sites
- City of Portland
- Taxlots
- rivers and major streams
- wetlands
- open stream channel
- piped stream segment
- flood area
- 2019 aerial photos

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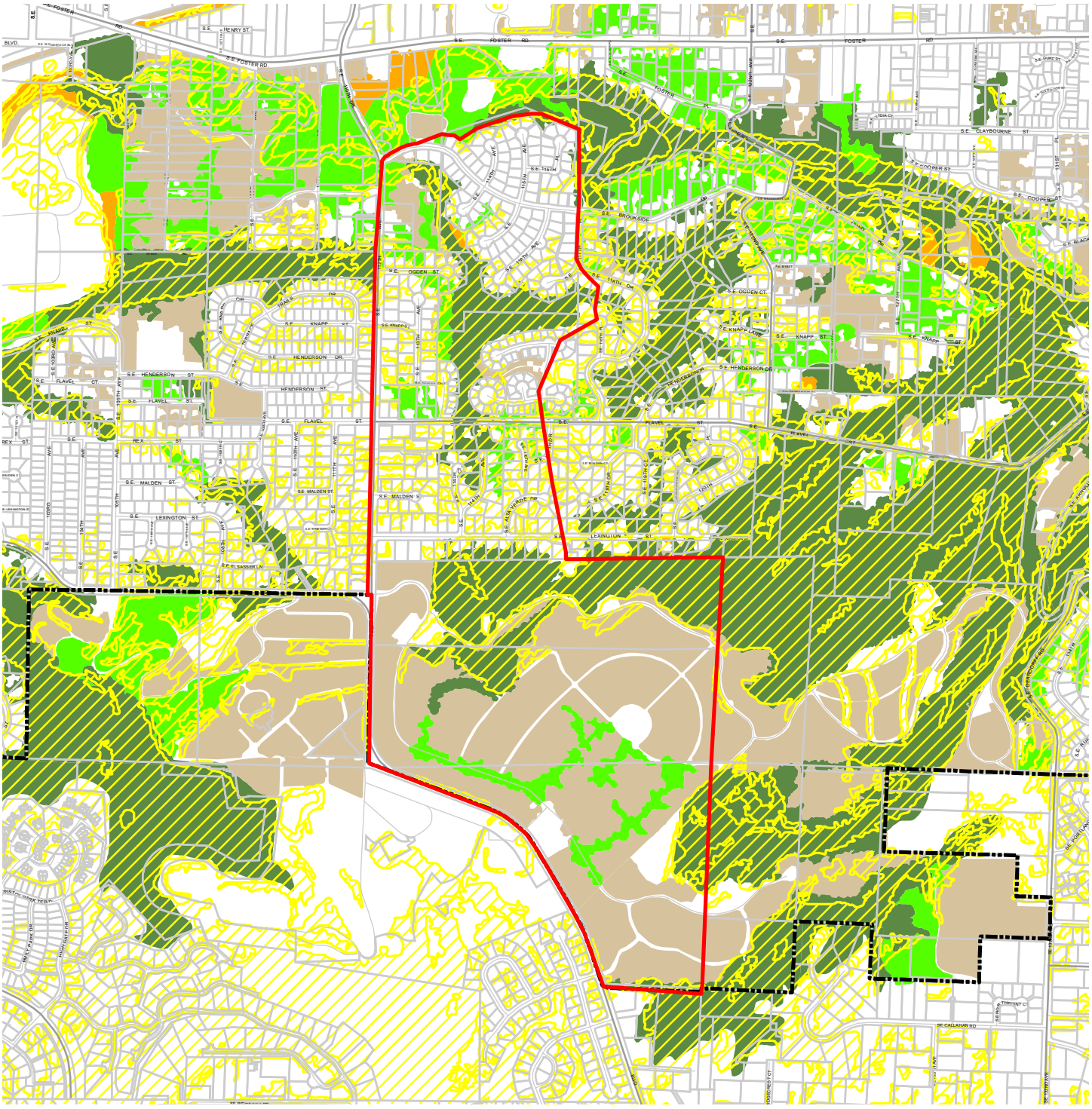

Map B: Vegetation and Steep Slopes

Resource Site: BL4

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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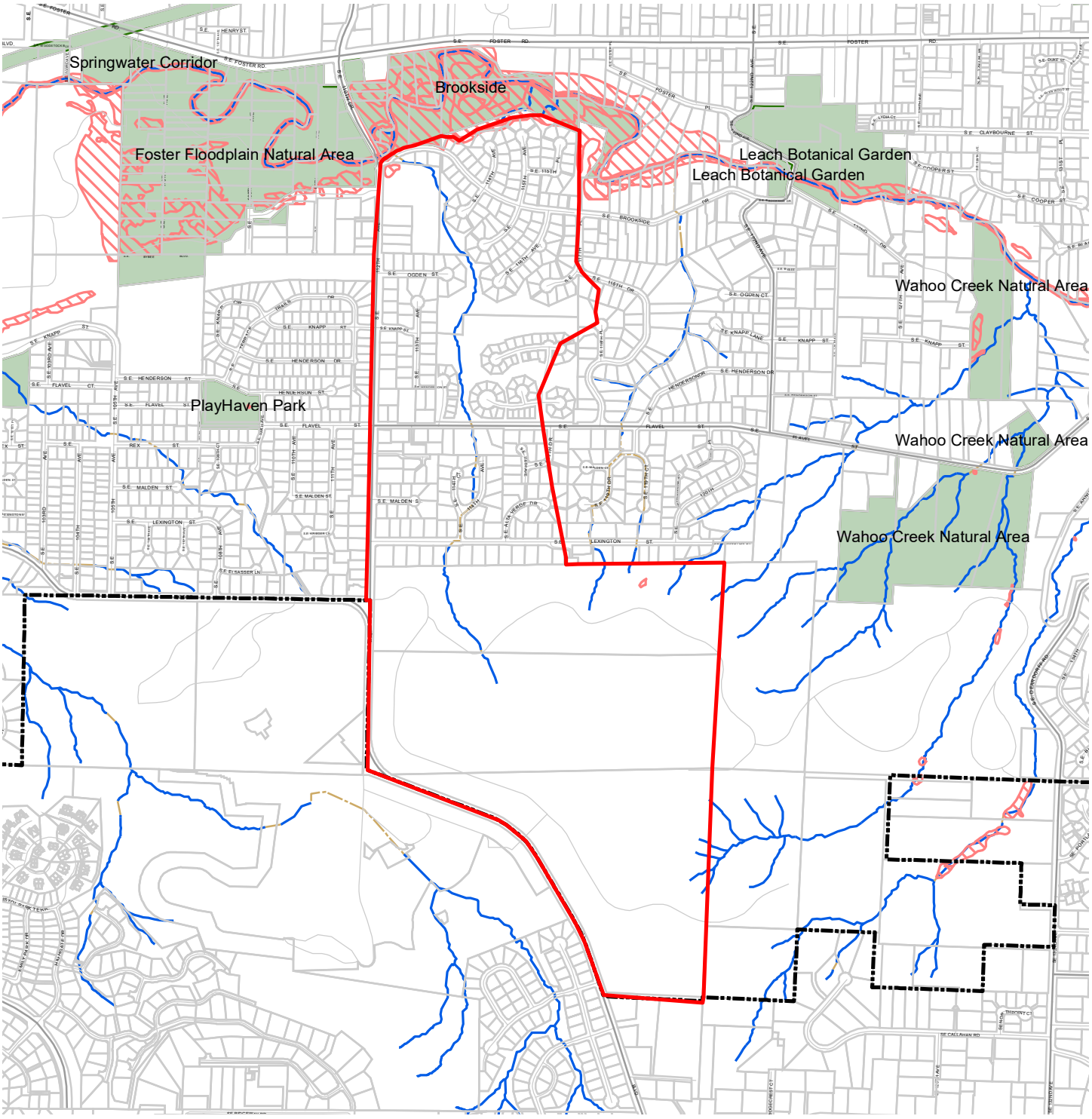

Map C: Special Habitat Areas

Resource Site: BL4

Updated: June 2020

NORTH

0 550 1,100 Feet

Proposed Draft

Resource Sites
Special Habitat Areas (SHAs)
open stream channel
piped stream segment
parks
schools
Taxlots
City of Portland

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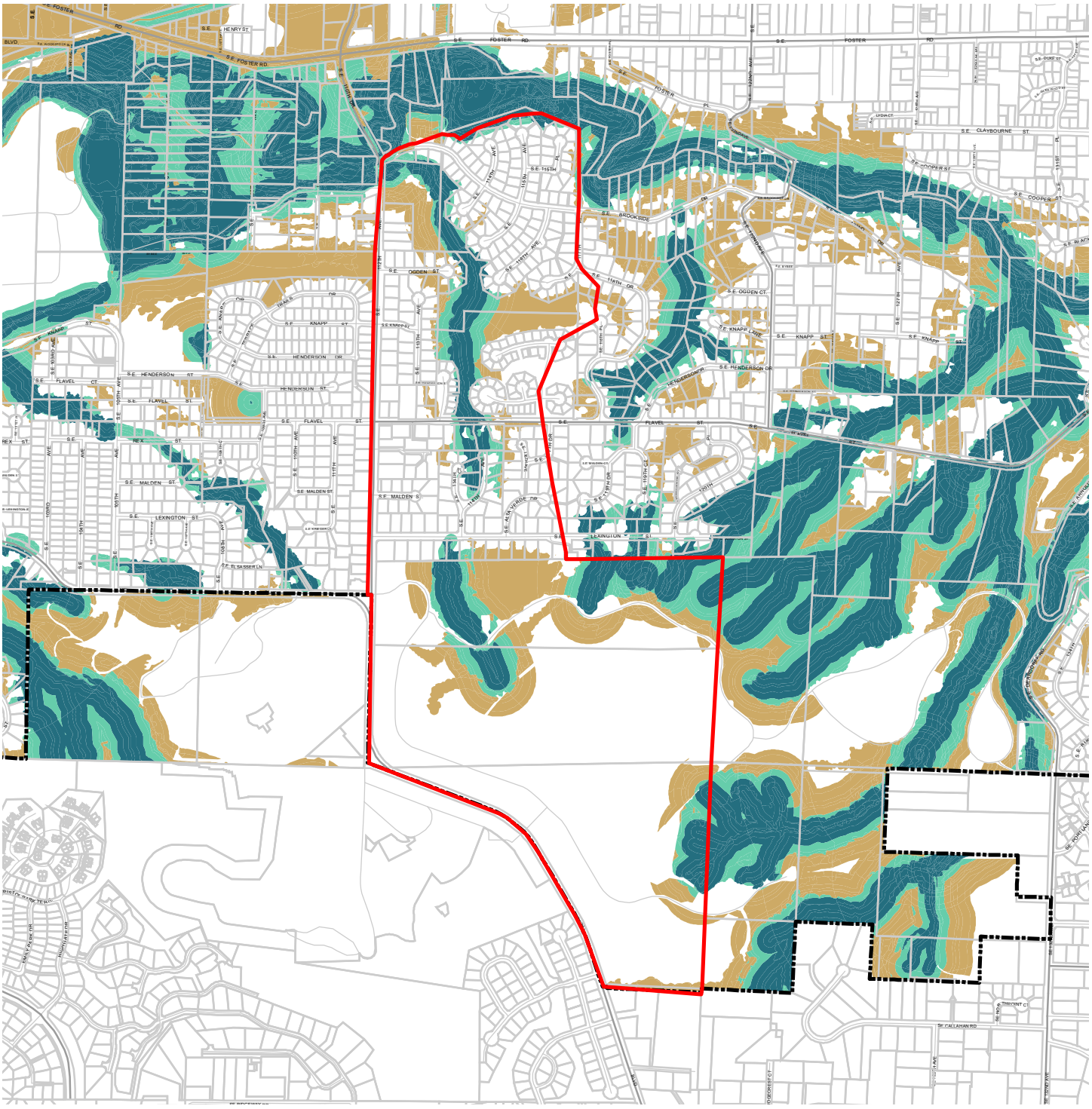

Map D: Riparian Corridors Habitat Classification

Resource Site: BL4

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

Resource Sites

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

City of Portland

Taxlots

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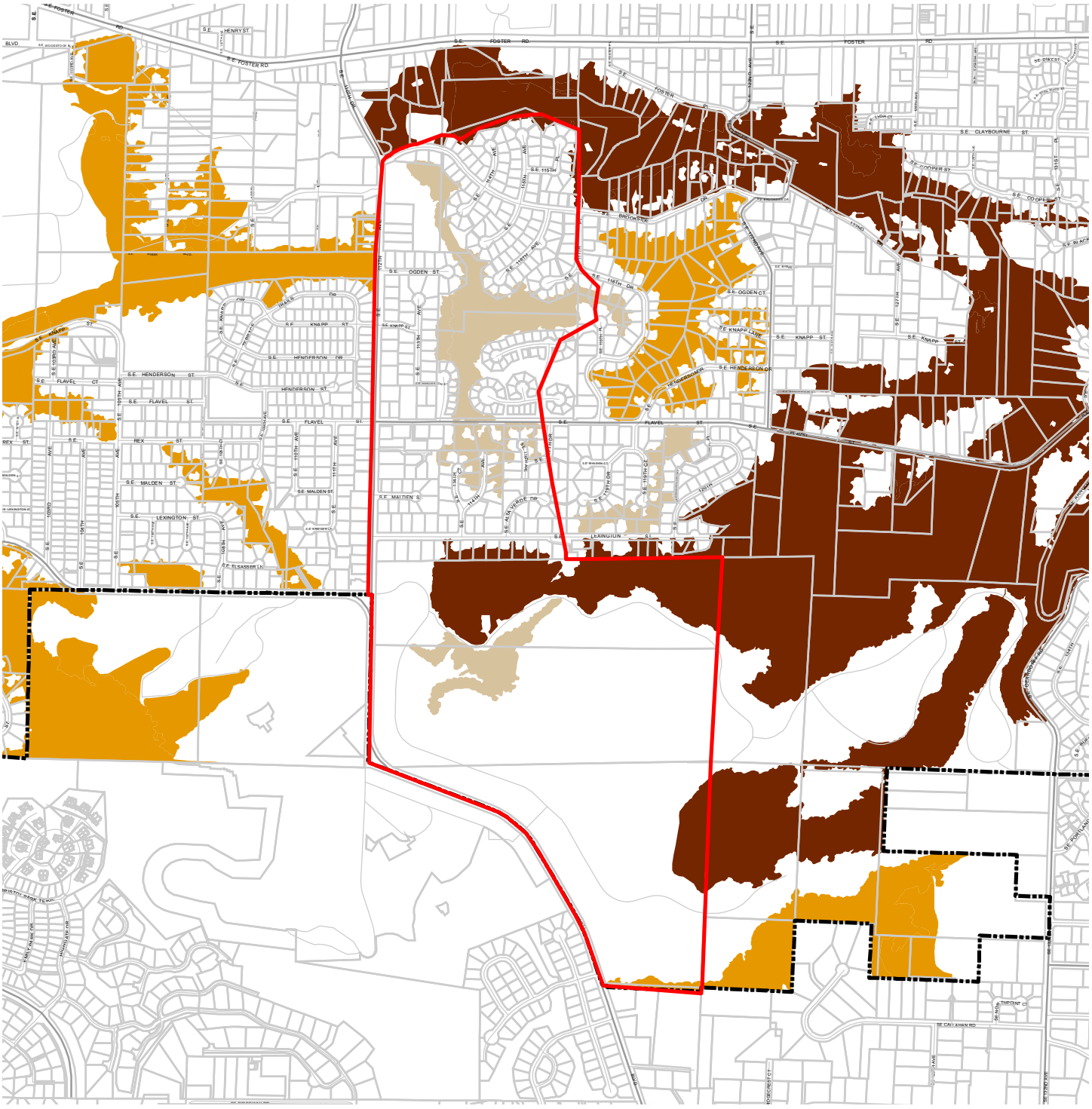

Map E: Wildlife Habitat Classification

Resource Site: BL4

Updated: June 2020

NORTH

0 470 940 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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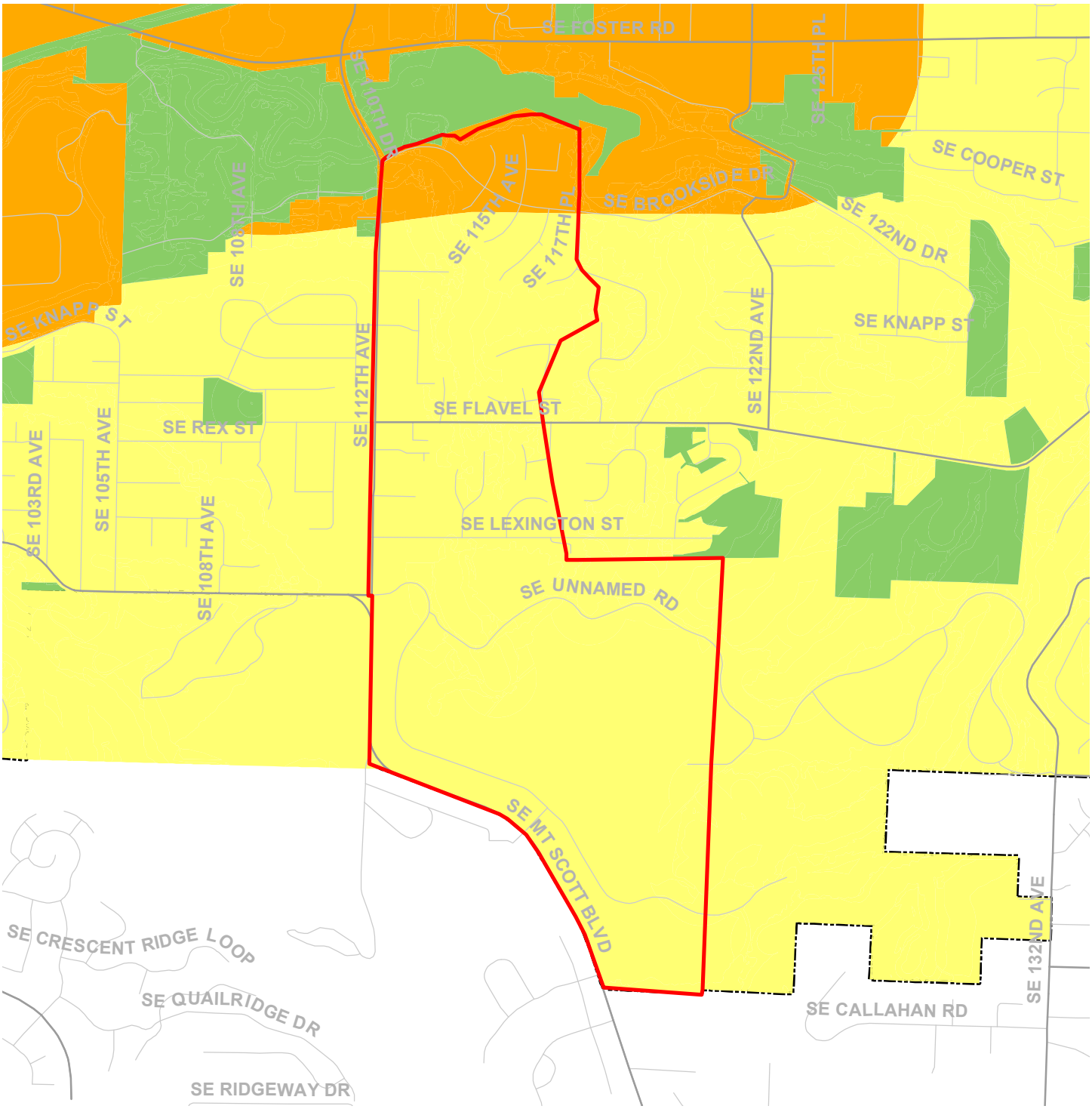

Map F: Urban Development Value (Title 13)

Resource Site: BL4

Updated: June 2020

NORTH

0 750 1,500 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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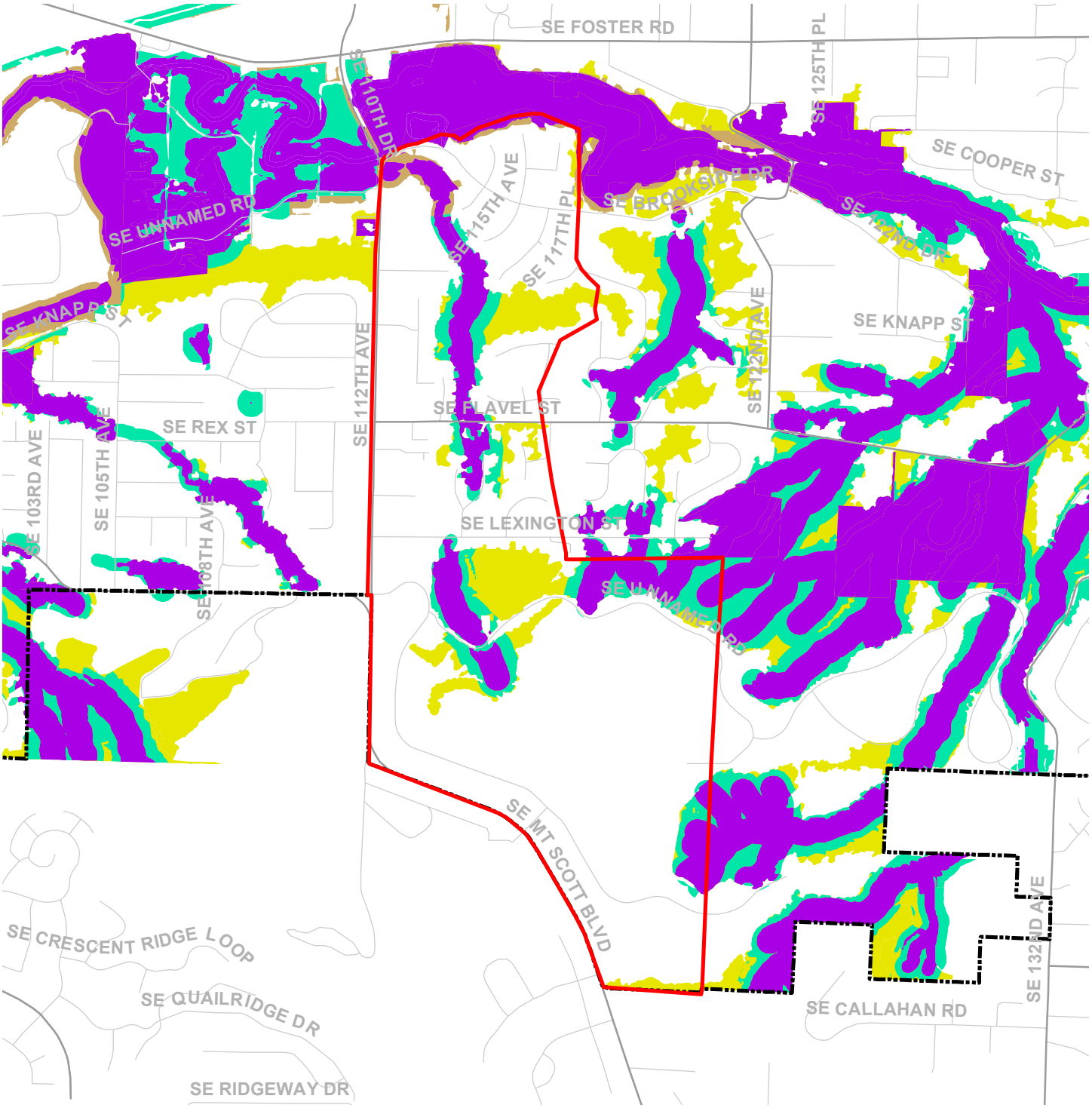
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL4

Updated: June 2020

NORTH

0 750 1,500 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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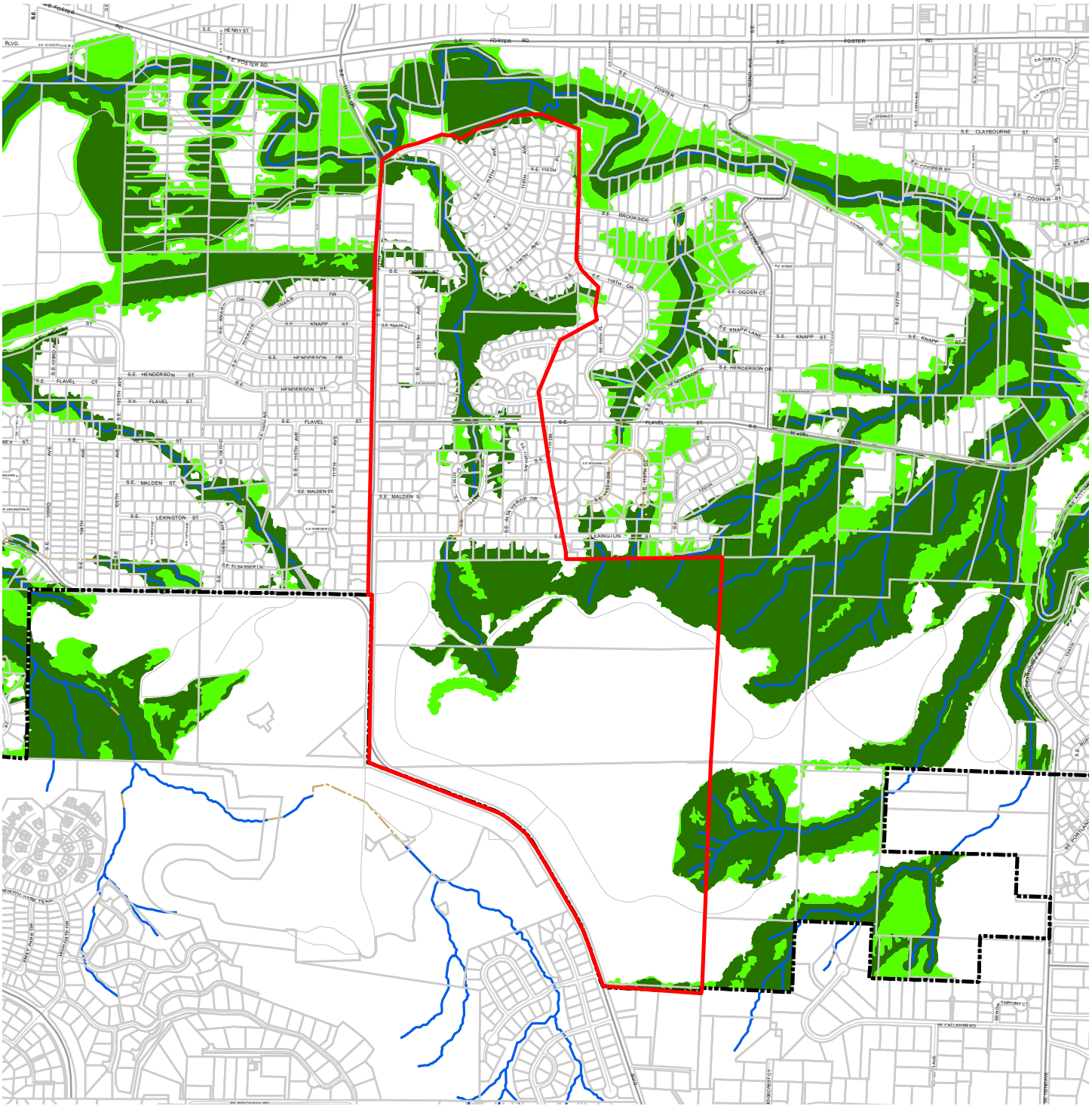

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL4

Updated: June 2020

NORTH

0 600 1,200 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL4 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; flood area; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: Brookside Wetland (W, M, C)

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL4**
	Study Area
Stream (Miles)	1.0
Wetlands (acres)	0.4
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	51.9
Woodland (acres)	20.2
Shrubland (acres)	0.2
Herbaceous (acres)	92.8
Flood Area*	
Vegetated (acres)	0.1
Non-vegetated (acres)	0.1
Steep Slopes (acres)**	82.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located just east of SE 112th Ave and is bounded by Brookside Natural Area (see JC15) to the north and the City of Portland boundary to the south. The creek has its headwaters near Willamette National Cemetery. It flows north through residential development and privately-owned

open space tracks until it enters a culvert under Brookside Drive before entering Johnson Creek at the west end of the Brookside Natural Area. The culvert is perched above Johnson Creek during most flow events, creating a fish passage barrier.

The natural resources in the watershed include Frog Creek, its tributaries, habitat areas, and forested upland areas. Most of Frog Creek flows in an area characterized by steep slopes of 25% or higher.

Special status bird species observed within or adjacent to this resource site include Bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, bufflehead, bushtit, common yellowthroat, downy woodpecker, great blue heron, green heron, hooded merganser, Hutton's vireo, Nashville warbler, orange-crowned warbler, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, red crossbill, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, willow flycatcher, Wilson's warbler, wood duck, and yellow warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL4				
Resource Site (acres) = 260				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	24.8	15.6	37.1	77.5
percent total inventory site area	9.5%	6.0%	14.3%	29.8%
Wildlife Habitat*				
acres	27.5	1.1	26.8	55.4
percent total inventory site area	10.6%	0.4%	10.3%	21.3%
Special Habitat Areas**				
acres	1.1			
percent total inventory site area	0.4%			
Combined Total+				
acres	39.2	10.3	28.6	78.0
percent total inventory site area	15.1%	3.9%	11.0%	30.0%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL4, 6% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL4

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
260	30	15	6%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL4, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL4, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank extending or wetlands and extending to 100 feet of streams or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands and on steep slopes areas of forest or woodland vegetation that are contiguous to but more than 100 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL5 **Resource Site Name:** Cedar Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30e

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

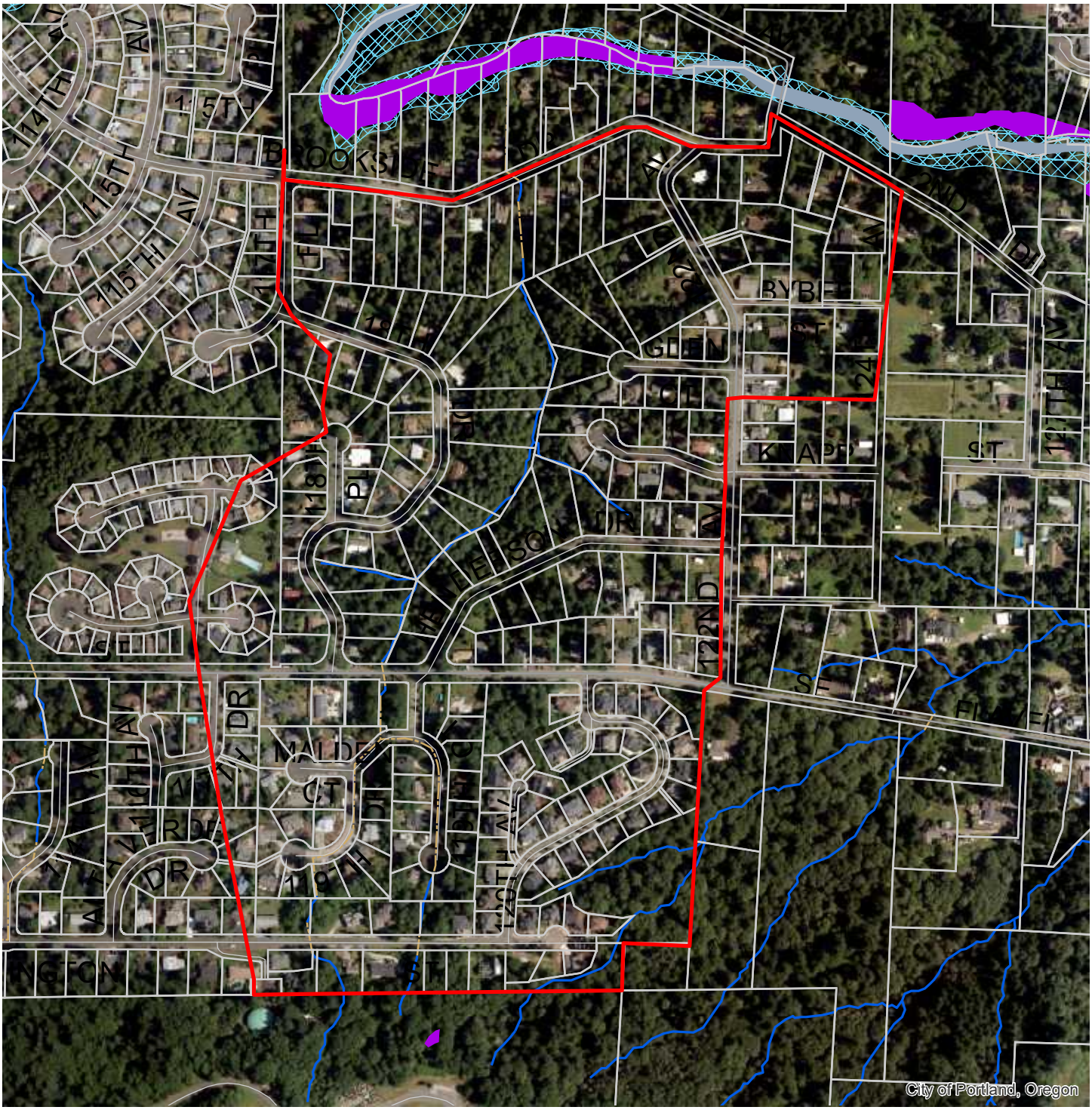
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL5 includes the following base zones (acres):

OS	0.0
R10	103.5



Map A: Water Features

Resource Site: BL5

Updated: June 2020

NORTH

0 245 490 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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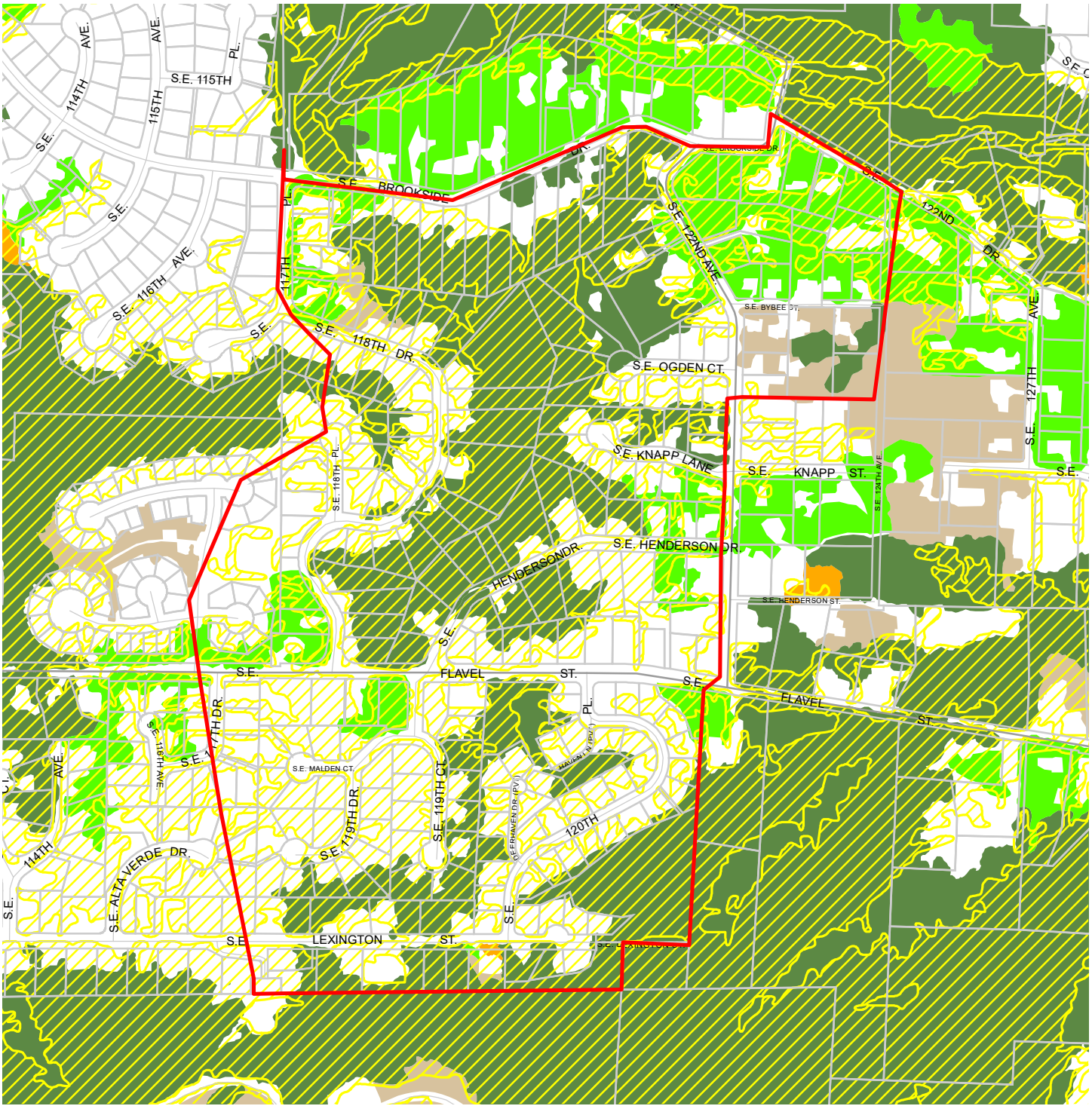

Map B: Vegetation and Steep Slopes

Resource Site: BL5

Updated: June 2020

NORTH

0 245 490 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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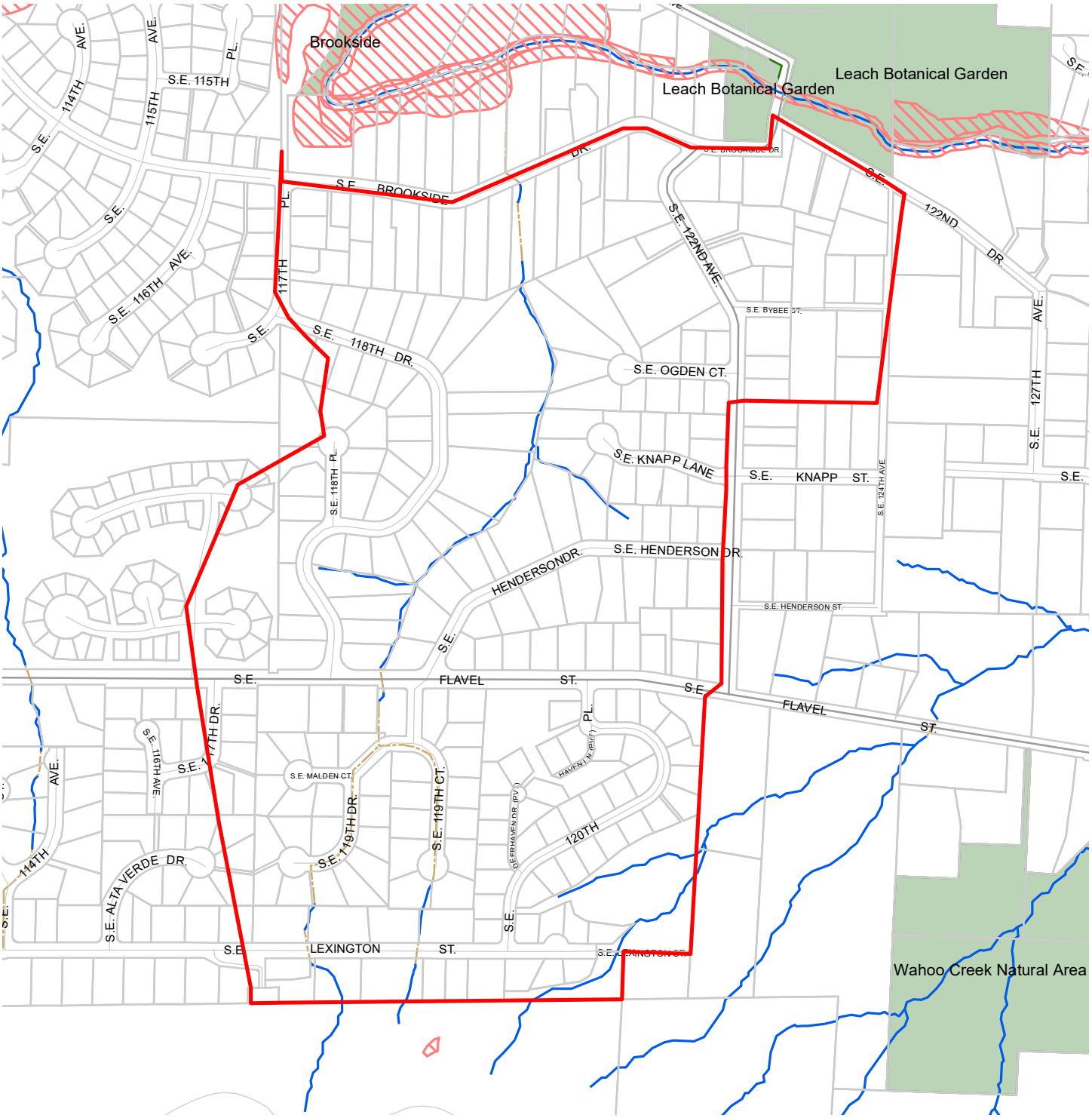

Map C: Special Habitat Areas

Resource Site: BL5

Updated: June 2020

NORTH

0 262.5 525 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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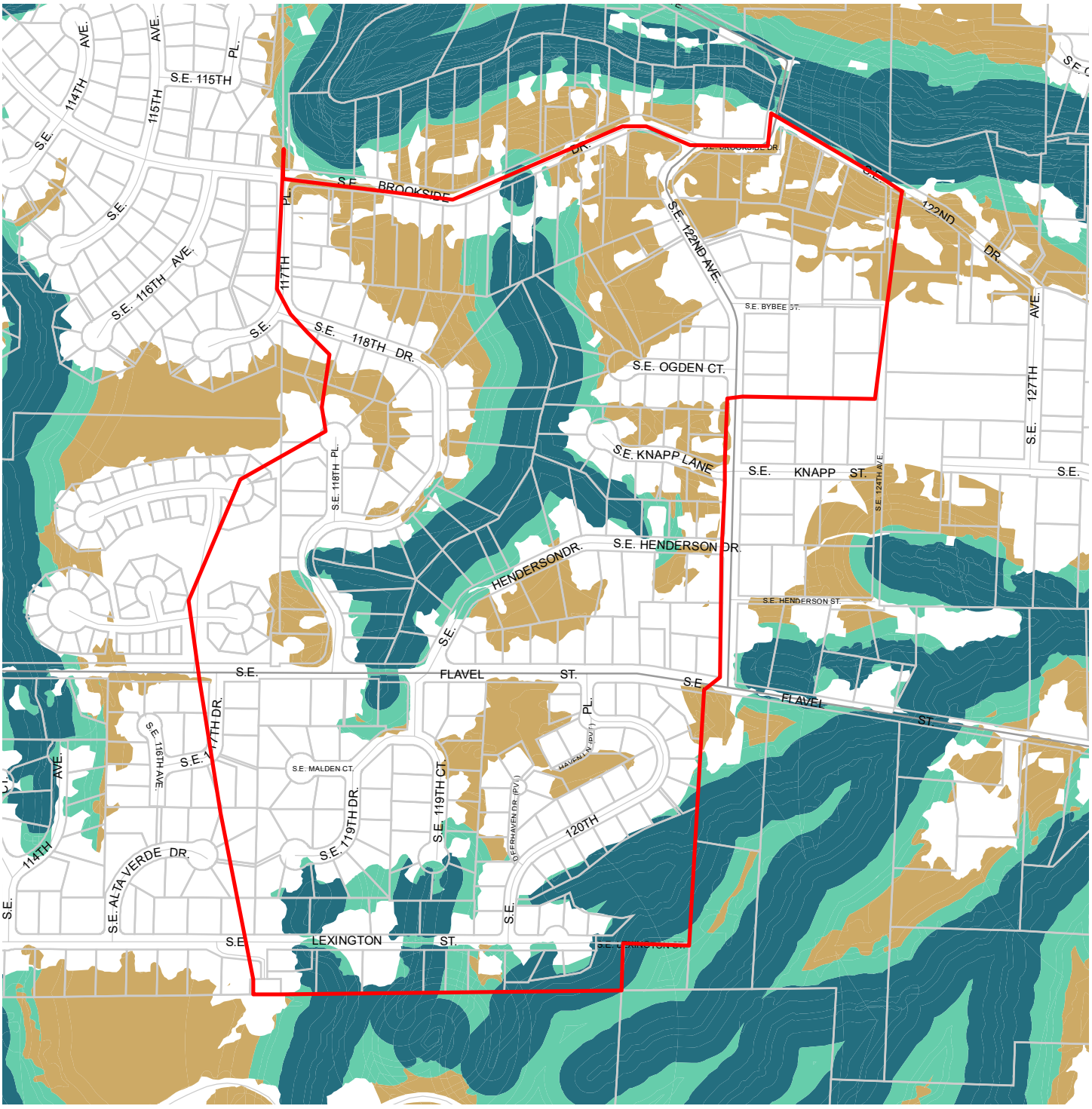

Map D: Riparian Corridors Habitat Classification

Resource Site: BL5

Updated: June 2020

NORTH

0 245 490 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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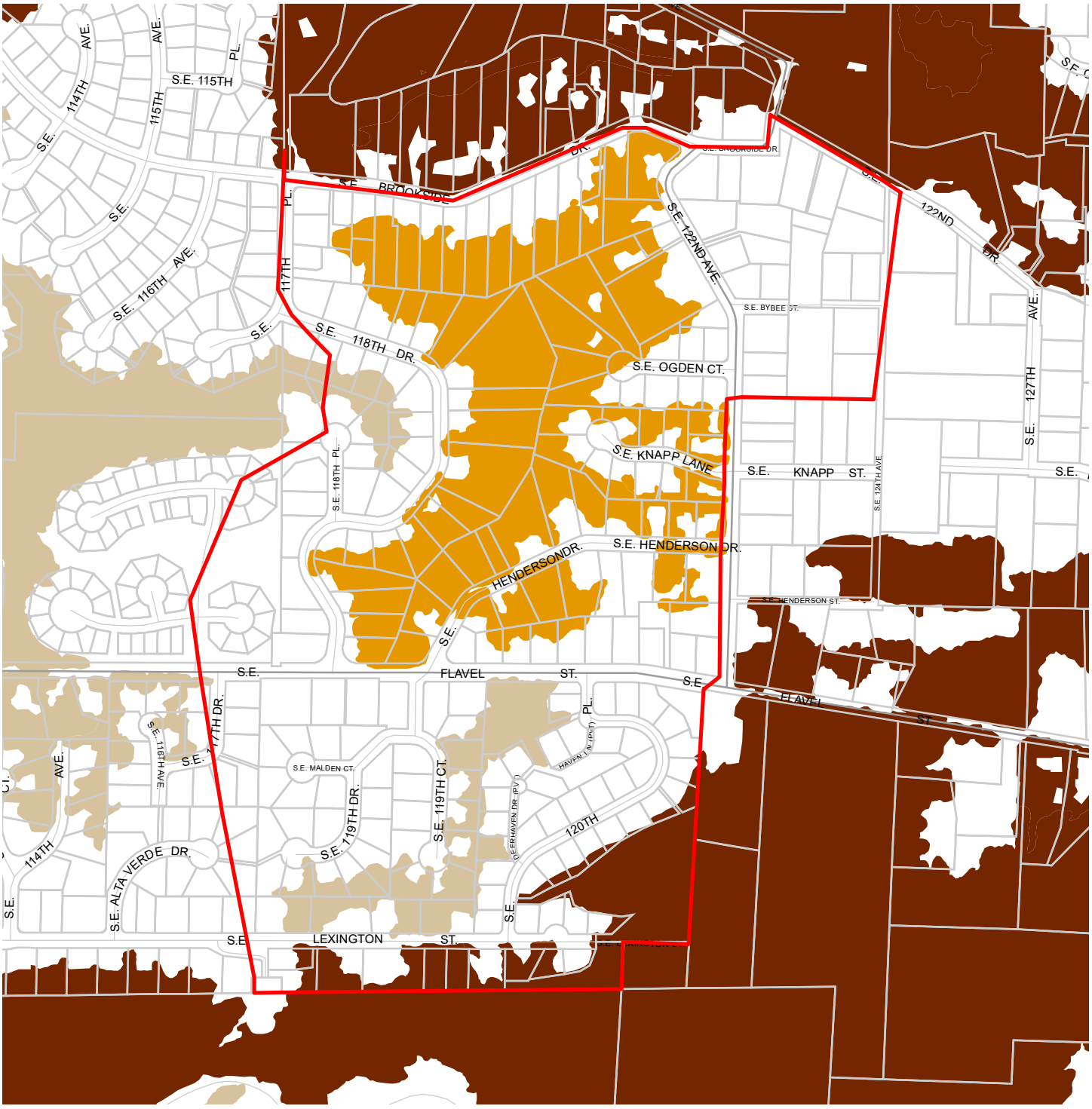

Map E: Wildlife Habitat Classification

Resource Site: BL5

Updated: June 2020

NORTH

0 200 400 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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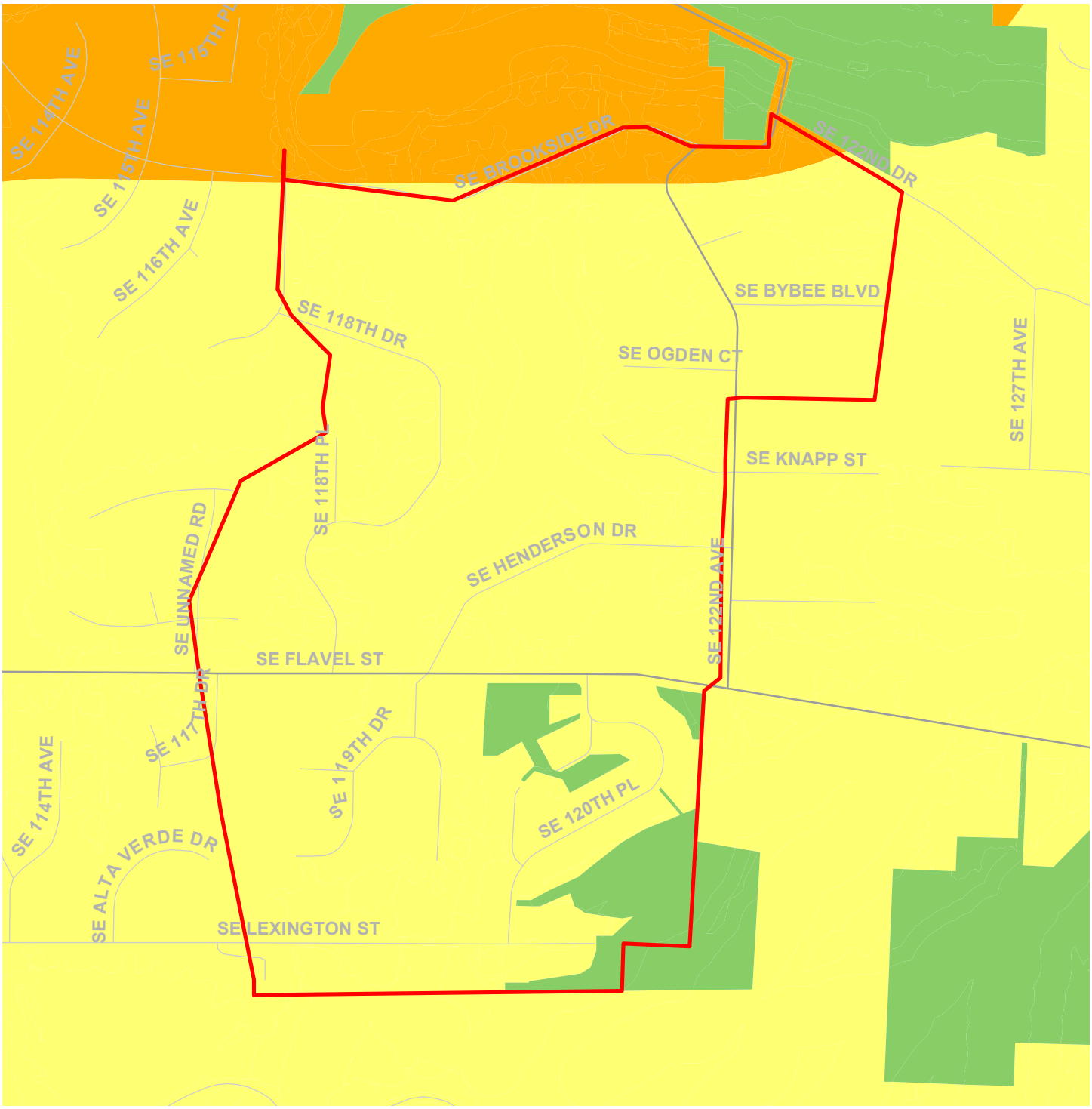

Map F: Urban Development Value (Title 13)

Resource Site: BL5

Updated: June 2020

NORTH

0 335 670 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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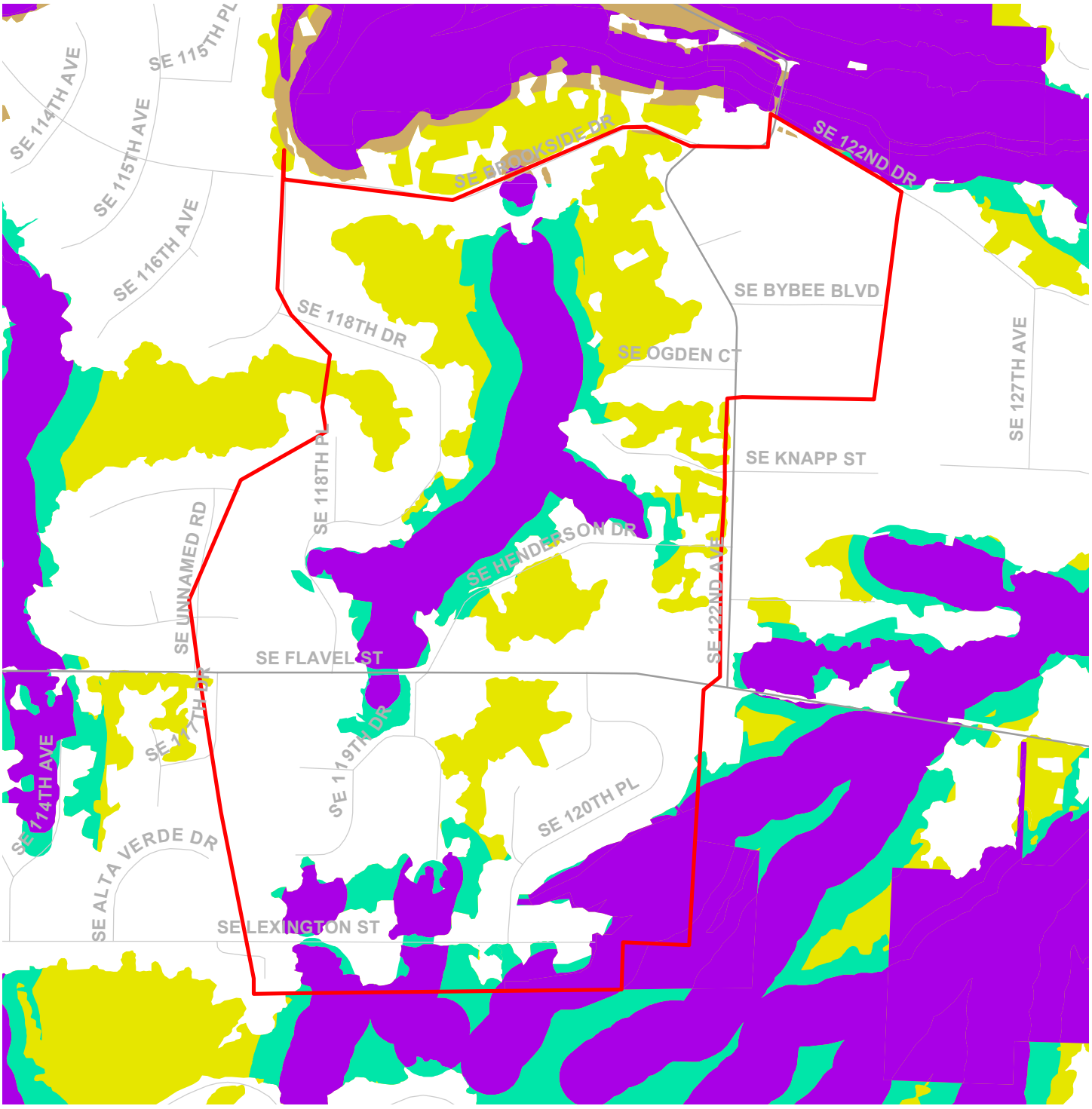

Map F: Urban Development Value (Title 13)

Resource Site: BL5

Updated: June 2020

NORTH

0 335 670 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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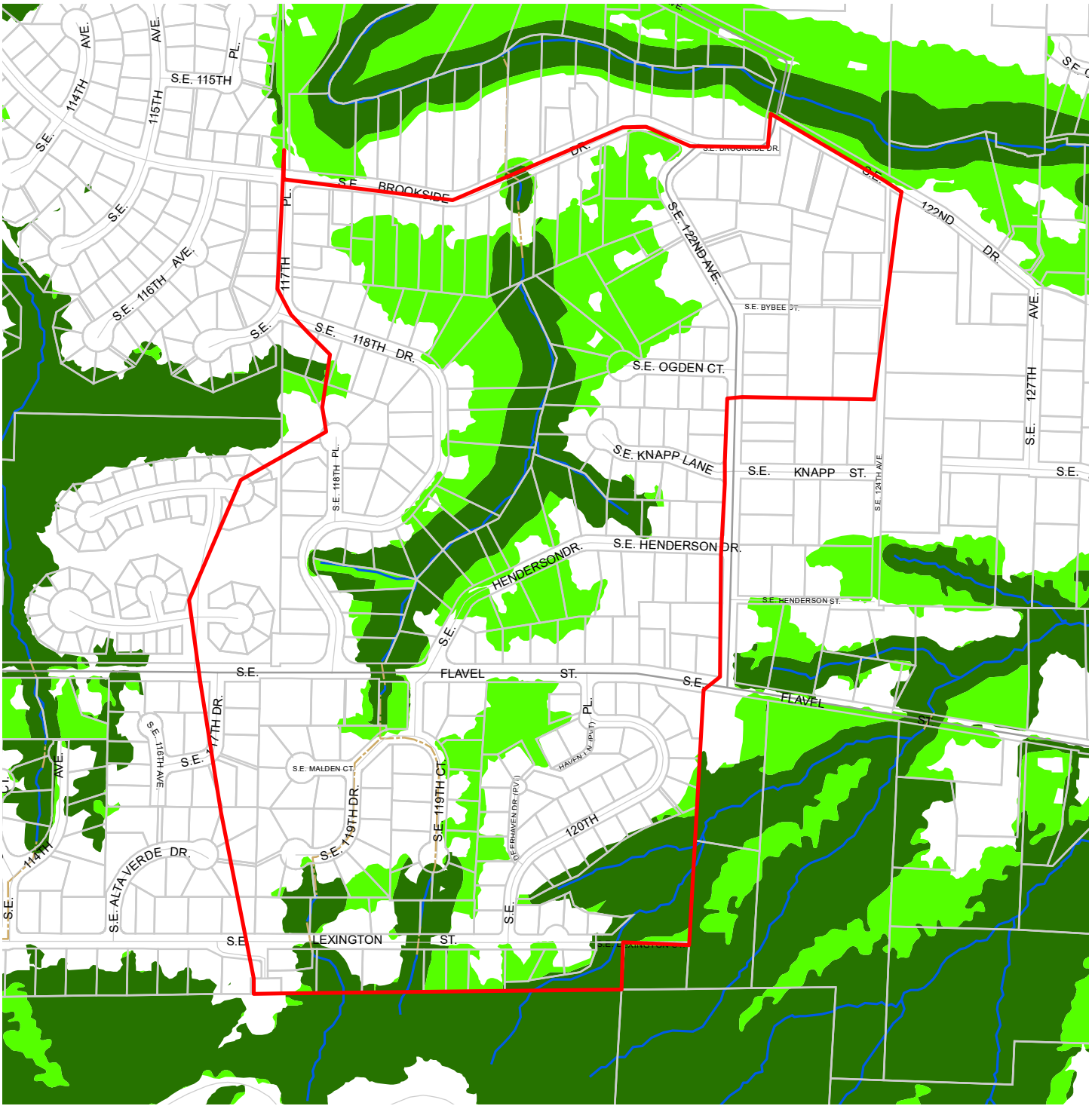

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL5

Updated: June 2020

NORTH

0 265 530 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL5 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL5**
	Study Area
Stream (Miles)	0.8
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	37.9
Woodland (acres)	11.8
Shrubland (acres)	0.1
Herbaceous (acres)	2.3
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	66.5
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located generally between SE 118th Drive and 122nd Ave, between Brookside Drive and the Lexington Street. Land uses are primarily single family residential, with low densities and large lots in the northern part of the resource site and residential subdivisions in the south.

Portions of the creek are piped under residential subdivisions between the southern headwaters and the forested are, which cover the middle and northern portions. Cedar Creek reenters a pipe at the north under Brookside Drive and flows into Johnson Creek at the Leach Botanical Garden (JC16). The resources in the watershed include Cedar Creek and its tributaries, habitat areas, and forested upland areas.

Special status bird species observed within or adjacent to this resource site include bald eagle, black-throated gray warbler, brown creeper, bushtit, downy woodpecker, great blue heron, green heron, hermit warbler, hooded merganser, Hutton's vireo, merlin, orange-crowned warbler, pacific-slope flycatcher, pacific wren, peregrine falcon, pileated woodpecker, purple finch, red crossbill, rufous hummingbird, Swainson's thrush, varied thrush, western wood-pewee, white-breasted nuthatch, and yellow warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL5

Resource Site (acres) = 104

	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	16.7	8.1	21.0	45.8
percent total inventory site area	16.1%	7.8%	20.3%	44.2%
Wildlife Habitat*				
acres	6.1	25.5	6.0	37.6
percent total inventory site area	5.9%	24.6%	5.8%	36.3%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	17.5	18.7	9.9	46.1
percent total inventory site area	16.9%	18.1%	9.5%	44.5%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much

of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL5, 10% of the total area is effectively impervious, indicating a critical level of vulnerability, with negative impacts beginning to impact natural functions, but natural processes are still in place and providing support to biologic systems.

Table C. Impervious Area within Resource Site BL5

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
104	21	11	10%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL5, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL5, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank and land within 40 feet of stream top-of-bank.
2. Apply a protection overlay zone (p zone) to wetlands and land within 40 feet of wetlands.
3. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank extending to 100 feet of streams.
4. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank and on steep slopes areas of forest or woodland vegetation that are contiguous to but more than 100 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL6 **Resource Site Name:** Wahoo Creek Natural Area

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30f

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

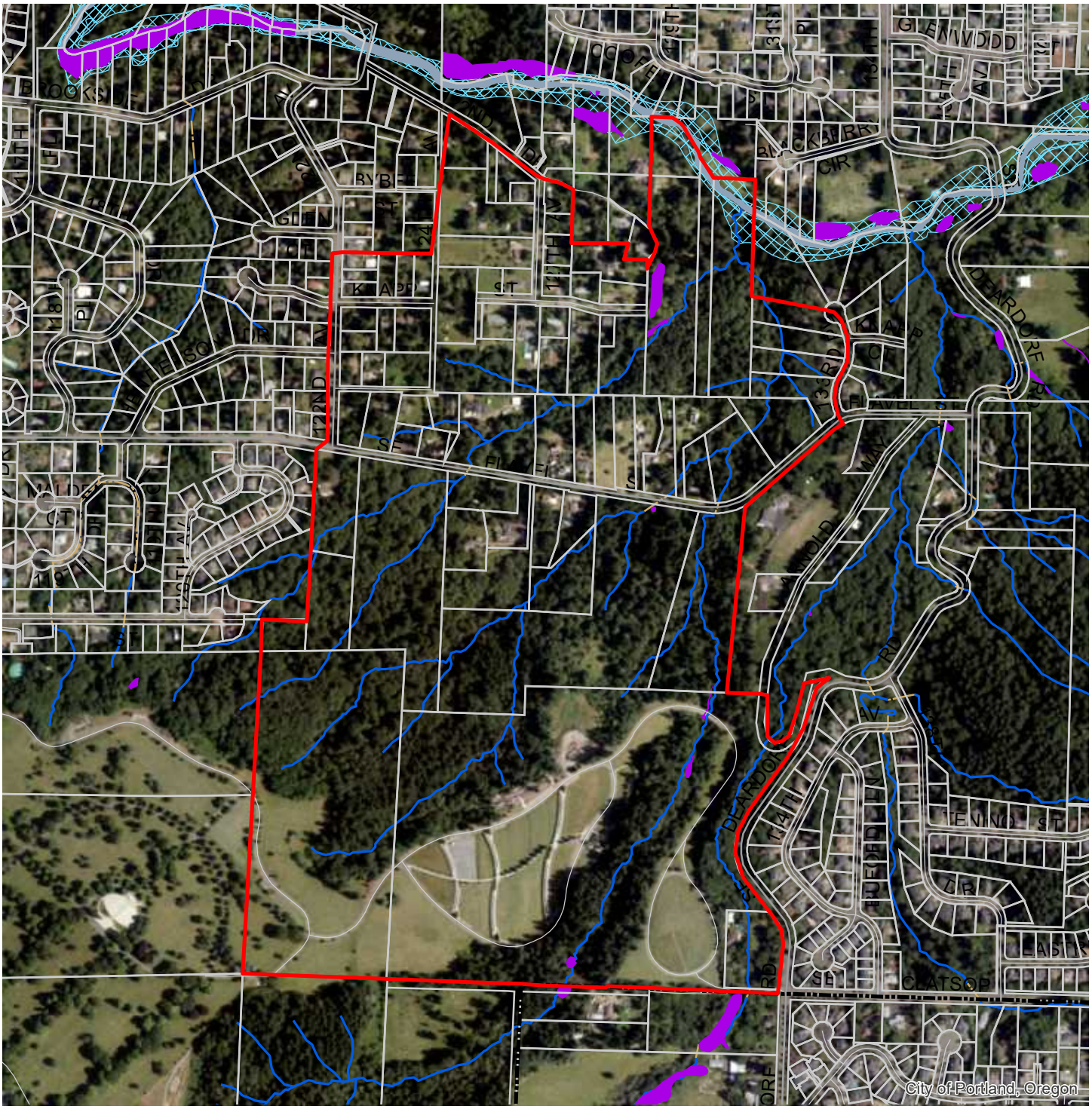
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL6 includes the following base zones (acres):

OS	119.6
R10	86.3



Map A: Water Features

Resource Site: BL6

Updated: June 2020

NORTH

0 362.5 725 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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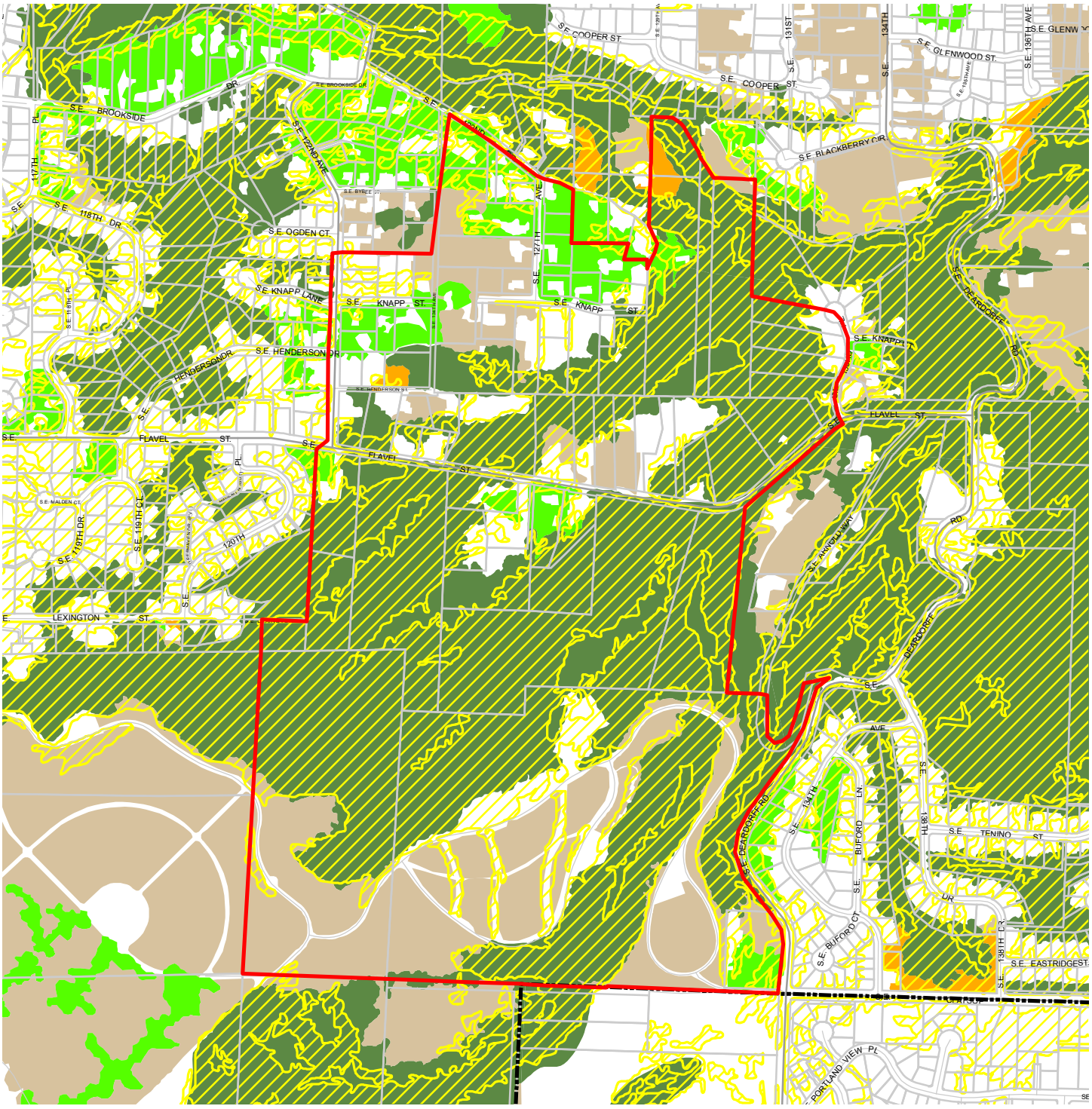

Map B: Vegetation and Steep Slopes

Resource Site: BL6

Updated: June 2020

NORTH

0 362.5 725 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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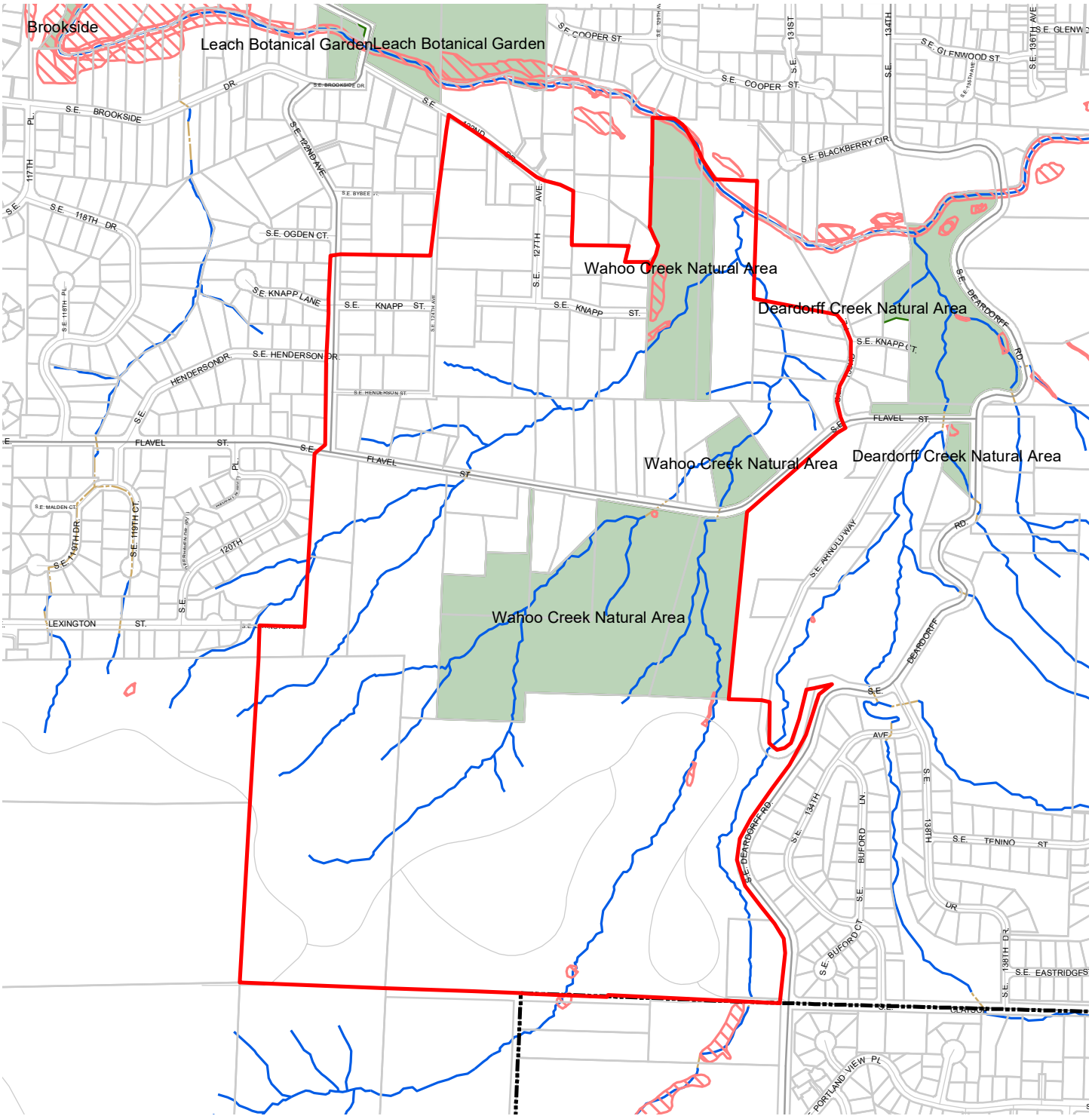
June 2020



Map C: Special Habitat Areas

Resource Site: BL6

Updated: June 2020

NORTH

0 390 780 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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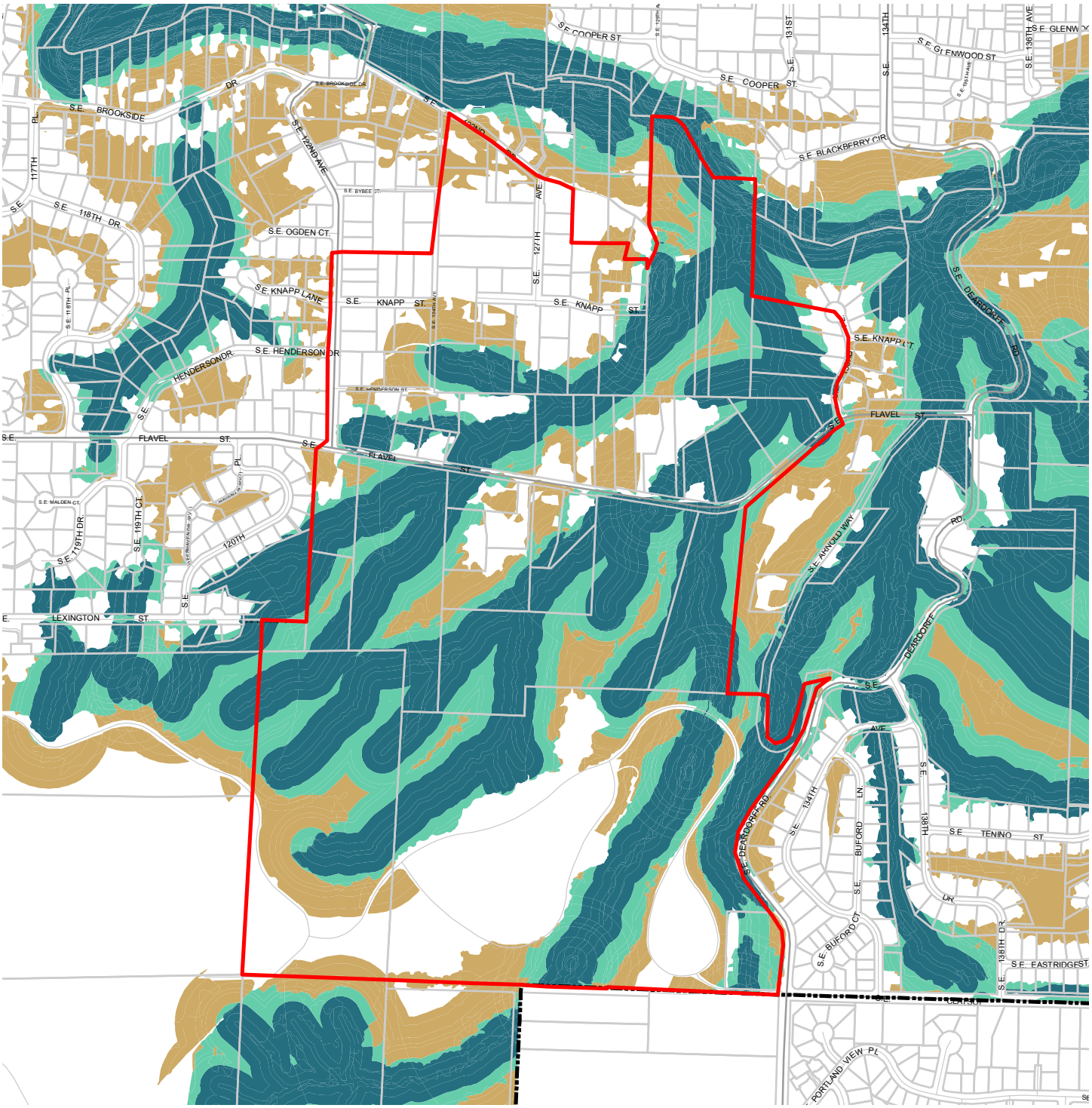
June 2020



Map D: Riparian Corridors Habitat Classification

Resource Site: BL6

Updated: June 2020

NORTH

0 362.5 725 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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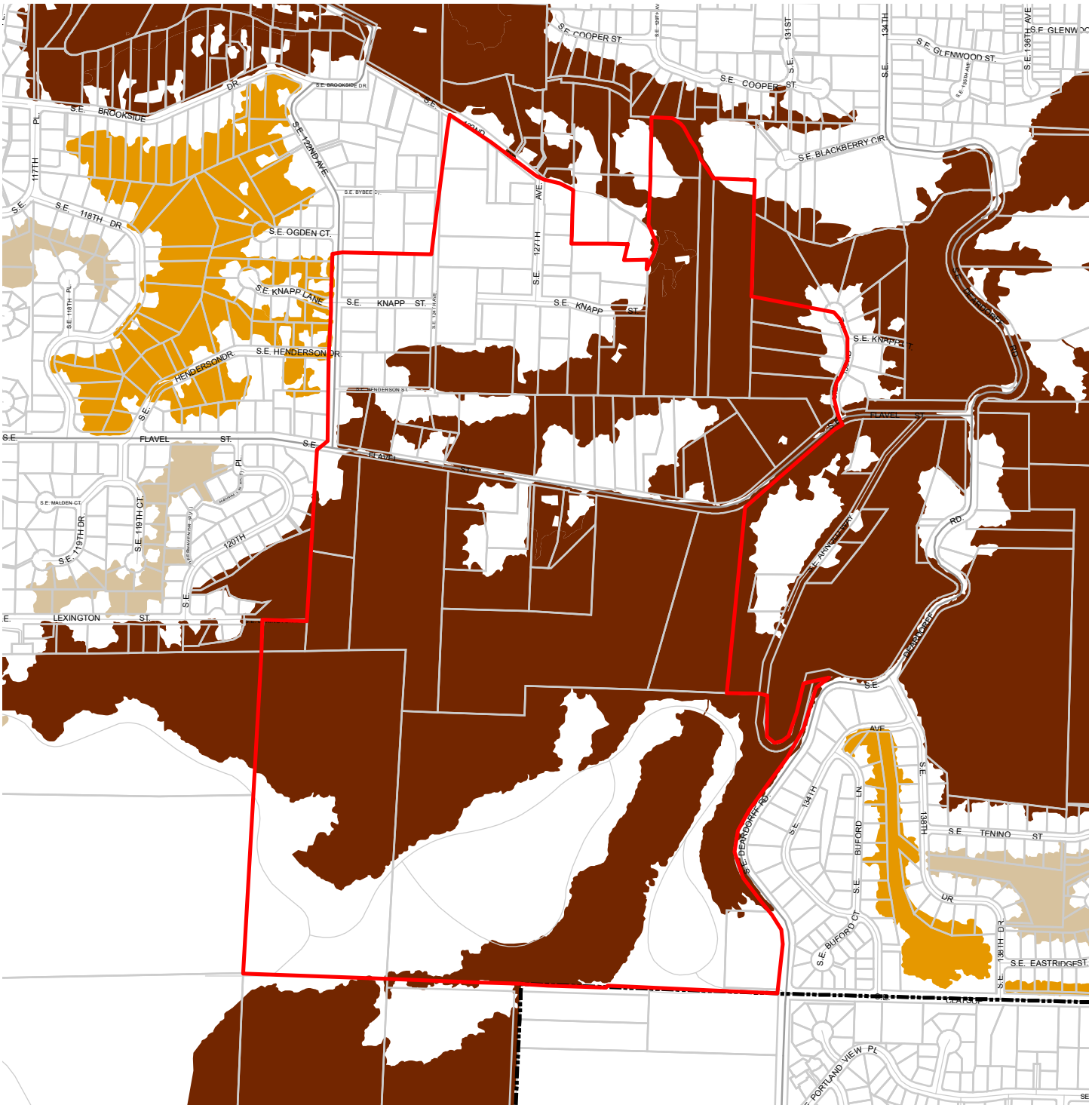
City of Portland, Oregon

June 2020



Map E: Wildlife Habitat Classification

Resource Site: BL6

Updated: June 2020

NORTH

0 295 590 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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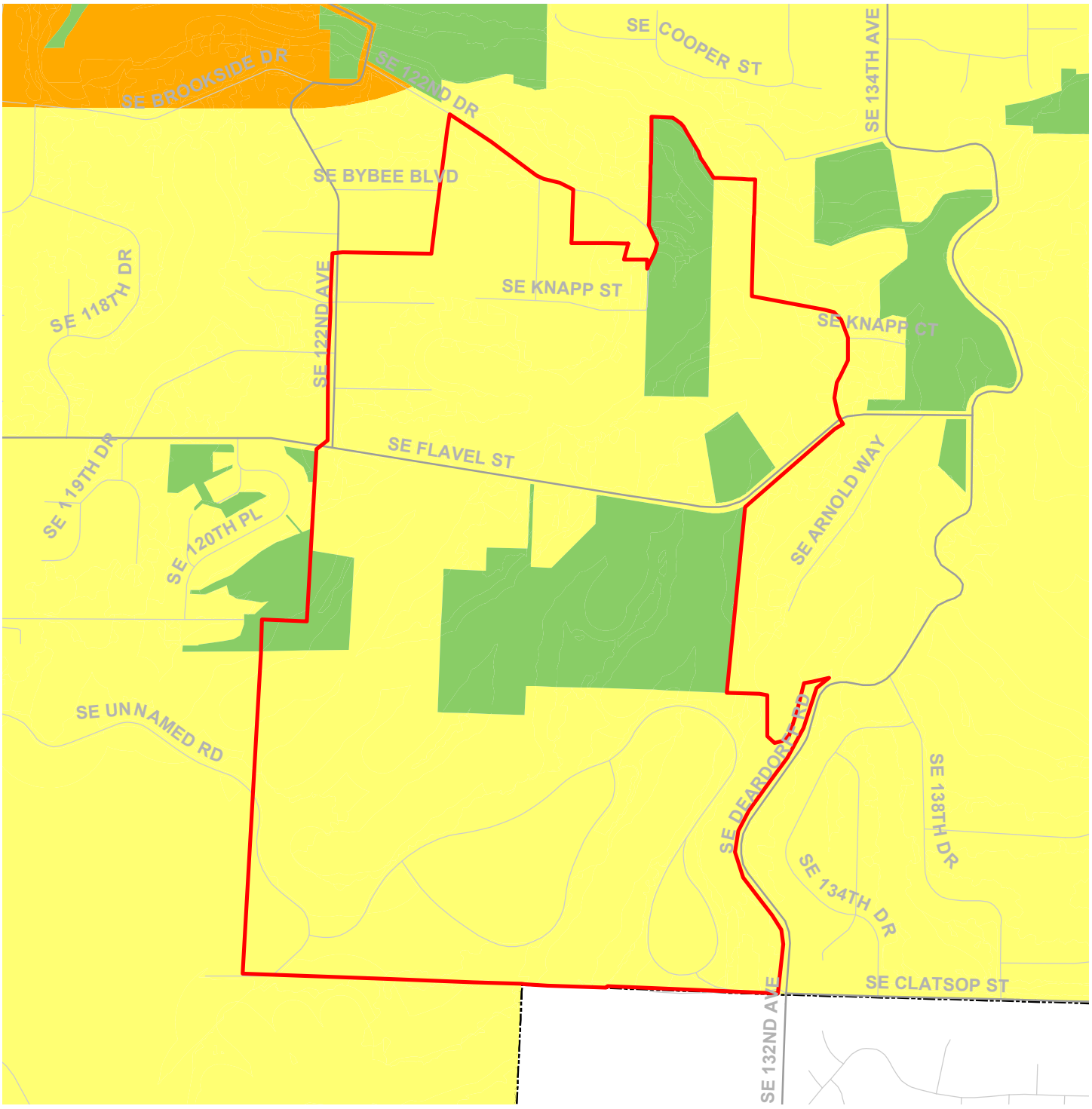
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL6

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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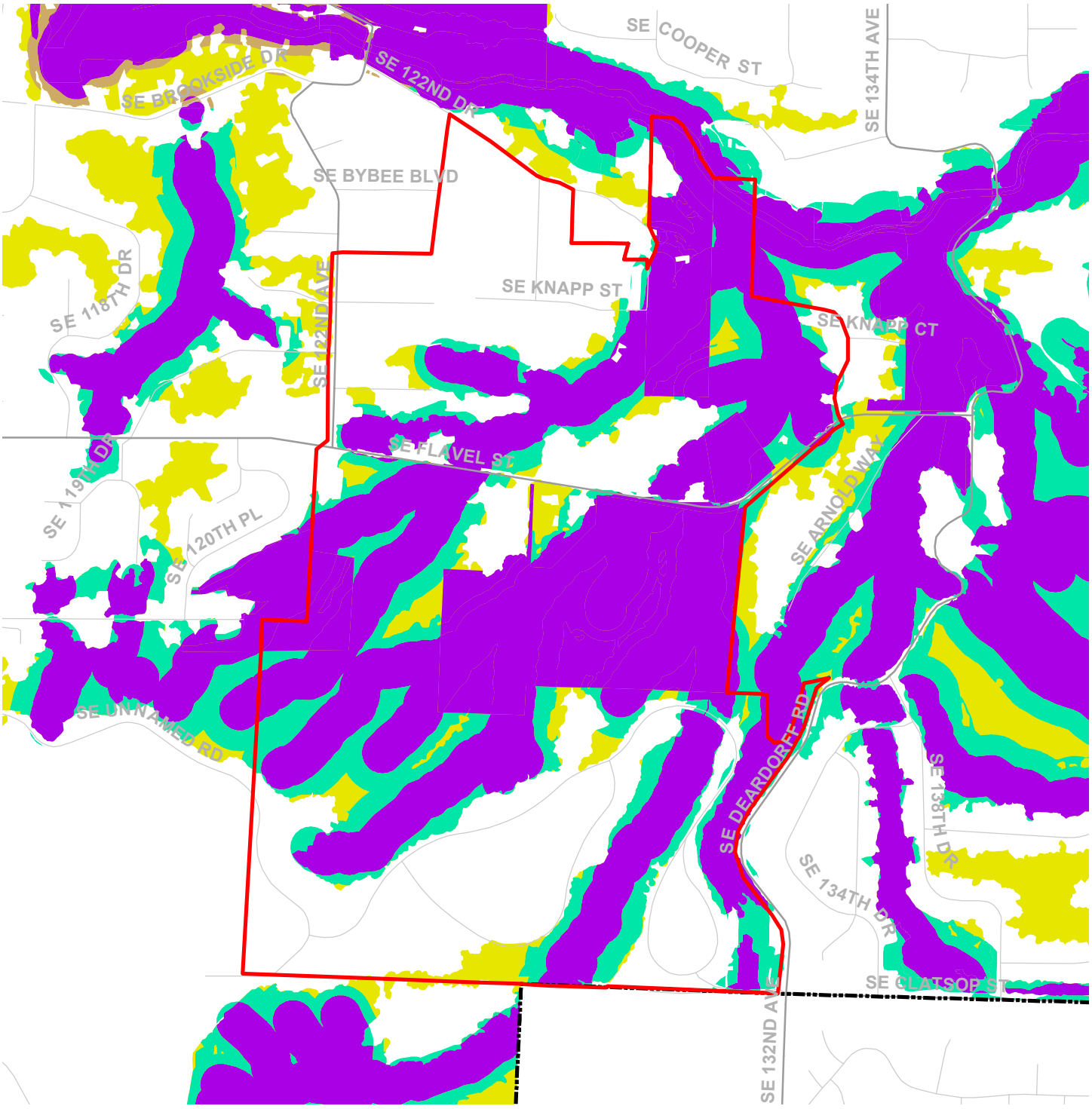
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL6

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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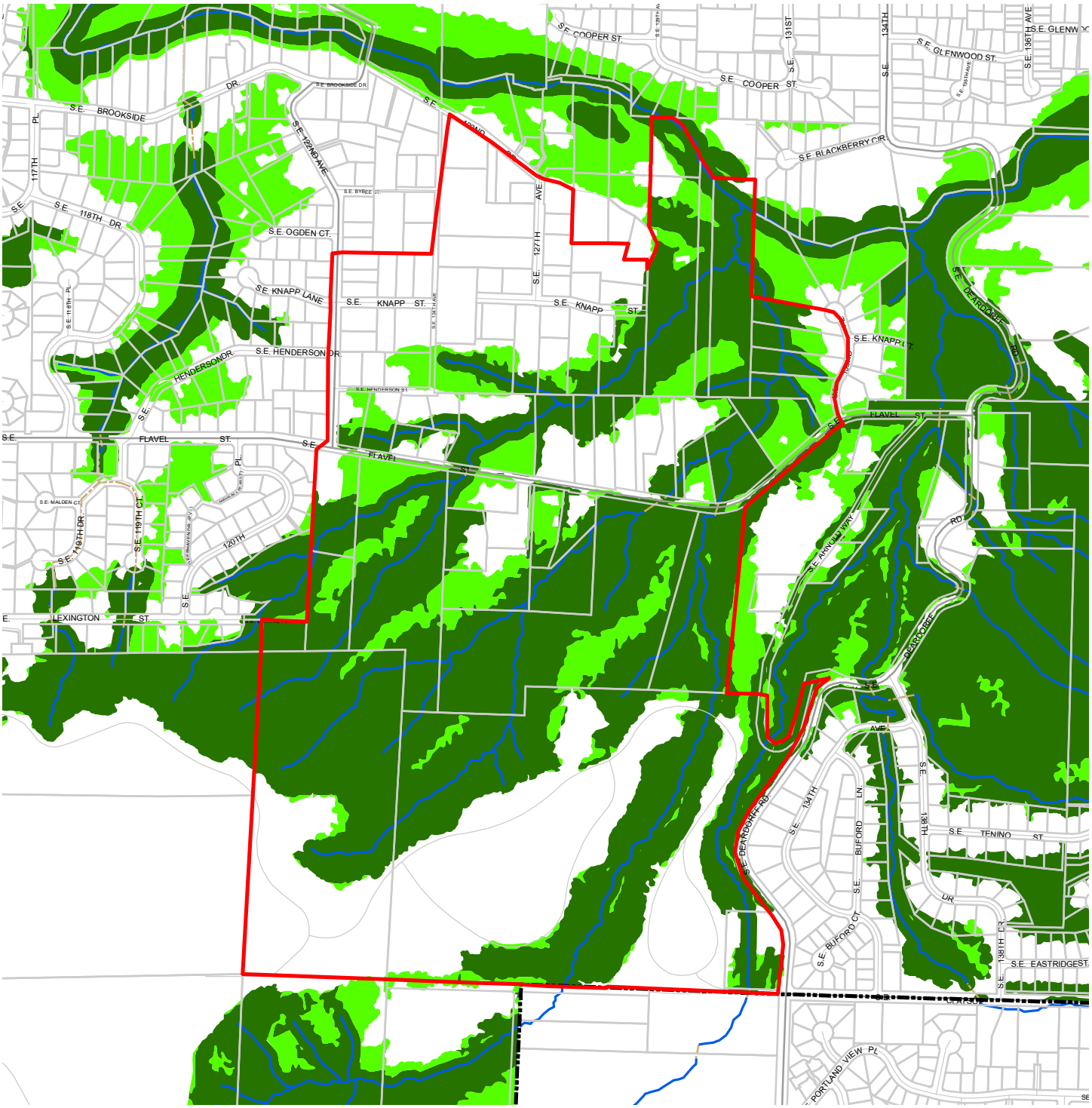

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL6

Updated: June 2020

NORTH

0 400 800 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL6 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; flood area; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: Johnson Creek (S, C)

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site BL6	
	Study Area
Stream (Miles)	3.8
Wetlands (acres)	0.5
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	123.5
Woodland (acres)	12.7
Shrubland (acres)	1.0
Herbaceous (acres)	38.3
Flood Area*	
Vegetated (acres)	1.7
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	118.3
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located on the northeast slope of Mt. Scott. The northern portion borders resource sites JC16, JC17 and JC18, as described in the Johnson Creek Background Report. The southern border is roughly along Clatsop Street. The Wahoo Creek Natural Are covers a significant portion of the site, south

of Flavel Street, which bisects the site east and west. The southern portion of the site includes a portion of the Willamette National Cemetery. The rest of the site is comprised of low-density, single family residential development.

The natural resources within the resource site include two forks and numerous tributaries of Wahoo Creek, which is a tributary to Deardorff Creek. Wahoo Creek has relatively intact riparian and upland cover. The resource site also includes scrubland habitats and forested upland areas. Most of Wahoo Creek and its tributaries flow through areas characterized by steep slopes of 25% or higher.

Beaver have been observed in this resource site. Special status bird species observed within or adjacent to this resource site include band-tailed pigeon, black-throated gray warbler, brown creeper, bushtit, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pileated woodpecker, purple finch, Swainson's thrush, and western wood-pewee.

Table B: Quality of Natural Resource Functions in Resource Site BL6

Resource Site (acres) = 206				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	81.0	36.8	30.4	148.3
percent total inventory site area	39.3%	17.9%	14.8%	72.0%
Wildlife Habitat*				
acres	125.2	0.1	0.0	125.3
percent total inventory site area	60.8%	0.1%	0.0%	60.9%
Special Habitat Areas**				
acres	0.4			
percent total inventory site area	0.2%			
Combined Total+				
acres	125.9	3.7	18.7	148.4
percent total inventory site area	61.2%	1.8%	9.1%	72.1%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL6, 2.2% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL6

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
205.9	7.0	4.5	2.2%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas;

generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL6, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL6, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL7 **Resource Site Name:** Deardorff Creek Headwaters

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30g

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

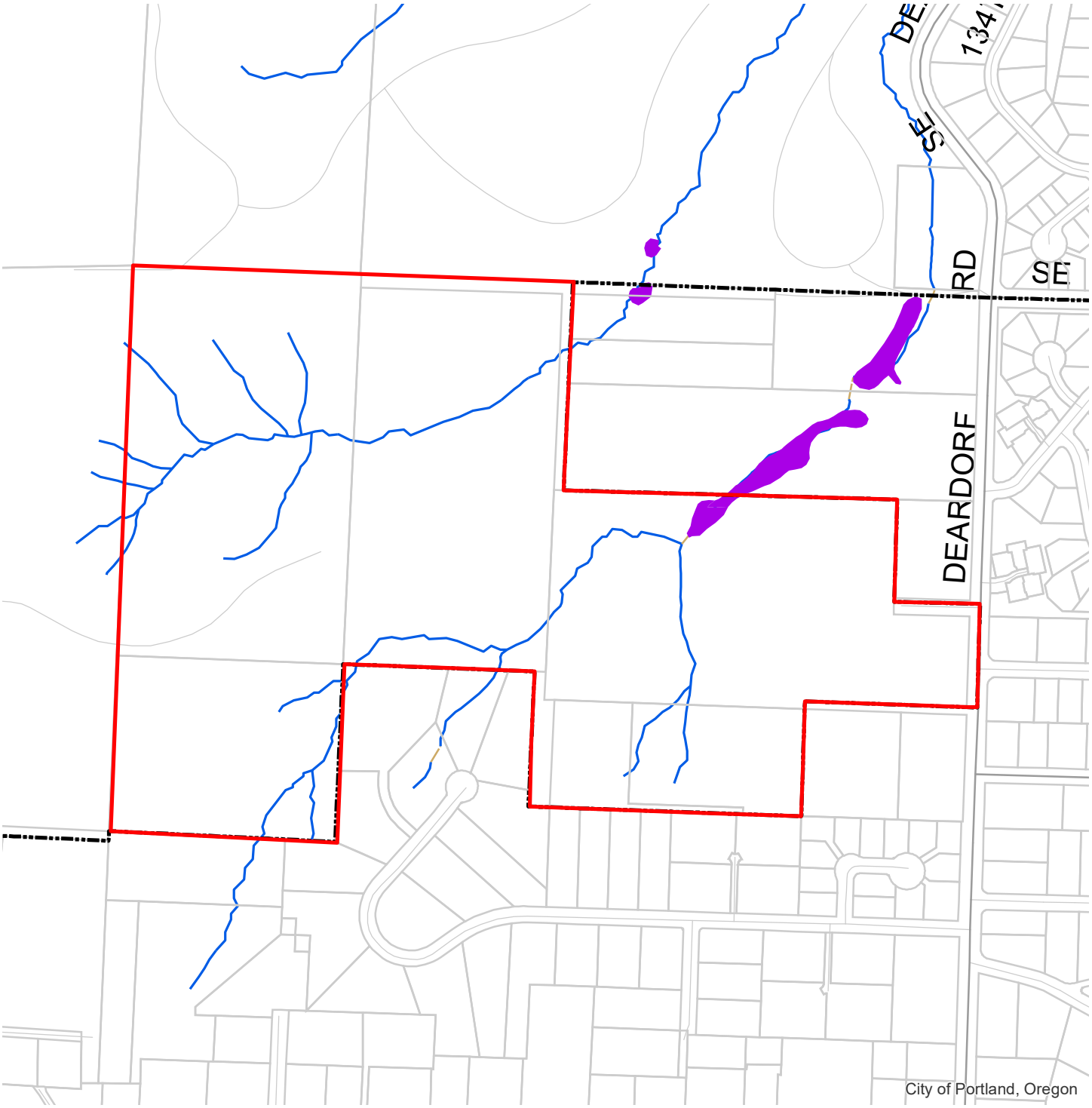
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL7 includes the following base zones (acres):

OS	27.9
R10	41.7



Map A: Water Features
Resource Site: BL7

Updated: June 2020

NORTH

0 230 460 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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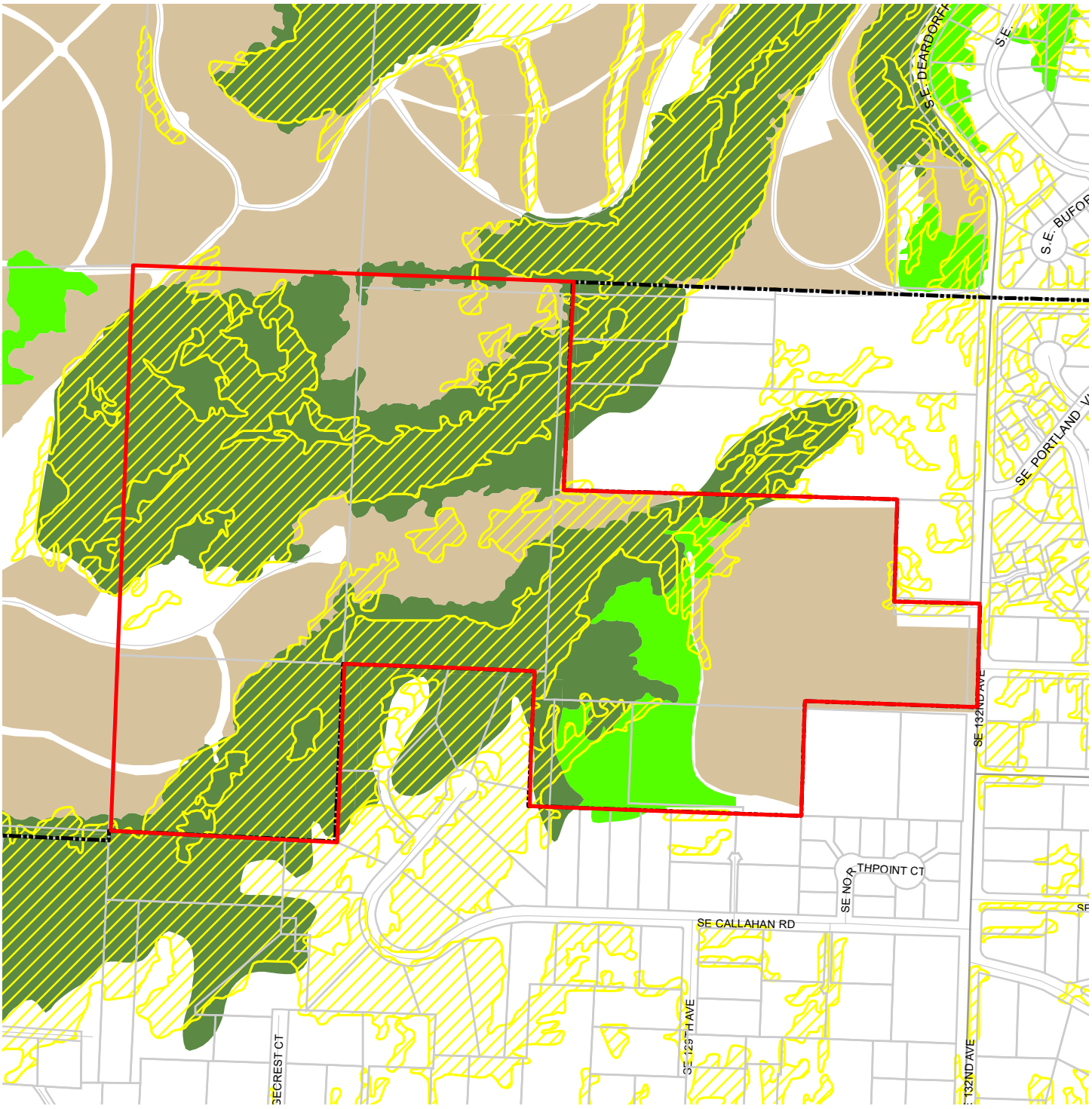


Map B: Vegetation and Steep Slopes

Resource Site: BL7

Updated: June 2020

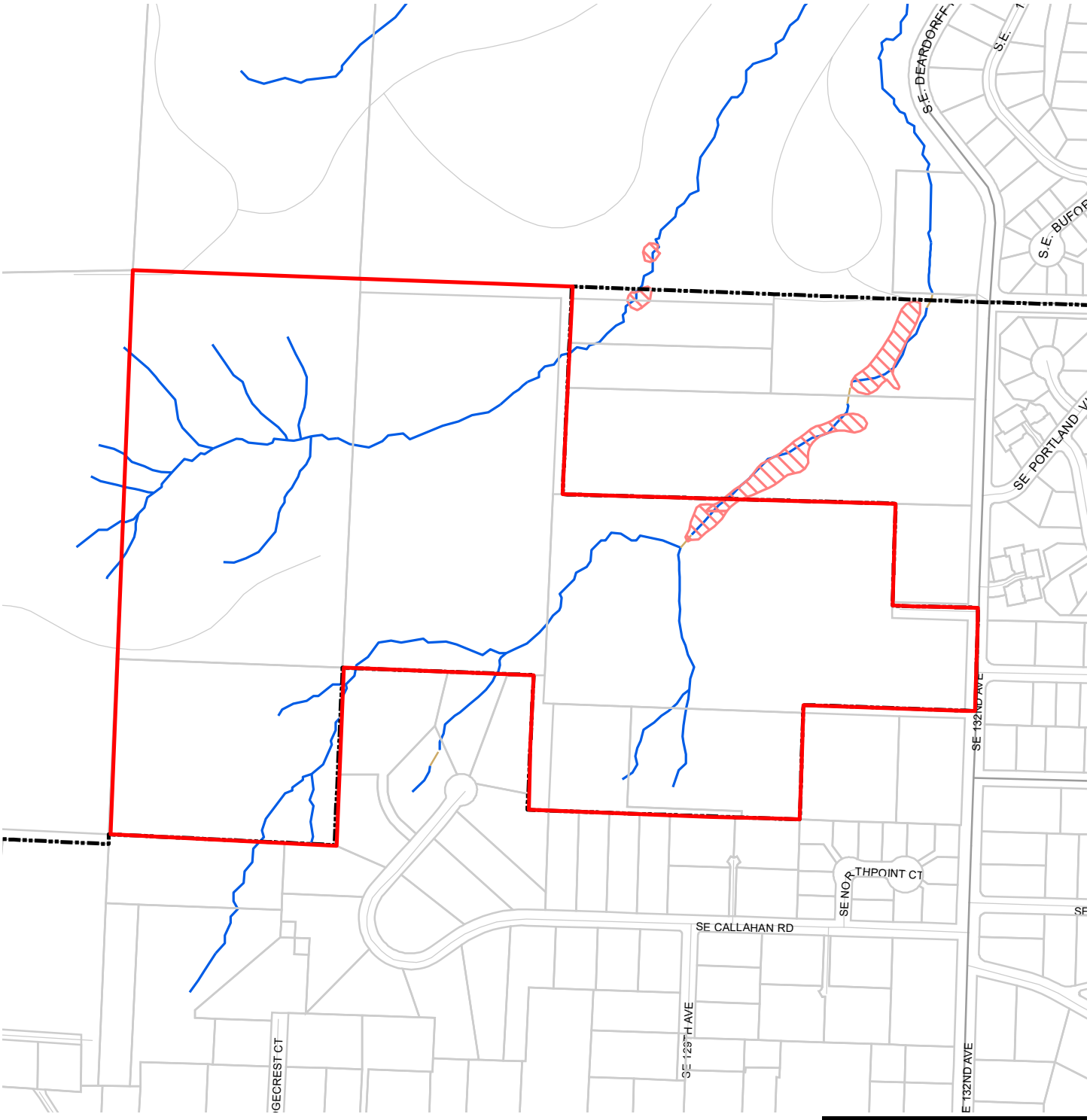
NORTH

0 230 460 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

June 2020



Map C: Special Habitat Areas

Resource Site: BL7

Updated: June 2020

NORTH

0 250 500 Feet

Proposed Draft

Resource Sites

Special Habitat Areas (SHAs)

open stream channel

piped stream segment

parks

schools

Taxlots

City of Portland

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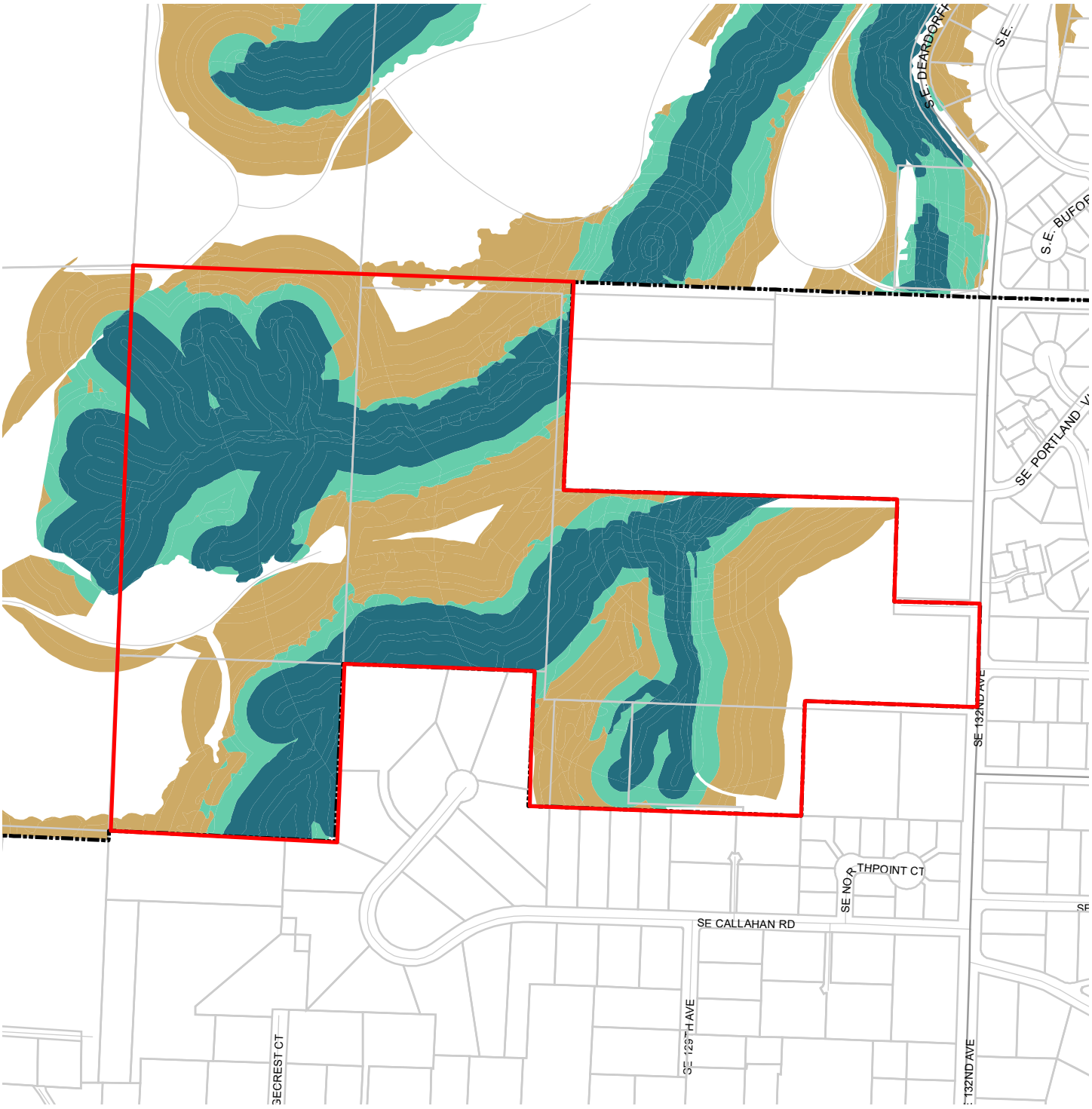
June 2020



Map D: Riparian Corridors Habitat Classification

Resource Site: BL7

Updated: June 2020

NORTH

0 230 460 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

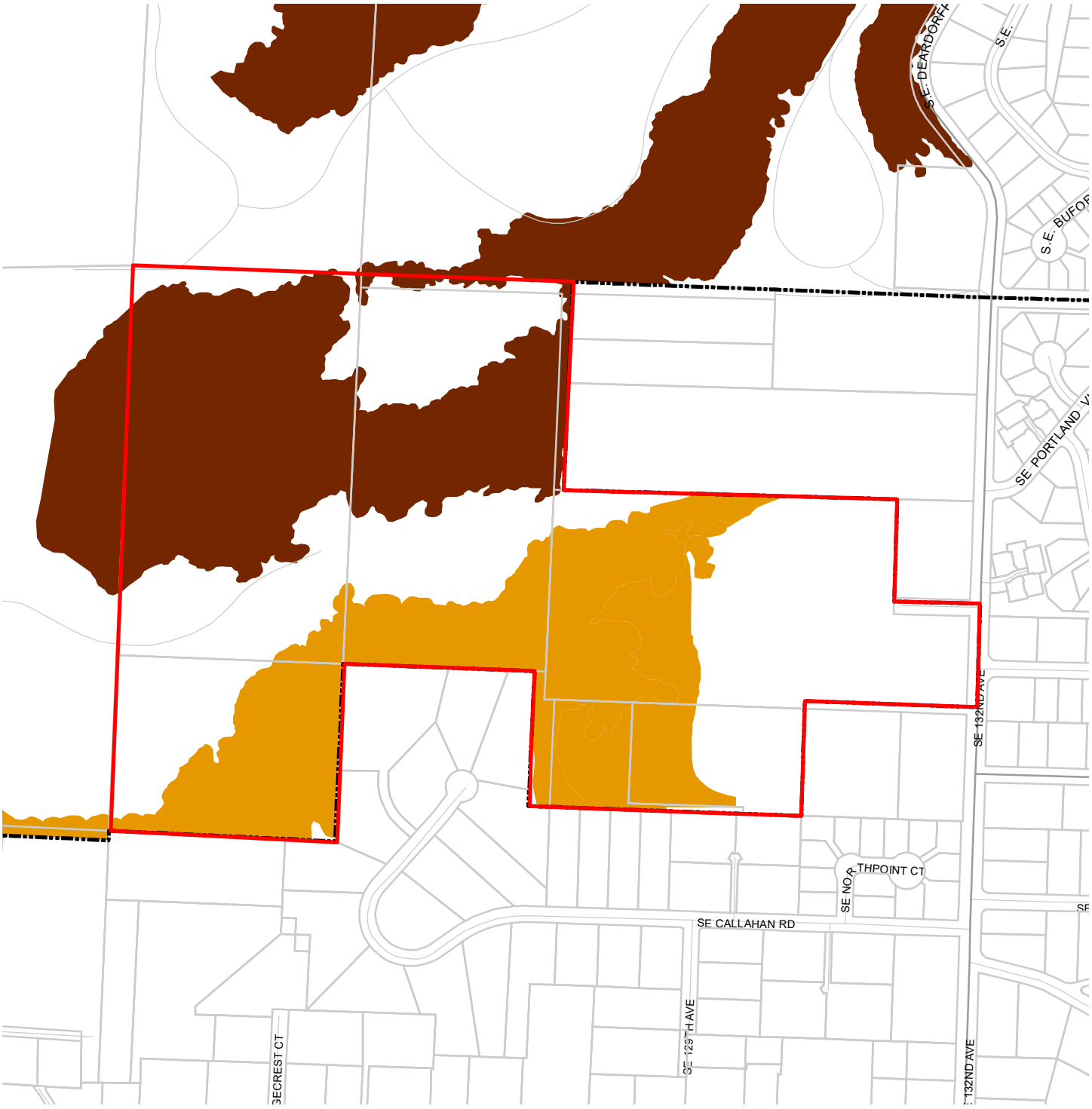
Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

June 2020



Map E: Wildlife Habitat Classification

Resource Site: BL7

Updated: June 2020

NORTH

0 187.5375 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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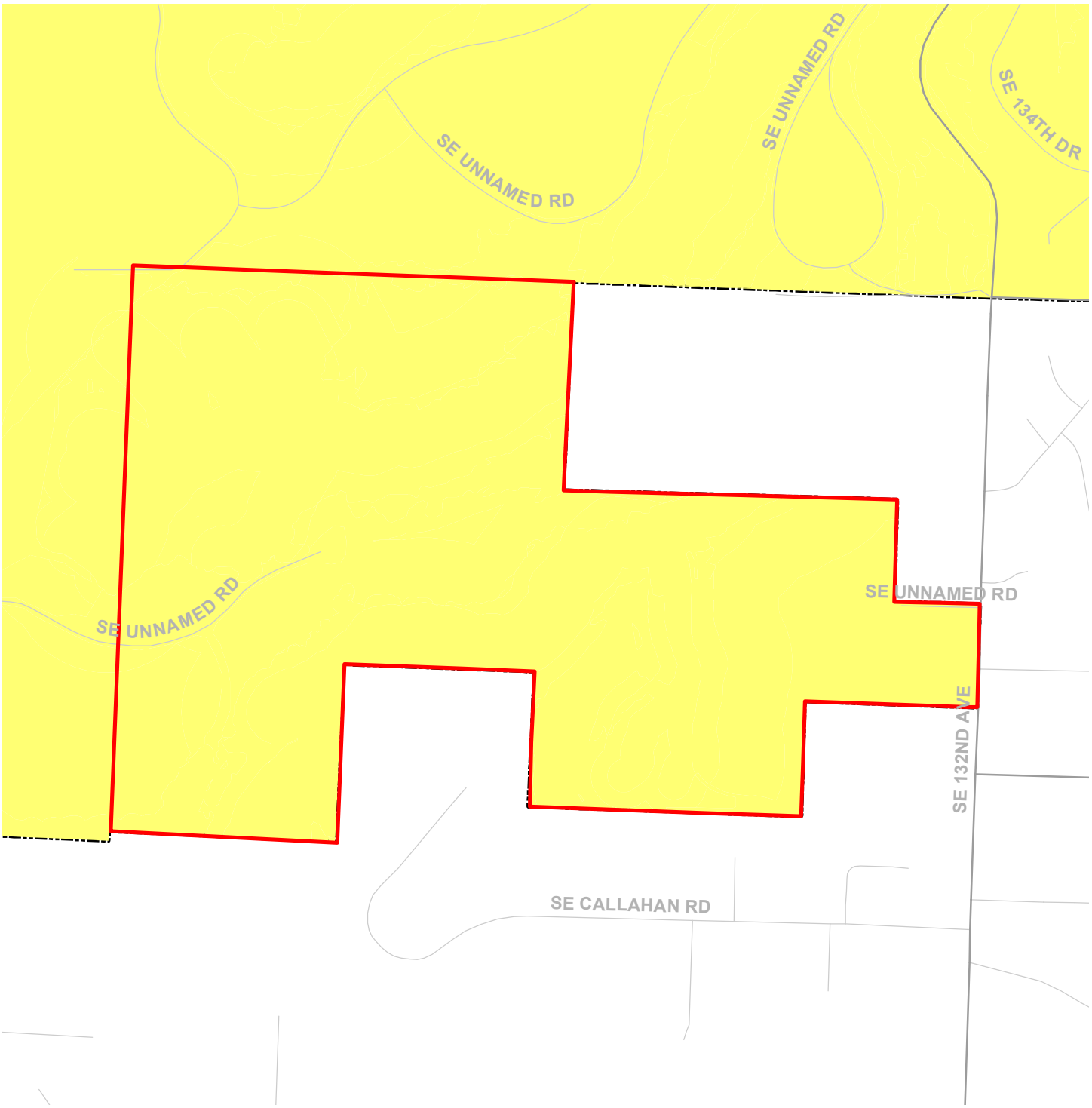


Map F: Urban Development Value (Title 13)

Resource Site: BL7

Updated: June 2020

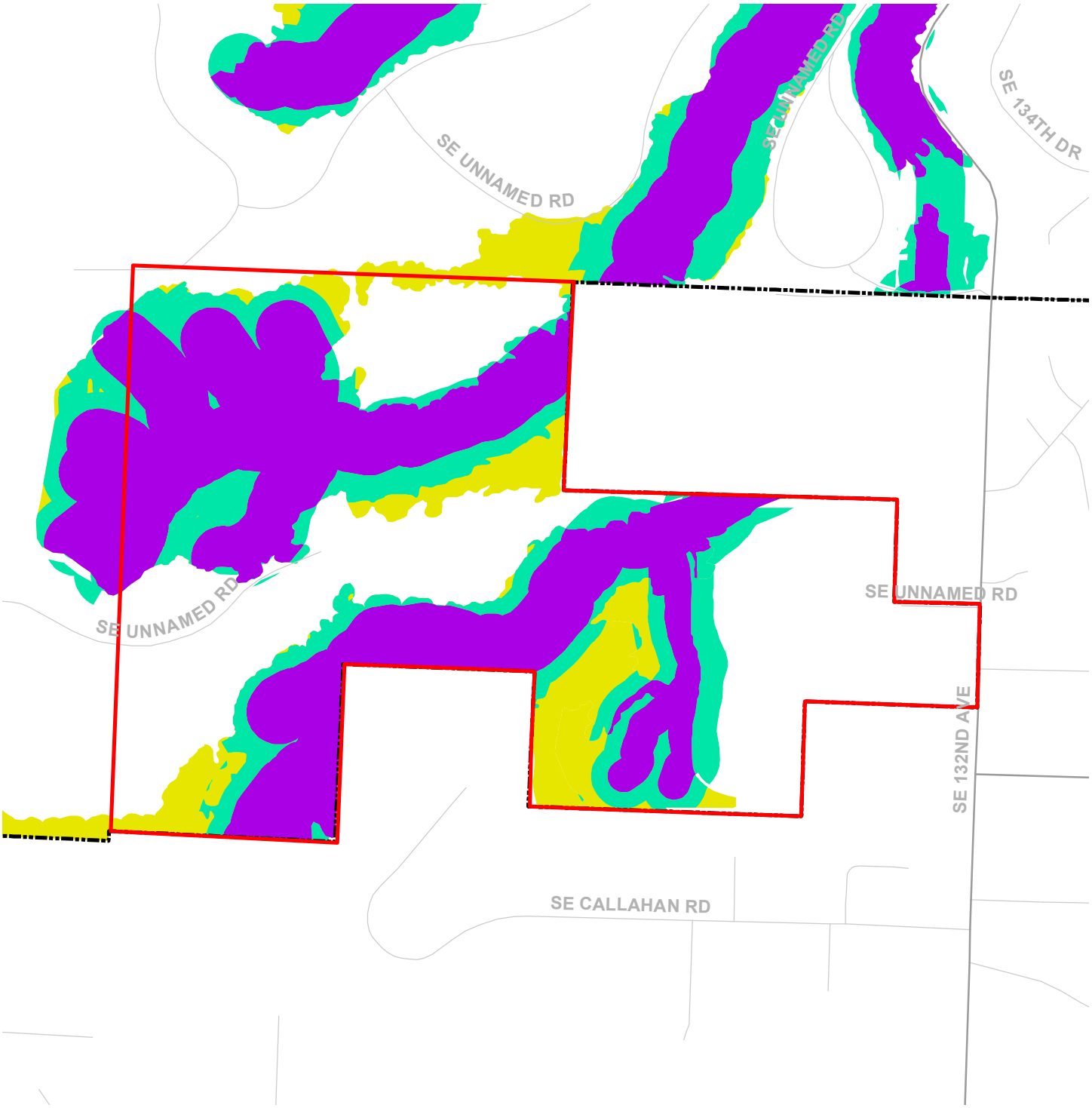
NORTH

0 315 630 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL7

Updated: June 2020

NORTH

0 315 630 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

[redacted]

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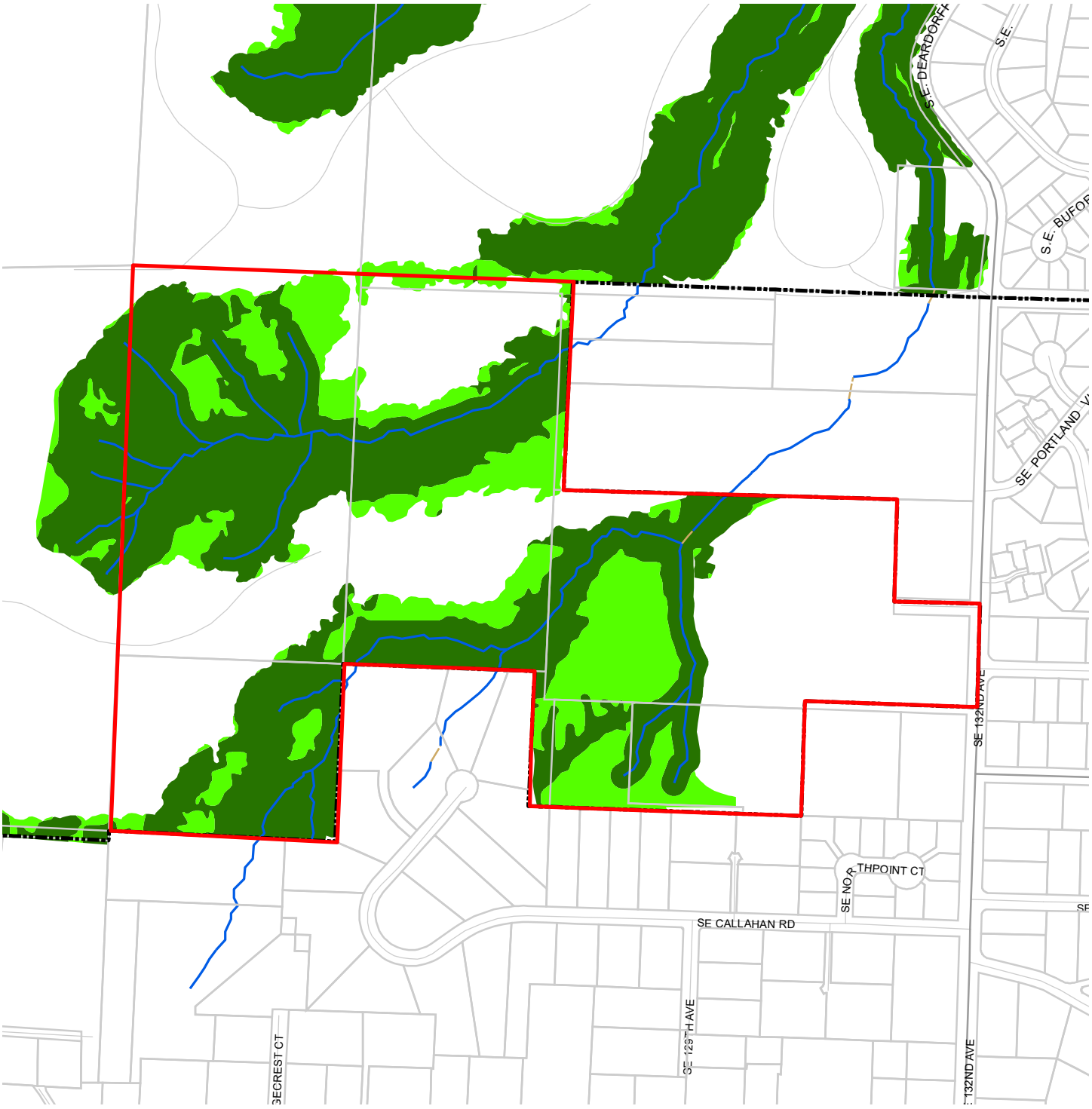

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site:

BL7

Updated: June 2020

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

[redacted]

NORTH
0 250 500 Feet
Proposed Draft

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Natural Resource Description

Within resource site BL7 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL7**
	Study Area
Stream (Miles)	1.4
Wetlands (acres)	0.2
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	33.9
Woodland (acres)	4.9
Shrubland (acres)	0.0
Herbaceous (acres)	26.9
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	27.0
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located at the southeast end of the Willamette National Cemetery, roughly around SE 132nd Avenue and Callahan Road. Natural resources on the site include the headwaters of Deardorff Creek, habitat areas, and forested upland areas. Other portions of the site are impacted by activities

related to servicing the cemetery. Most of the creek is within areas characterized by steep slopes of 25% or higher.

Table B: Quality of Natural Resource Functions in Resource Site BL7				
Resource Site (acres) = 70				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	24.7	9.9	22.7	57.4
percent total inventory site area	35.5%	14.3%	32.6%	82.4%
Wildlife Habitat*				
acres	19.1	19.7	0.0	38.8
percent total inventory site area	27.4%	28.3%	0.0%	55.7%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	30.5	10.6	16.2	57.4
percent total inventory site area	43.8%	15.3%	23.3%	82.4%
* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.				
** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.				
+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.				

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called “effective impervious area.” The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in

managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL7, 0.1% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL7

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
70	0.2	0.1	0.1%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL7, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL7, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL8 **Resource Site Name:** Deardorff Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30g

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

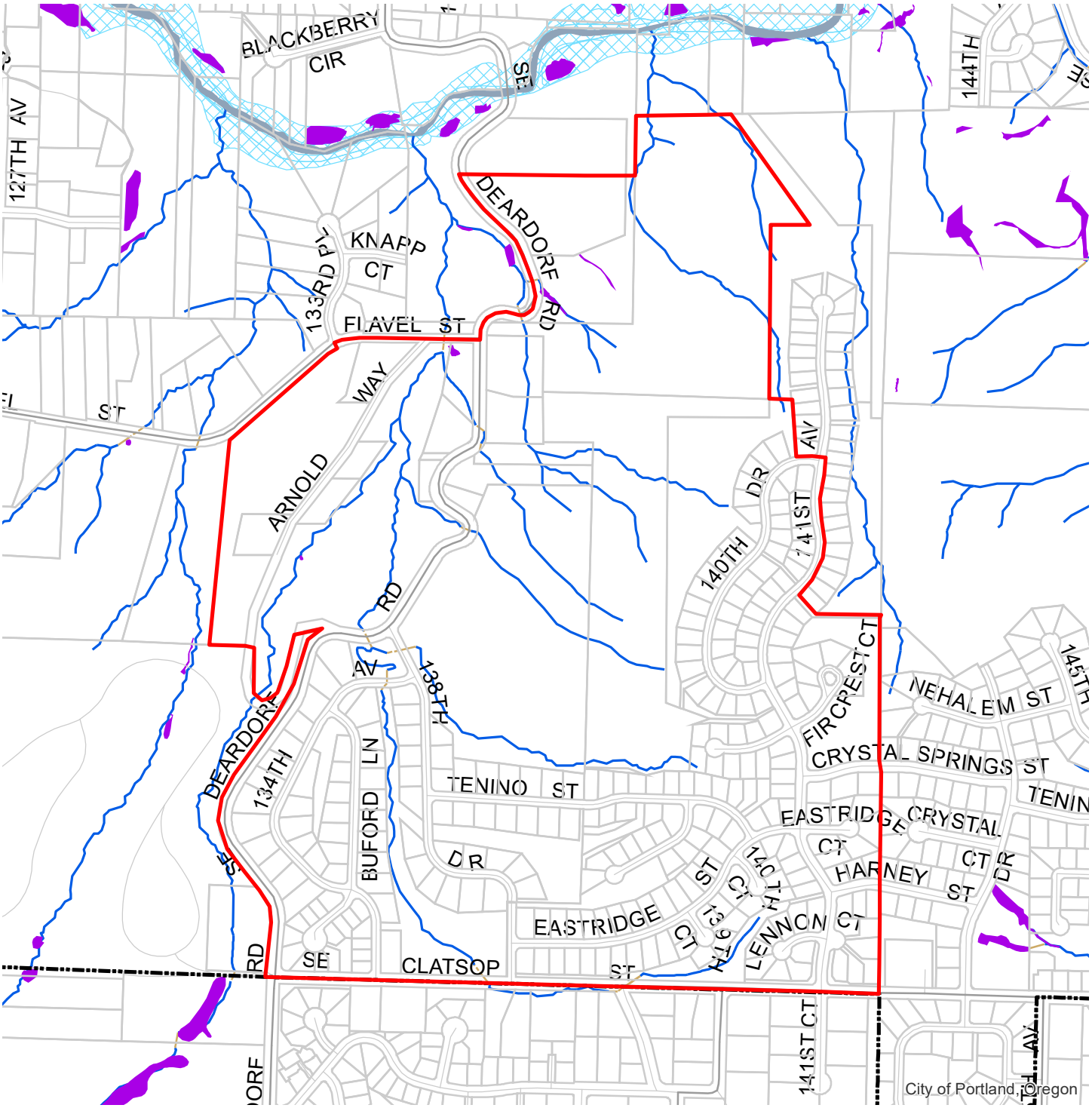
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL8 includes the following base zones (acres):

OS	53.3
R10	126.4
R20	16.1



Map A: Water Features
Resource Site: BL8

Updated: June 2020

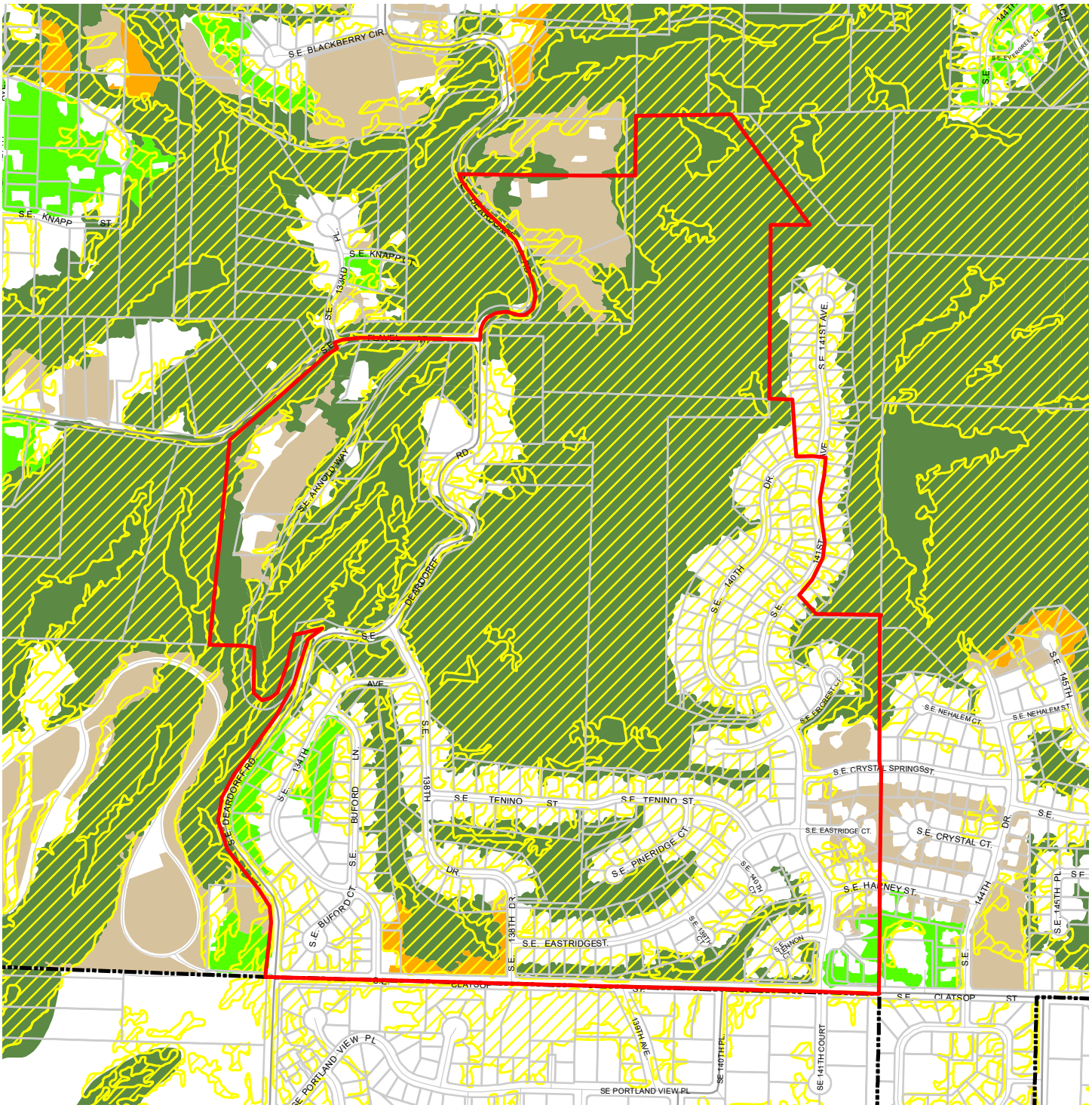
NORTH

0 330 660 Feet

Proposed Draft

- Resource Sites
- City of Portland
- Taxlots
- rivers and major streams
- wetlands
- open stream channel
- piped stream segment
- flood area
- 2019 aerial photos

June 2020



Map B: Vegetation and Steep Slopes

Resource Site: BL8

Updated: June 2020

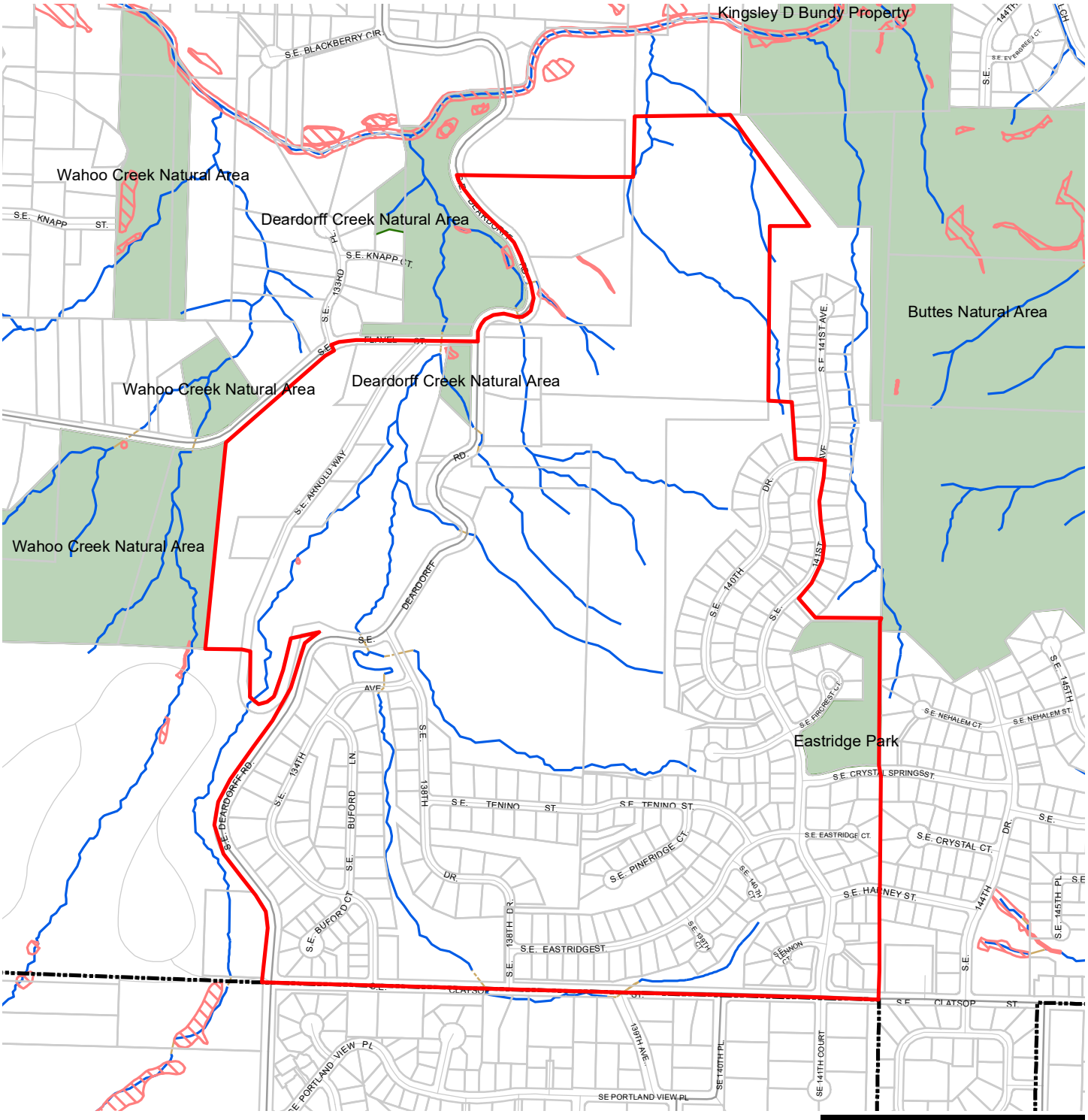
NORTH

0 330 660 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

June 2020



Map C: Special Habitat Areas

Resource Site: BL8

Updated: June 2020

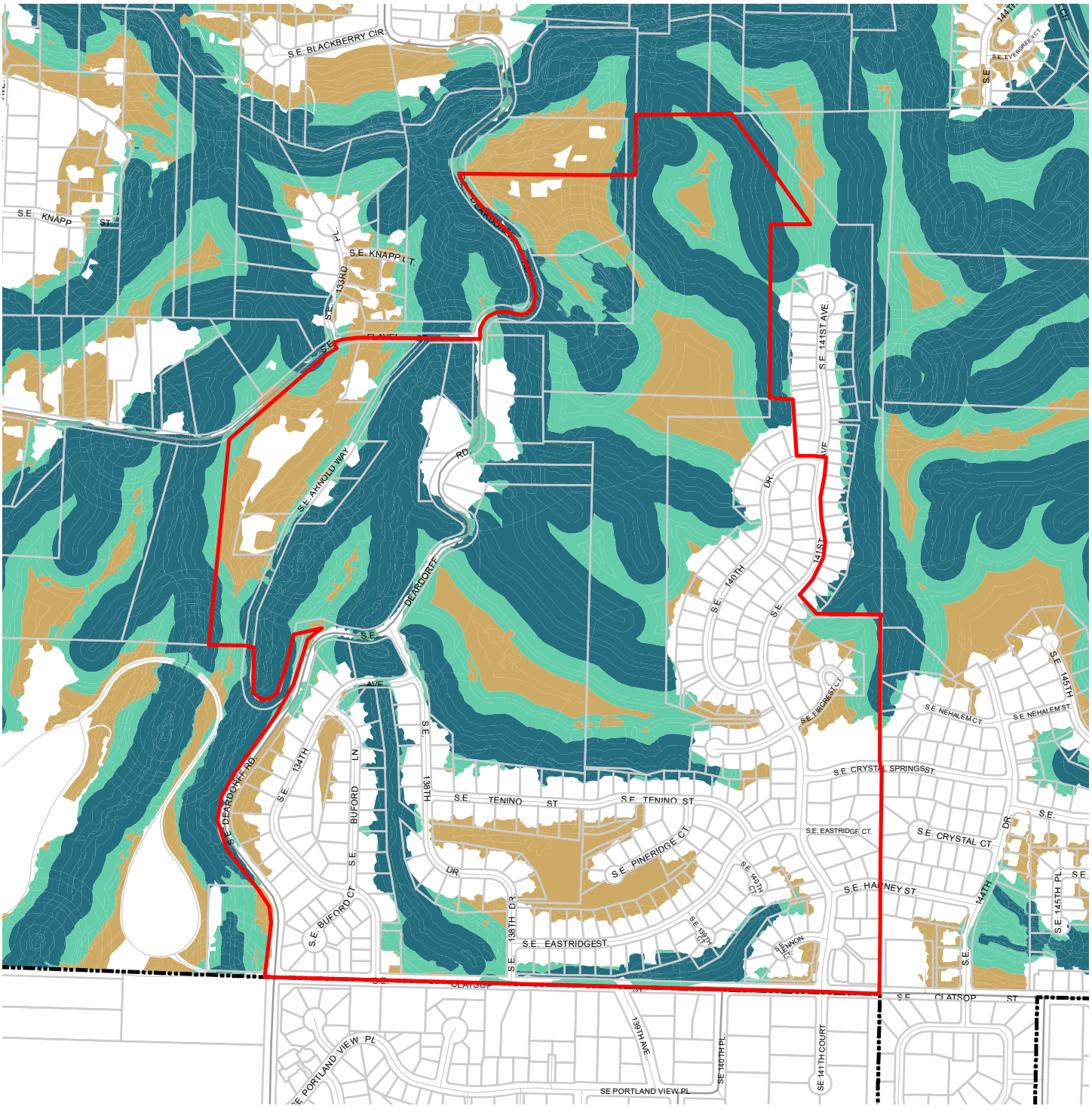
NORTH

0 355 710 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

[redacted]



Map D: Riparian Corridors Habitat Classification

Resource Site: BL8

Updated: June 2020

NORTH

0 330 660 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

[redacted]

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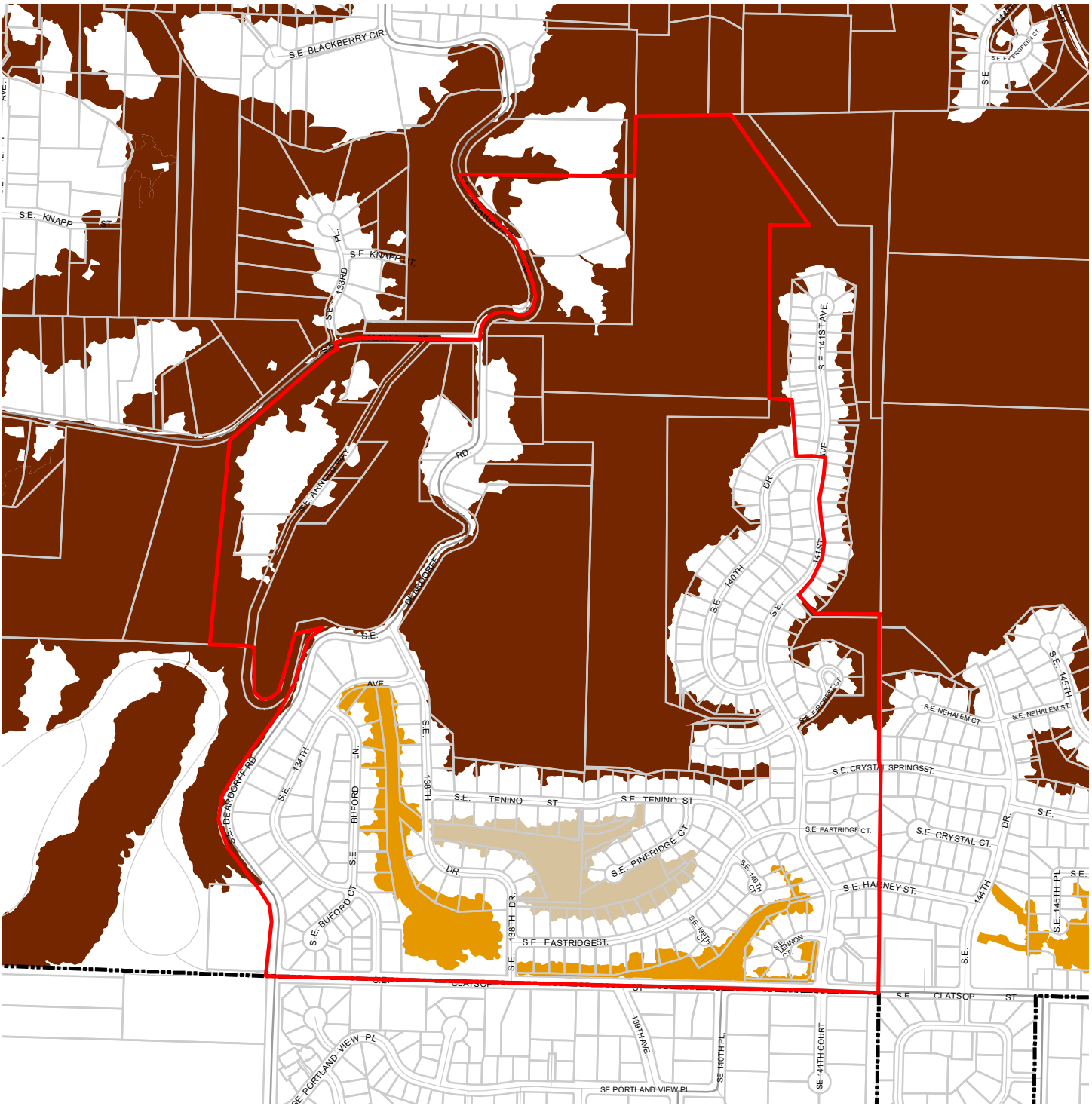
June 2020



Map E: Wildlife Habitat Classification

Resource Site: BL8

Updated: June 2020

NORTH

0 270 540 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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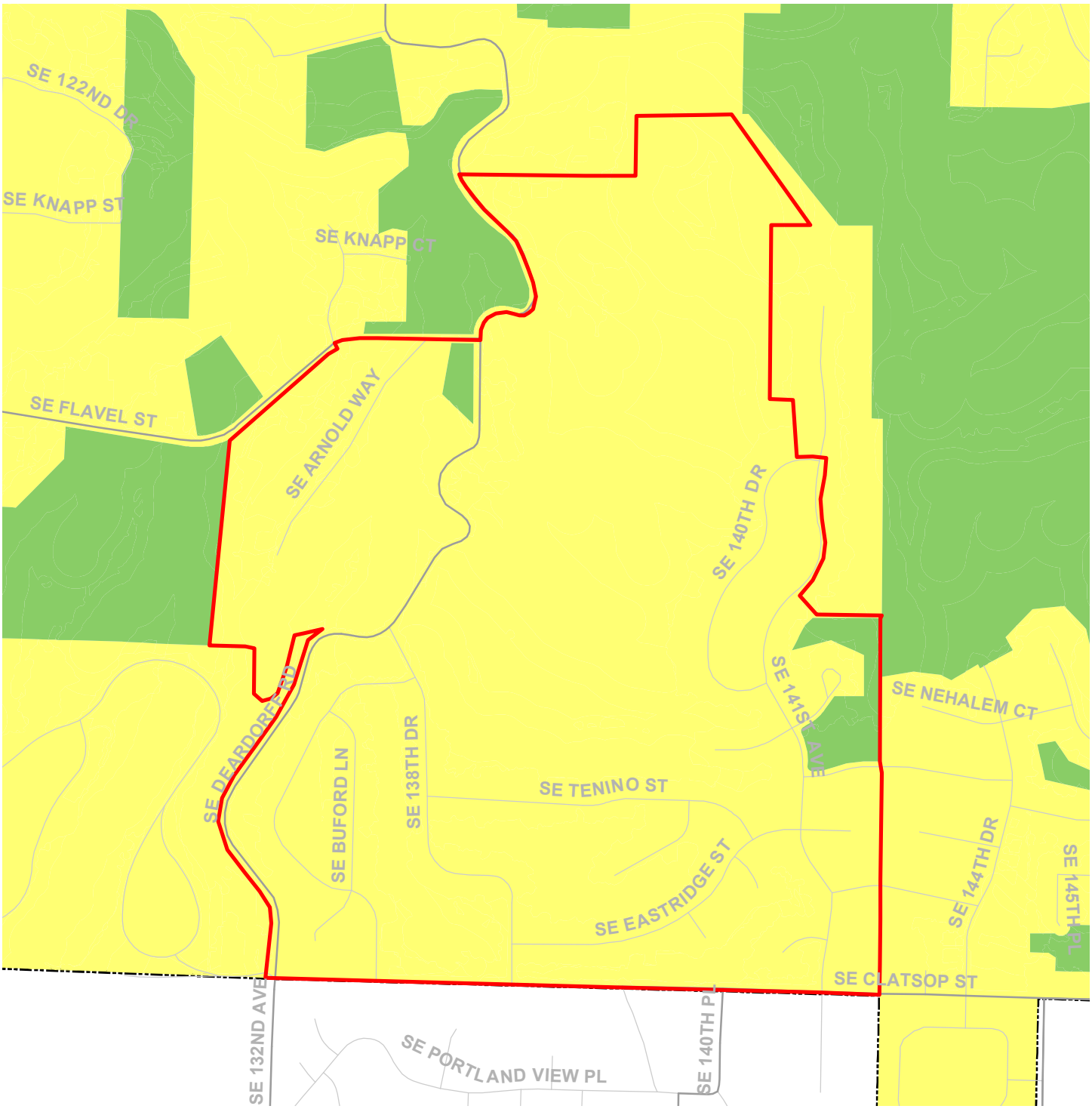
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL8

Updated: June 2020

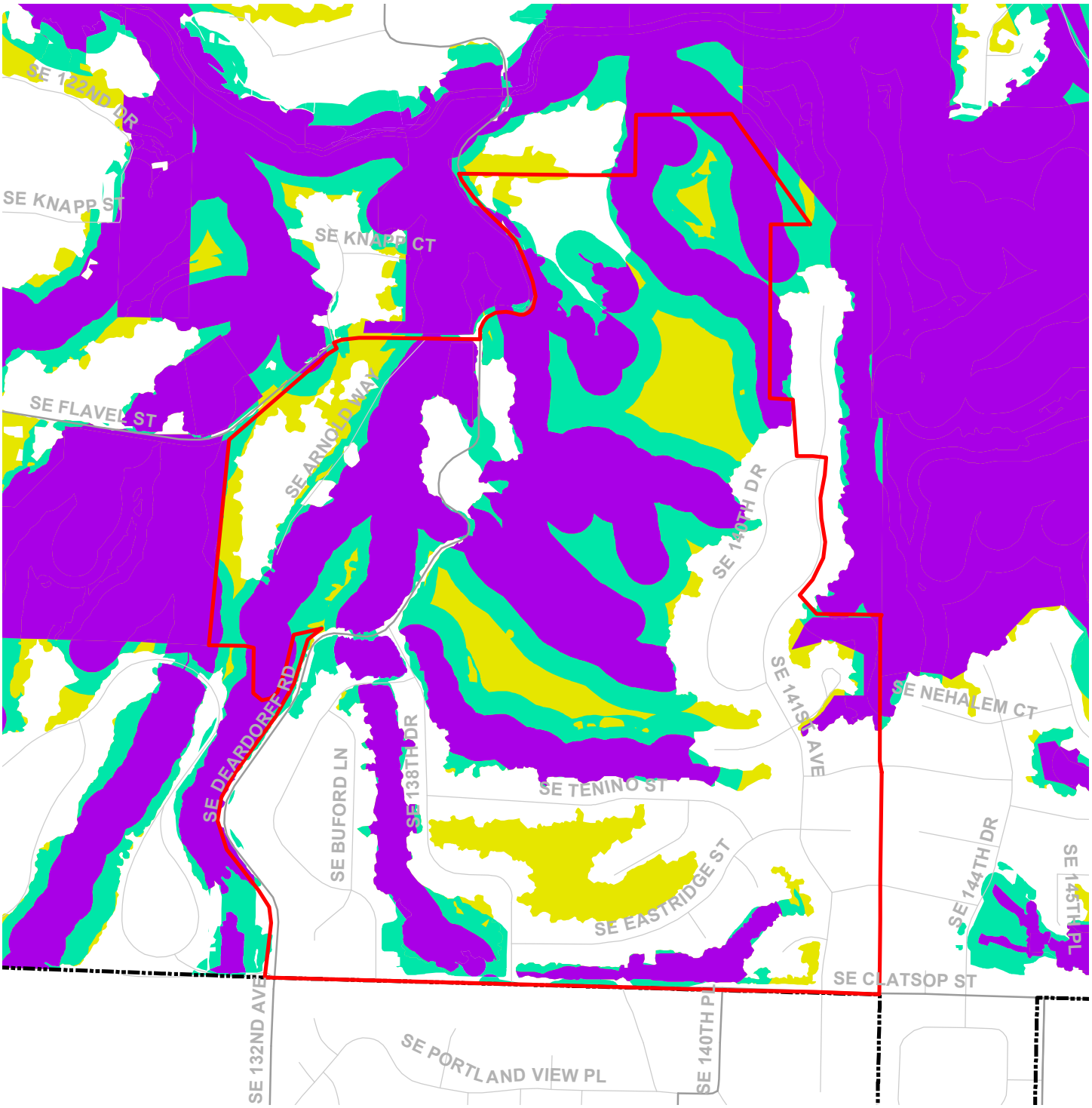
NORTH

0 450 900 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL8

Updated: June 2020

NORTH

0 450 900 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

[redacted]

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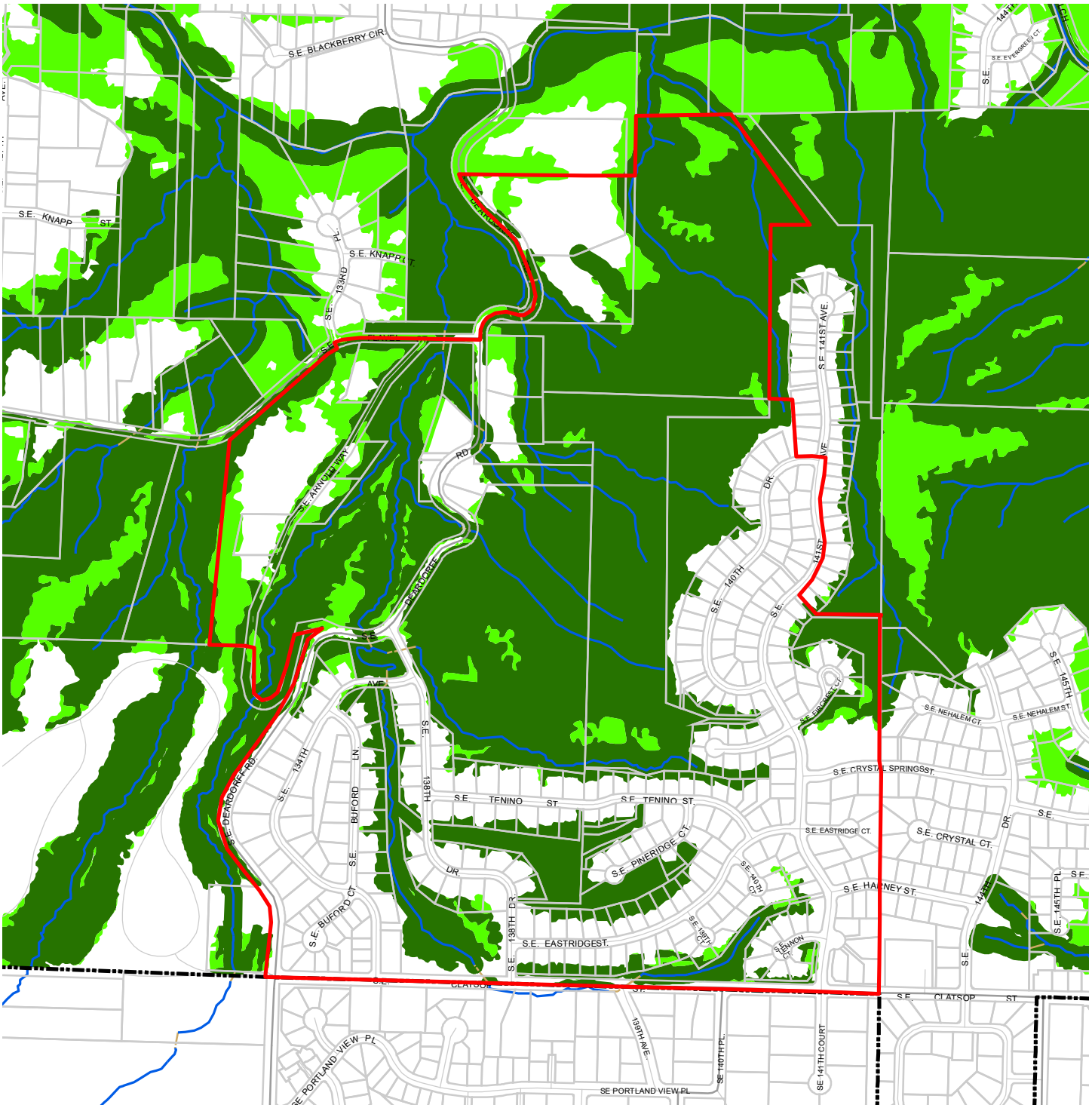

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site:

BL8

Updated: June 2020

NORTH

0 360 720 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

[redacted]

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Natural Resource Description

Within resource site BL8 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL8**
	Study Area
Stream (Miles)	3.0
Wetlands (acres)	0.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	112.8
Woodland (acres)	3.6
Shrubland (acres)	1.3
Herbaceous (acres)	10.9
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	130.8
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located east of the Wahoo Creek on either side of Deardorff Road. It is bordered by Clatsop Street at the south and resource sites JC18 and JC19 to the north. Much of the site is in open space, including publicly owned lands and privately held open space tracts associated with residential subdivisions. Residential subdivisions are found at the southern portion of the site.

Natural resources in the site include Deardorff Creek and its tributaries. Forested riparian areas, slopes and uplands extensively cover the site. Shrubland habitat is also present. Most of the site, including Deardorff Creek and its tributaries, is characterized by steep slopes of 25% or higher.

Chinook salmon, a species listed as threatened under the Endangered Species Act, and cutthroat trout, a species of concern in Oregon, have been found in the lower section of Deardorff Creek before it enters Johnson Creek. Riparian and upland canopy and understory remain relatively intact in this resource site. Deer are frequently observed foraging in these riparian upland areas,

Special status bird species observed within or adjacent to this resource site include band-tailed pigeon, black-throated gray warbler, brown creeper, bushtit, Hutton's vireo, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pileated woodpecker, purple finch, Swainson's thrush, and western wood-pewee.

Table B: Quality of Natural Resource Functions in Resource Site BL8				
Resource Site (acres) = 196				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	61.1	34.9	29.7	125.7
percent total inventory site area	31.2%	17.8%	15.2%	64.2%
Wildlife Habitat*				
acres	94.9	9.8	6.5	111.2
percent total inventory site area	48.4%	5.0%	3.3%	56.8%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	103.6	7.9	14.3	125.7
percent total inventory site area	52.9%	4.0%	7.3%	64.2%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL8, 4% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL8

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
196	30	8	4%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas;

generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20 and R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL8, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL8, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL9 **Resource Site Name:** Clatsop Butte

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30h

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

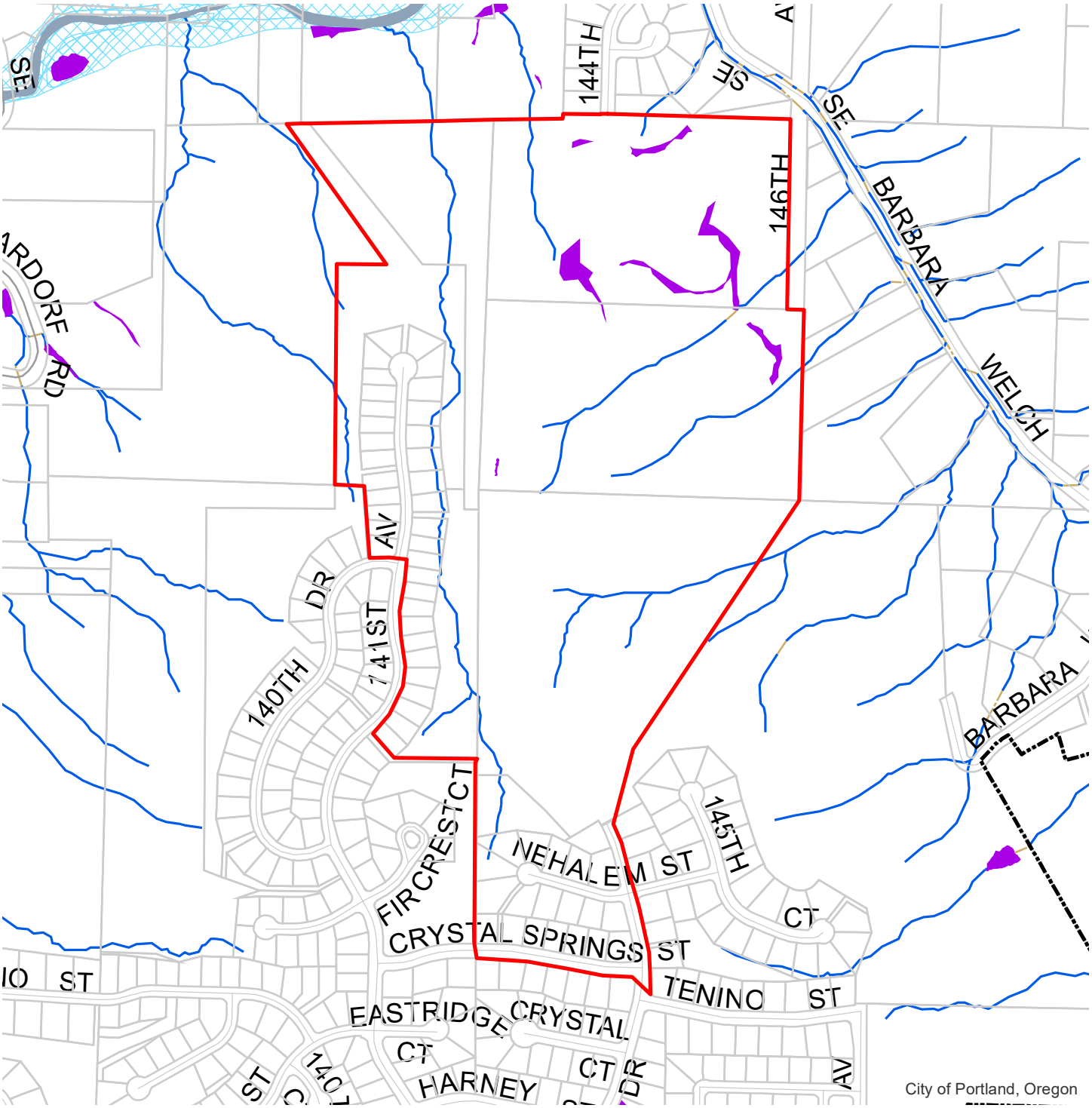
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL9 includes the following base zones (acres):

OS	58.0
R10	22.7



Map A: Water Features
Resource Site: BL9

Updated: June 2020

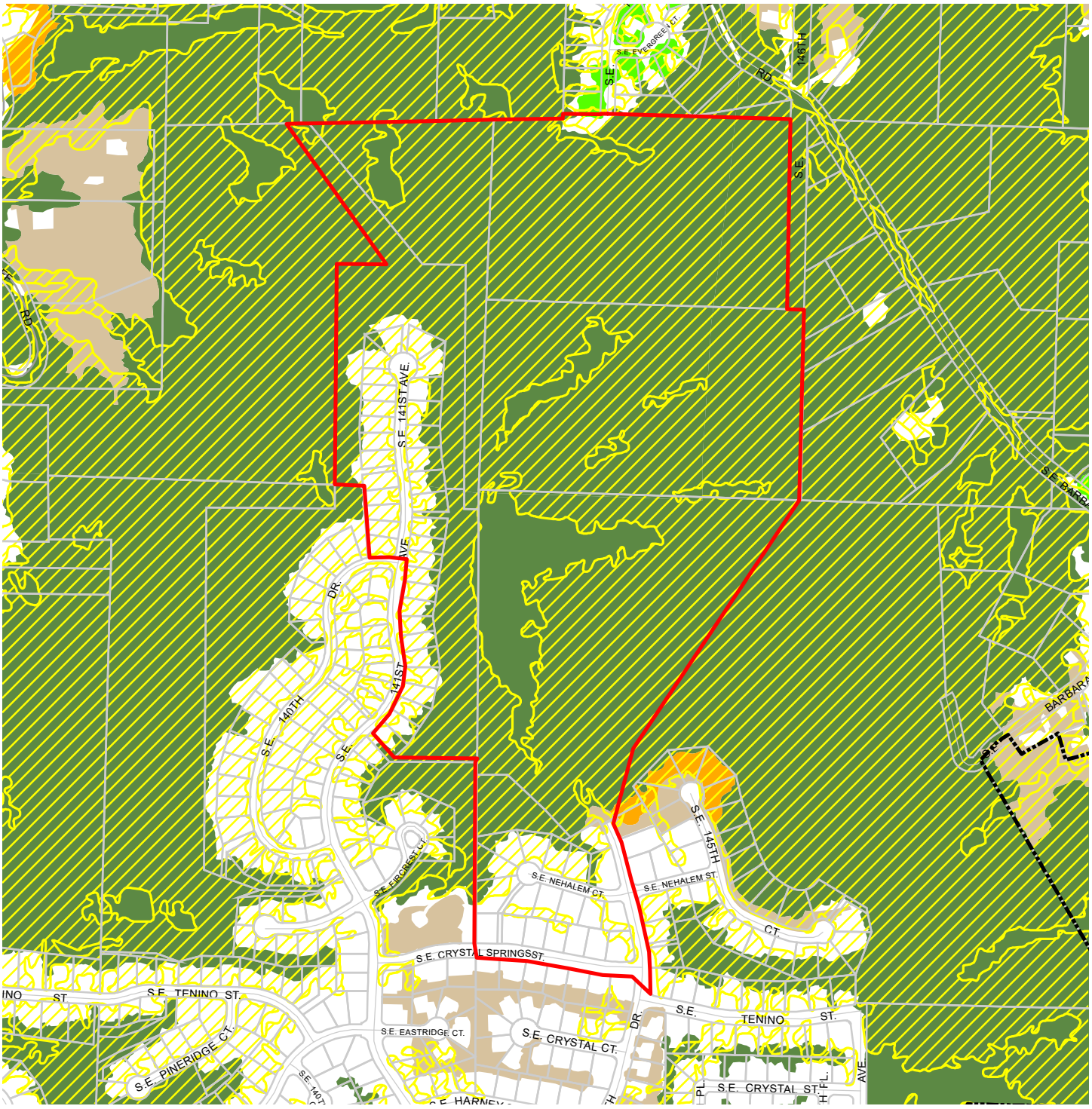
NORTH

0 260 520 Feet

Proposed Draft

- Resource Sites
- City of Portland
- Taxlots
- rivers and major streams
- wetlands
- open stream channel
- piped stream segment
- flood area
- 2019 aerial photos

[redacted]



Map B: Vegetation and Steep Slopes

Resource Site: BL9

Updated: June 2020

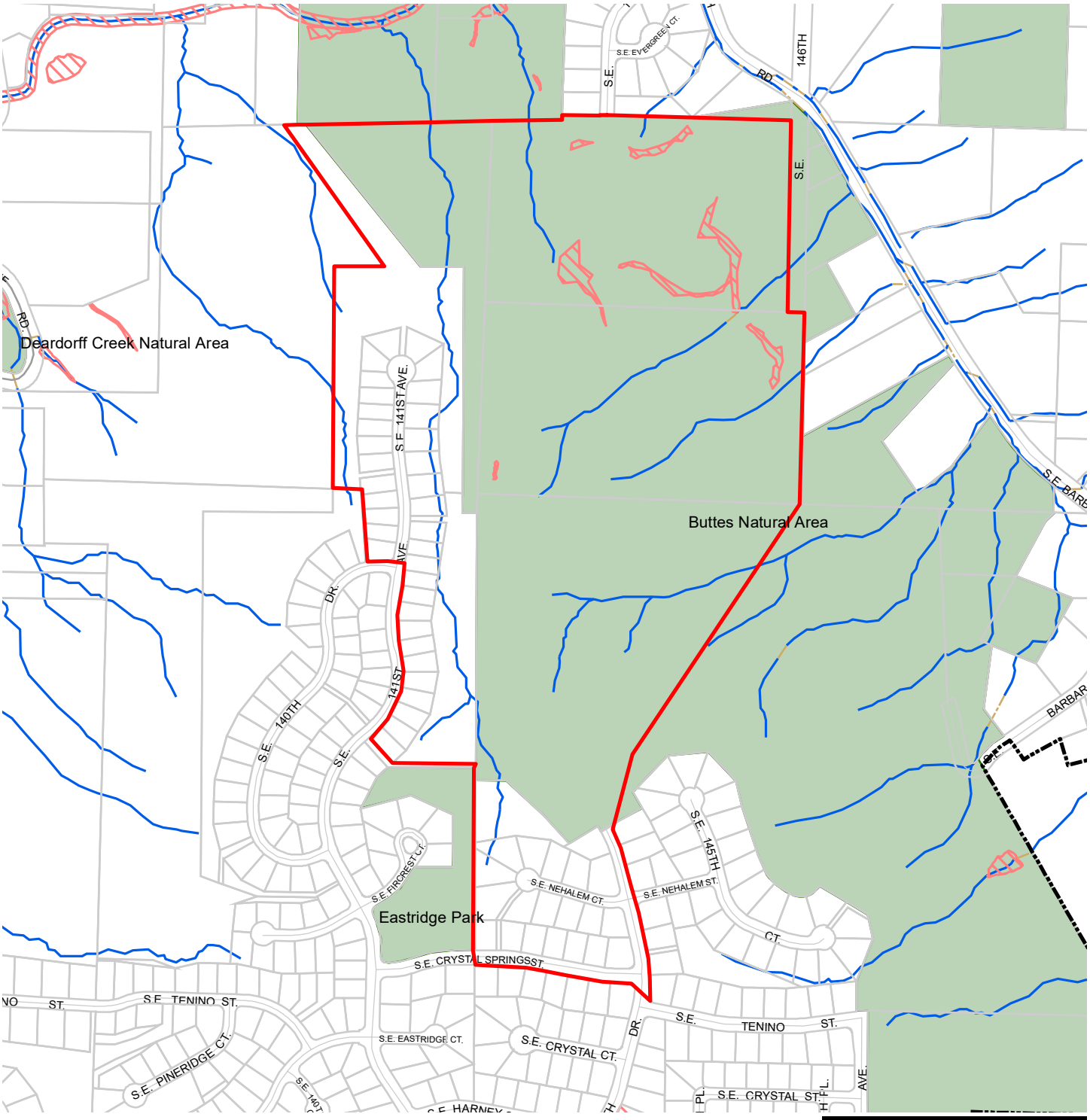
NORTH

0 260 520 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

June 2020



Map C: Special Habitat Areas

Resource Site: BL9

Updated: June 2020

NORTH

0 280 560 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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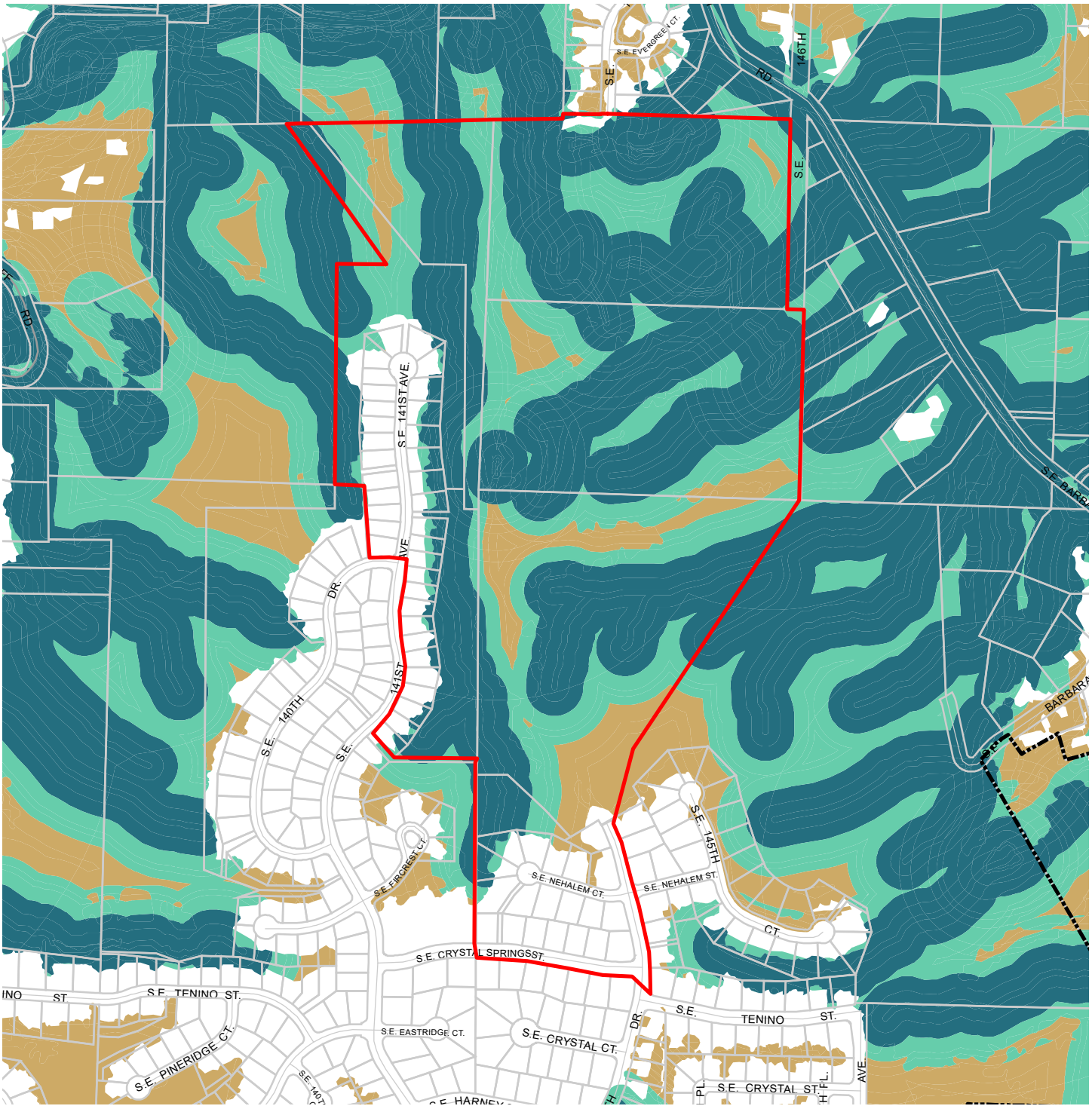
June 2020



Map D: Riparian Corridors Habitat Classification

Resource Site: BL9

Updated: June 2020

NORTH

0 260 520 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

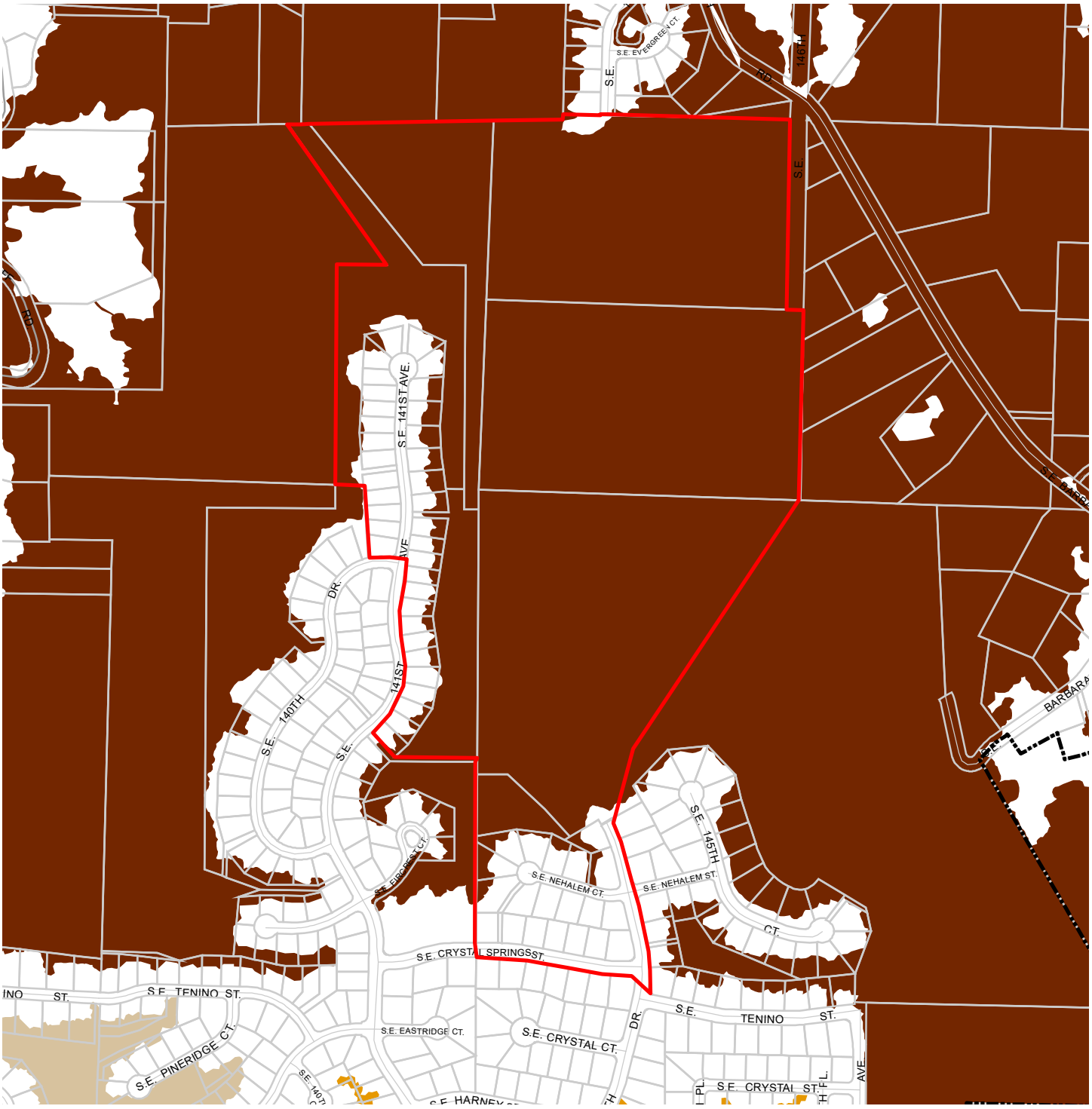
Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

June 2020



Map E: Wildlife Habitat Classification

Resource Site: BL9

Updated: June 2020

NORTH

0 212.5425 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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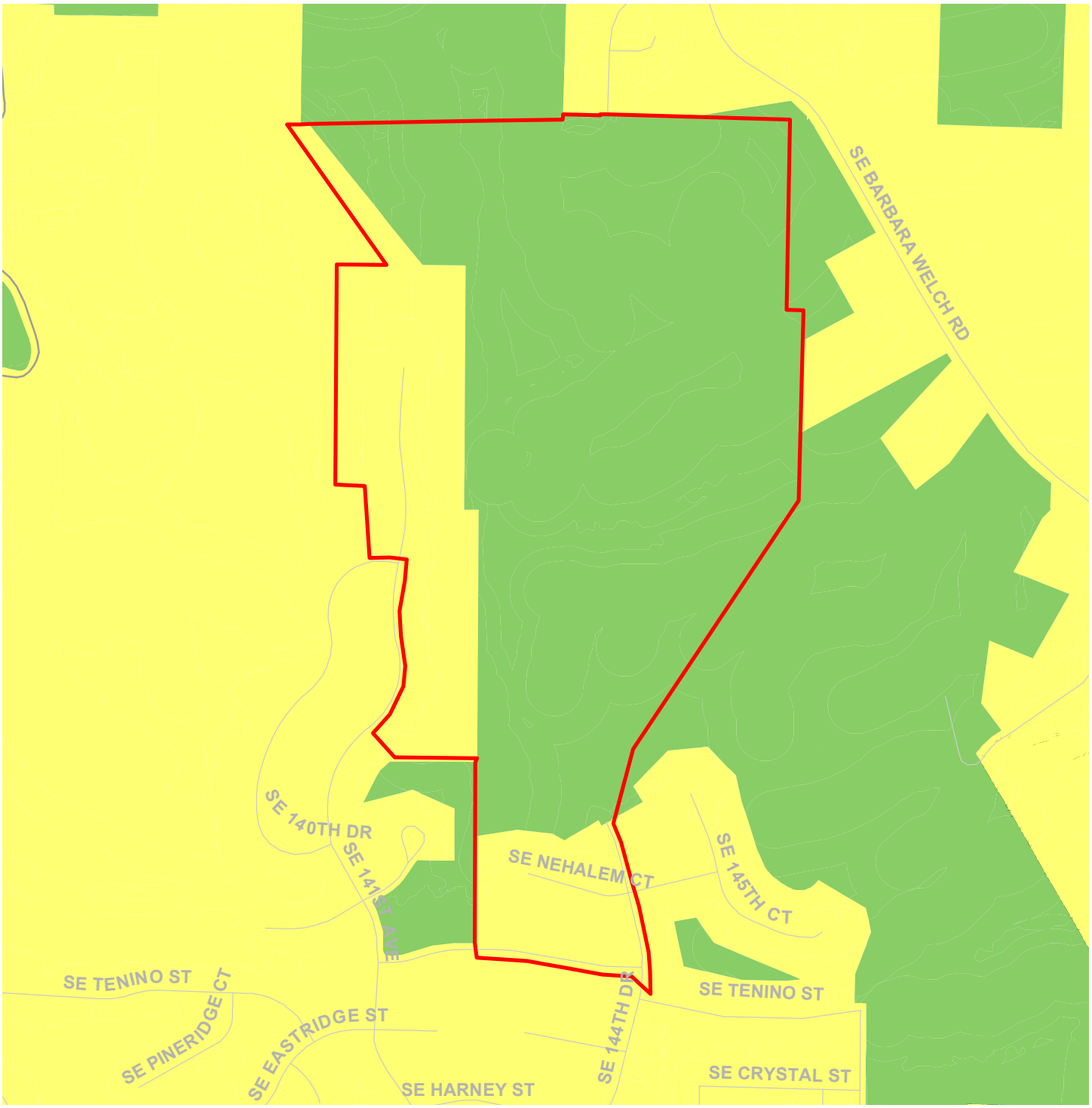


Map F: Urban Development Value (Title 13)

Resource Site: BL9

Updated: June 2020

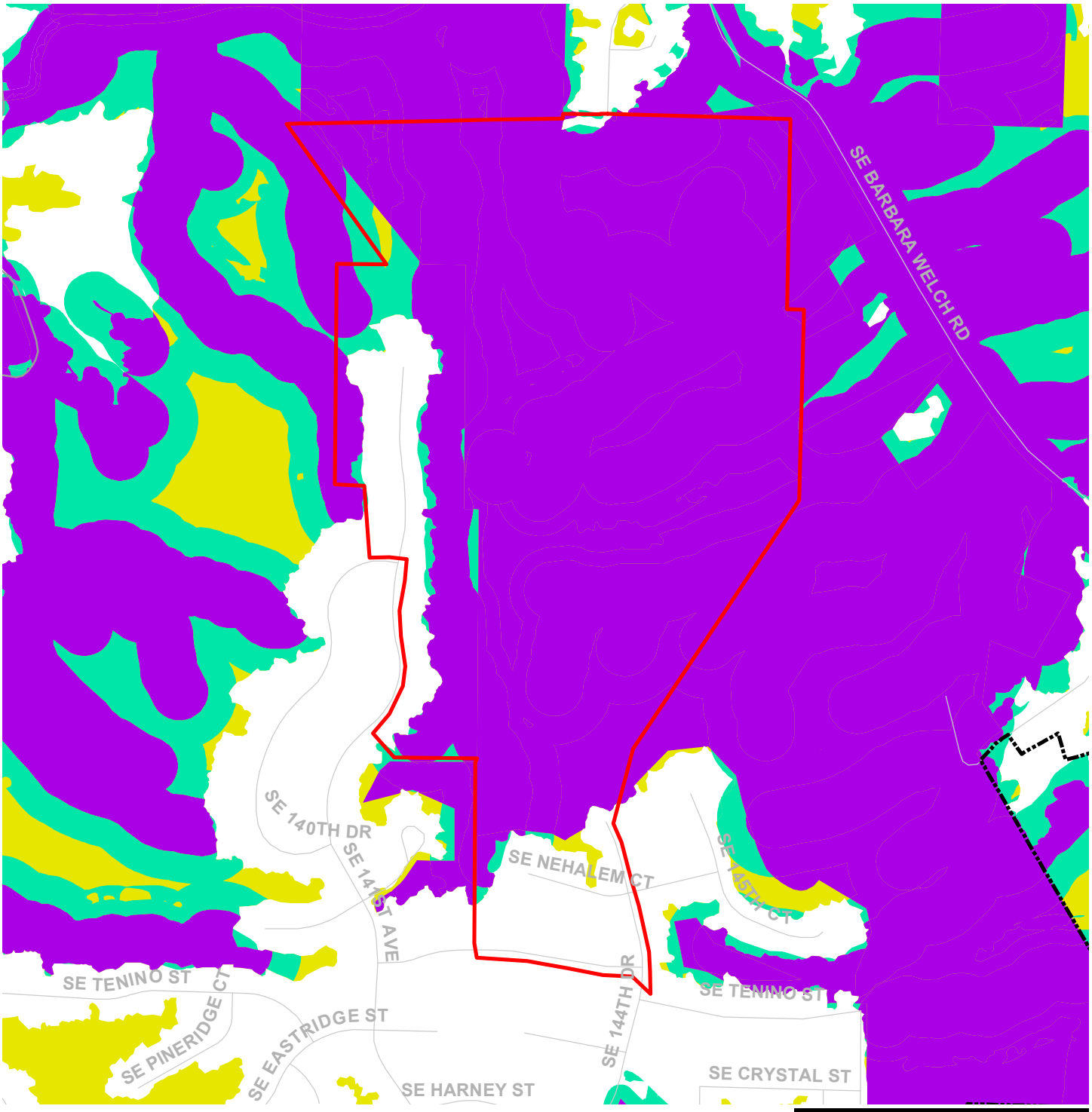
NORTH

0 355 710 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL9

Updated: June 2020

NORTH

0 355 710 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

[redacted]

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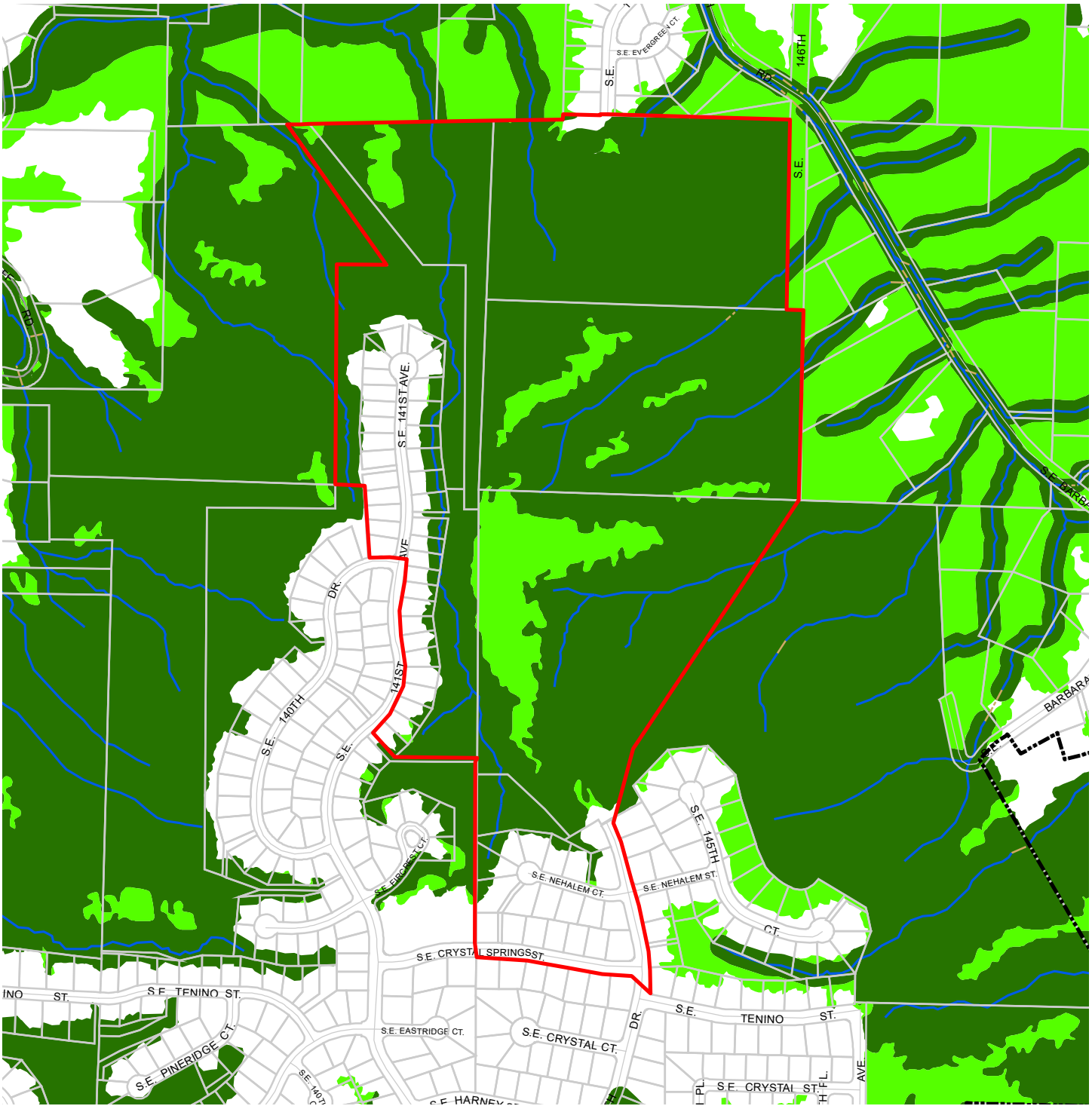

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL9

Updated: June 2020

NORTH

0 285 570 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

[redacted]

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Natural Resource Description

Within resource site BL9 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL9**
	Study Area
Stream (Miles)	1.4
Wetlands (acres)	0.9
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	69.0
Woodland (acres)	0.0
Shrubland (acres)	0.0
Herbaceous (acres)	0.1
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	67.9
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area. **Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This area is located between the Deardorff and Barbara Welch Creek watersheds, east of SE 141st Avenue. Metro's Buttes Natural Area comprises most of the site. Small portions of residential subdivisions are also within the resource site. The site is heavily forested.

Natural resources on the site include creeks, habitat areas, forested riparian areas, slopes and uplands. A few wetlands have been identified in the northern portion of the site. Most of the resource site is characterized by steep slopes of 25% or higher.

Special status bird species observed within or adjacent to this resource site include American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, willow flycatcher, and Wilson's warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL9

Resource Site (acres) = 81				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	42.4	20.6	6.7	69.6
percent total inventory site area	52.5%	25.5%	8.3%	86.3%
Wildlife Habitat*				
acres	69.0	0.0	0.0	69.0
percent total inventory site area	85.5%	0.0%	0.0%	85.5%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	69.0	0.6	0.0	69.6
percent total inventory site area	85.5%	0.8%	0.0%	86.3%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL9, 2% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL9

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
81	4	1.7	2%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation

clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL9, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL9, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank, and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands and extending to 100 feet of streams or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation on not steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands and on steep slopes areas of forest or woodland vegetation that are contiguous to but more than 100 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL10 **Resource Site Name:** Mitchell Creek Headwaters

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30l

There are no mapped natural resources within resource site BL10.

Resource Site No.: BL11 **Resource Site Name:** Barbara Welch Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30i

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

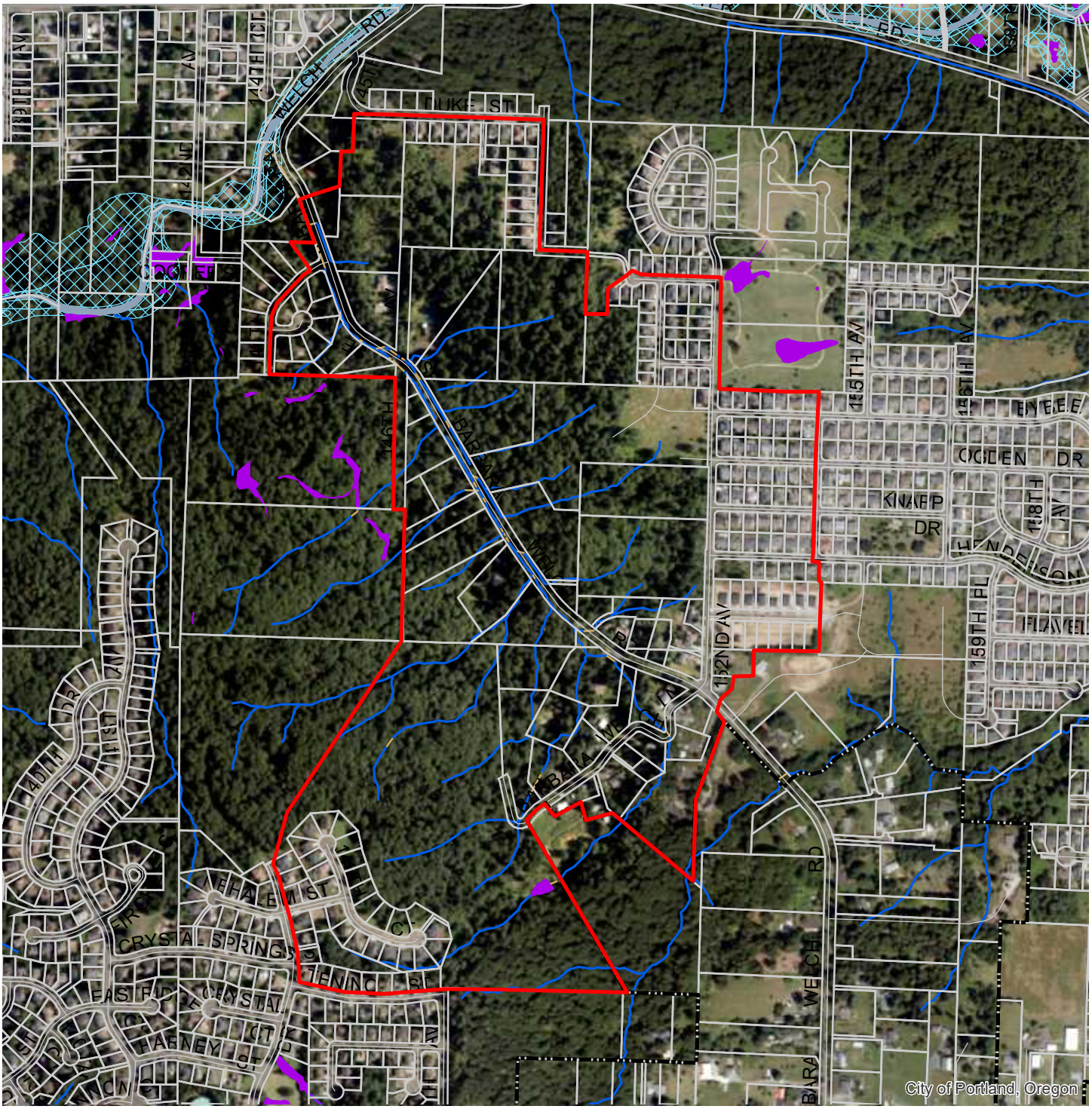
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL11 includes the following base zones (acres):

OS	57.9
R10	70.5
R20	50.8
RF	0.0



Map A: Water Features
Resource Site: BL11

Updated: June 2020

NORTH

0 375 750 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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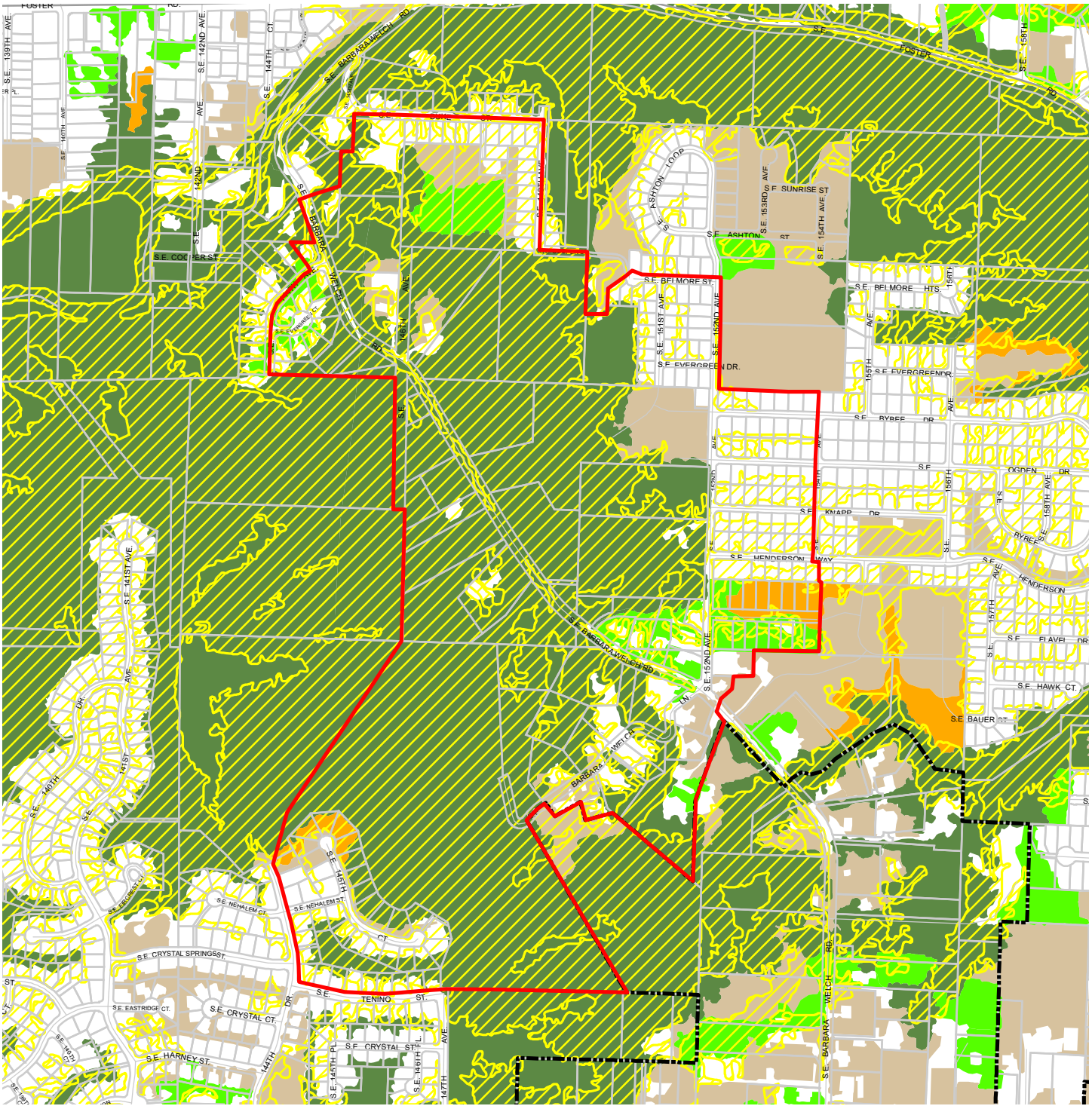

Map B: Vegetation and Steep Slopes

Resource Site: BL11

Updated: June 2020

NORTH

0 375 750 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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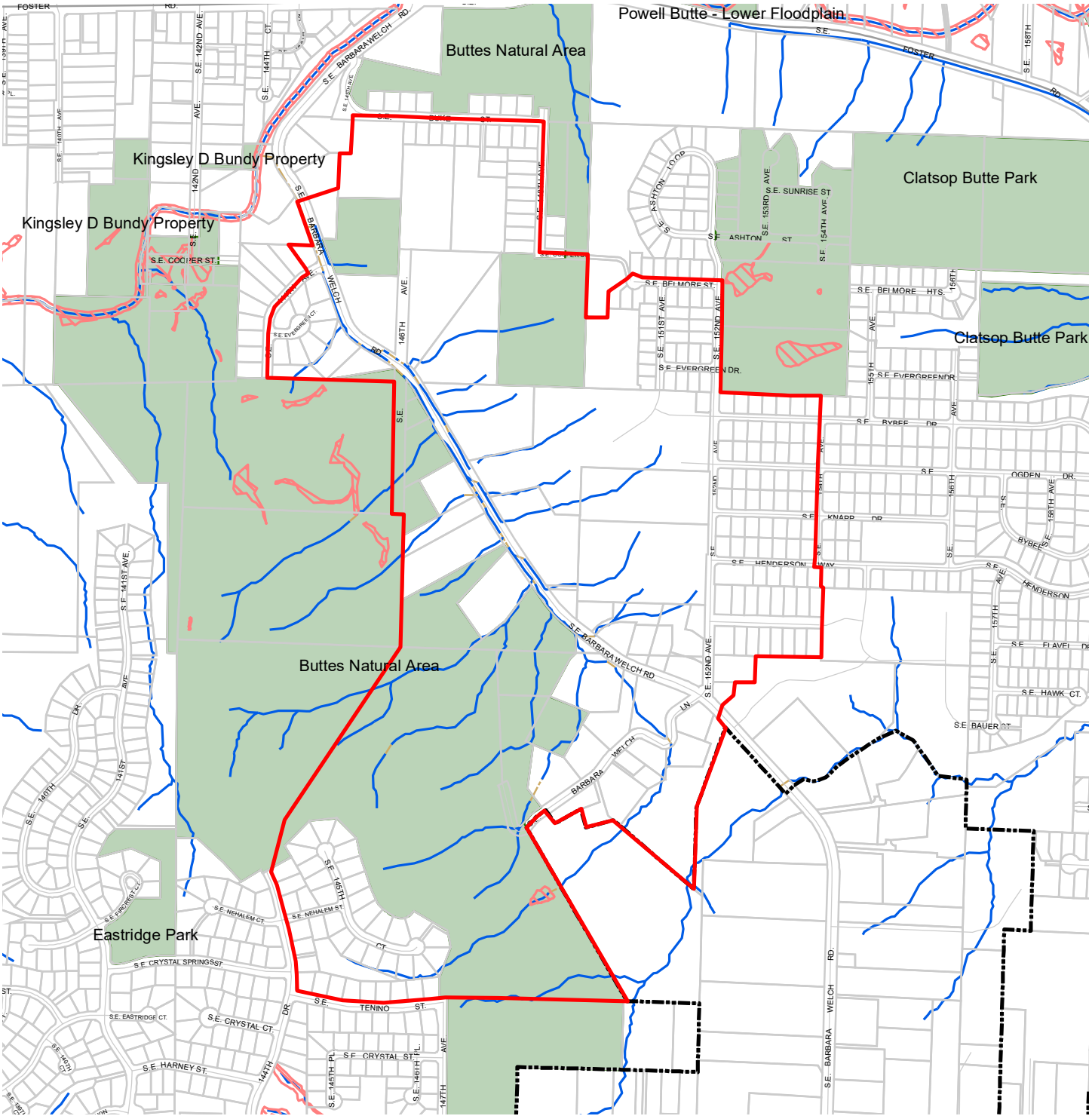
June 2020



Map C: Special Habitat Areas

Resource Site: BL11

Updated: June 2020

NORTH

0 405 810 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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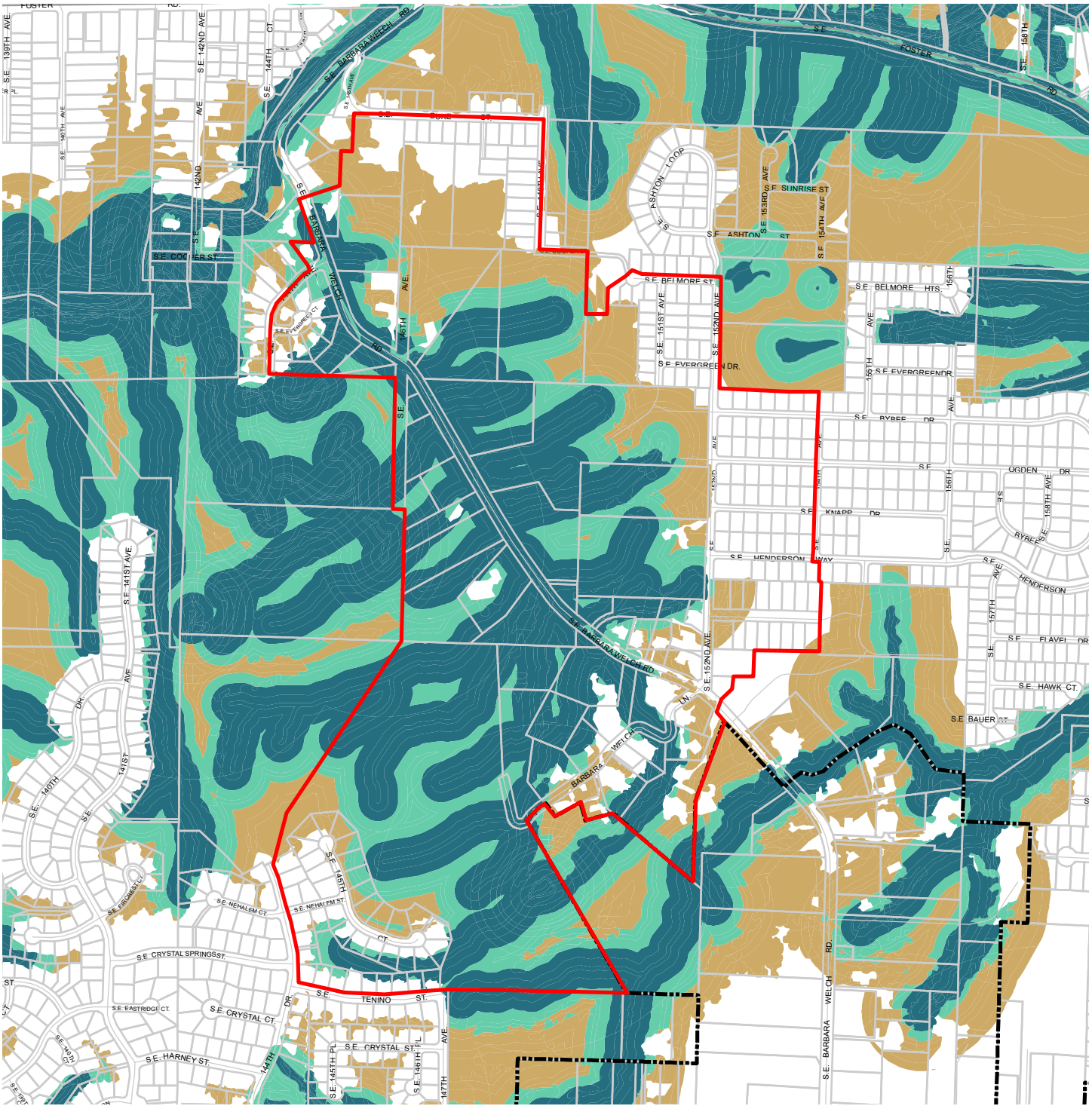

Map D: Riparian Corridors Habitat Classification

Resource Site: BL11

Updated: June 2020

NORTH

0 375 750 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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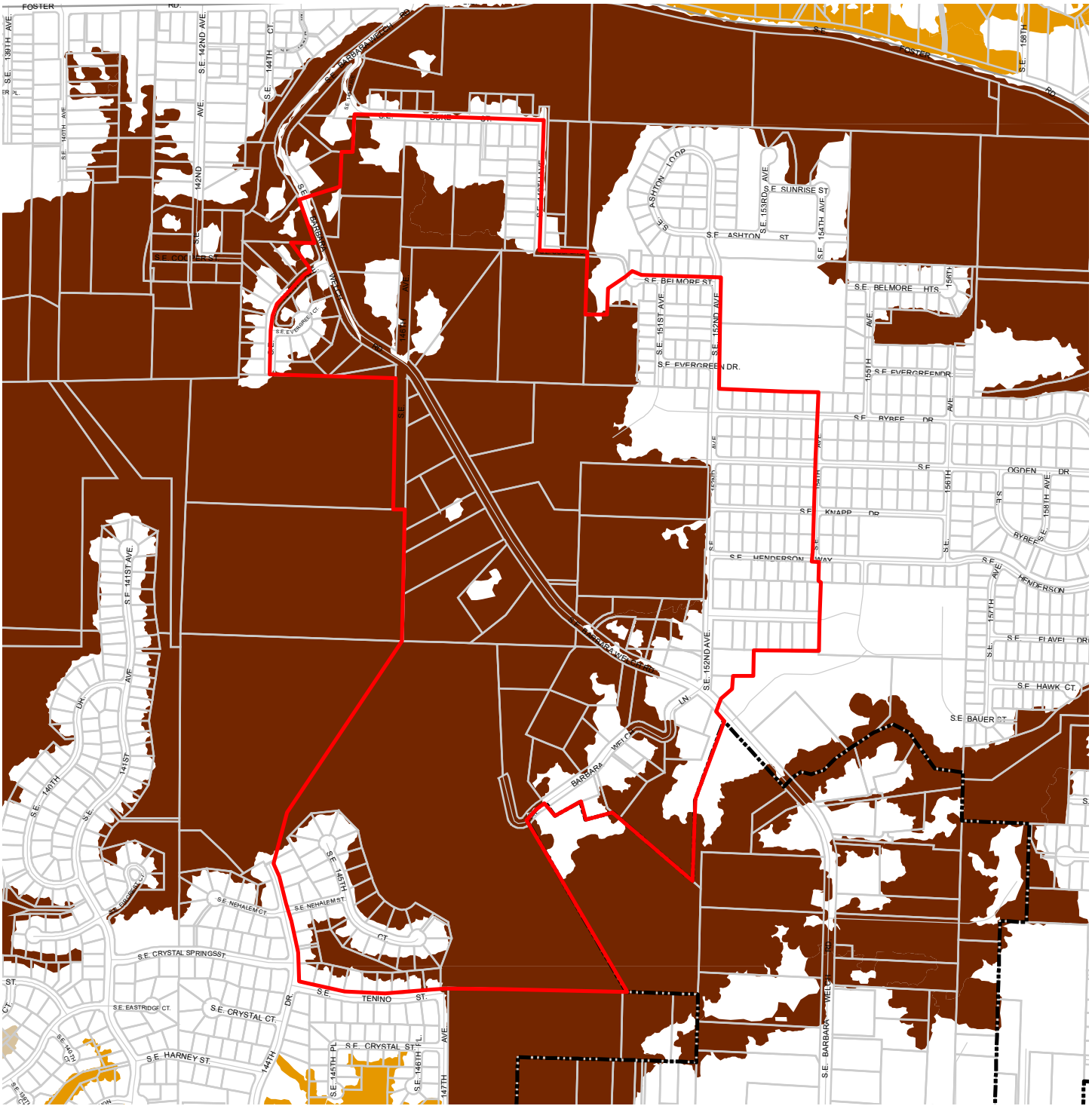

Map E: Wildlife Habitat Classification

Resource Site: BL11

Updated: June 2020

NORTH

0 305 610 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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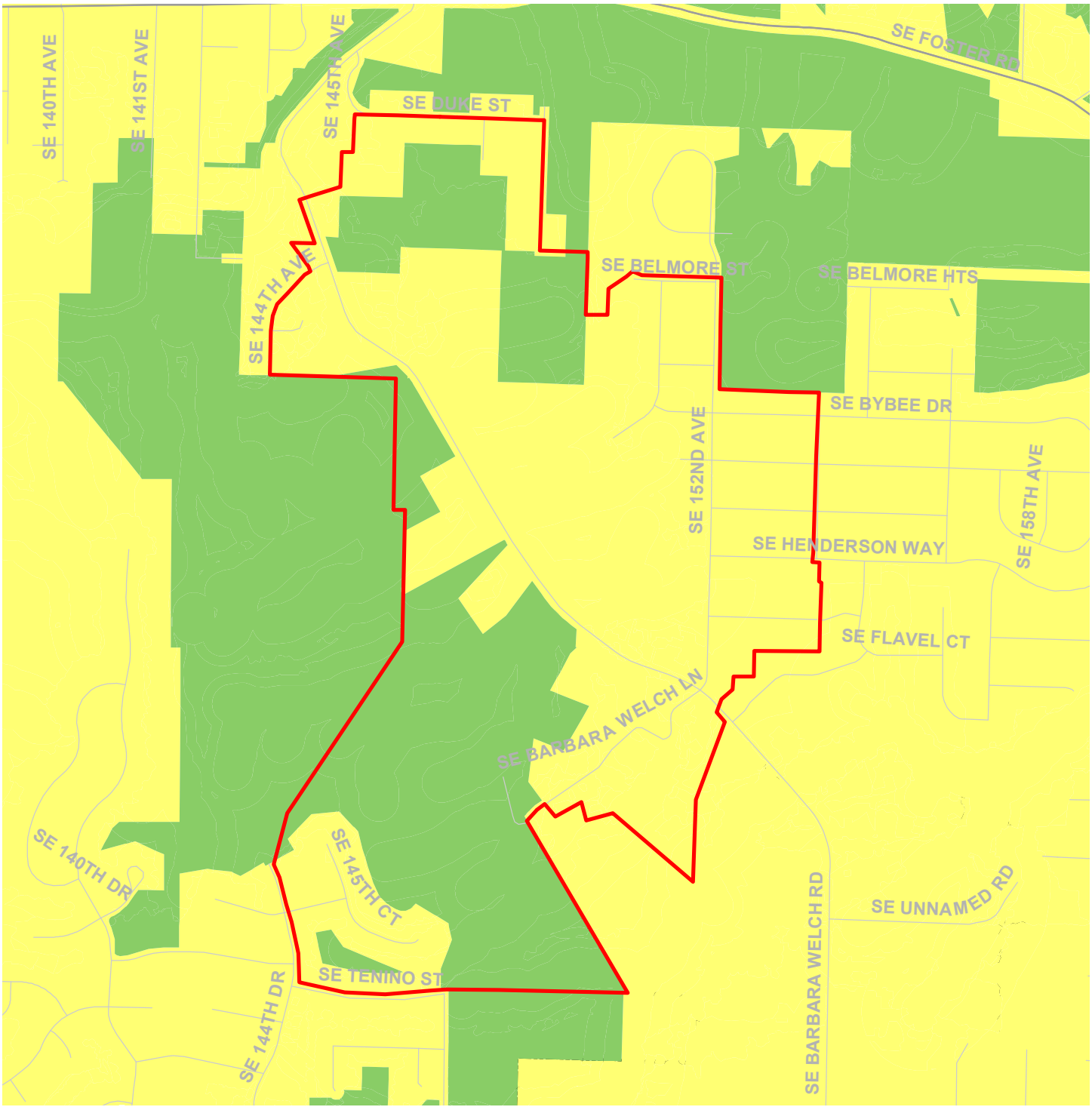

Map F: Urban Development Value (Title 13)

Resource Site: BL11

Updated: June 2020

NORTH

0 495 990 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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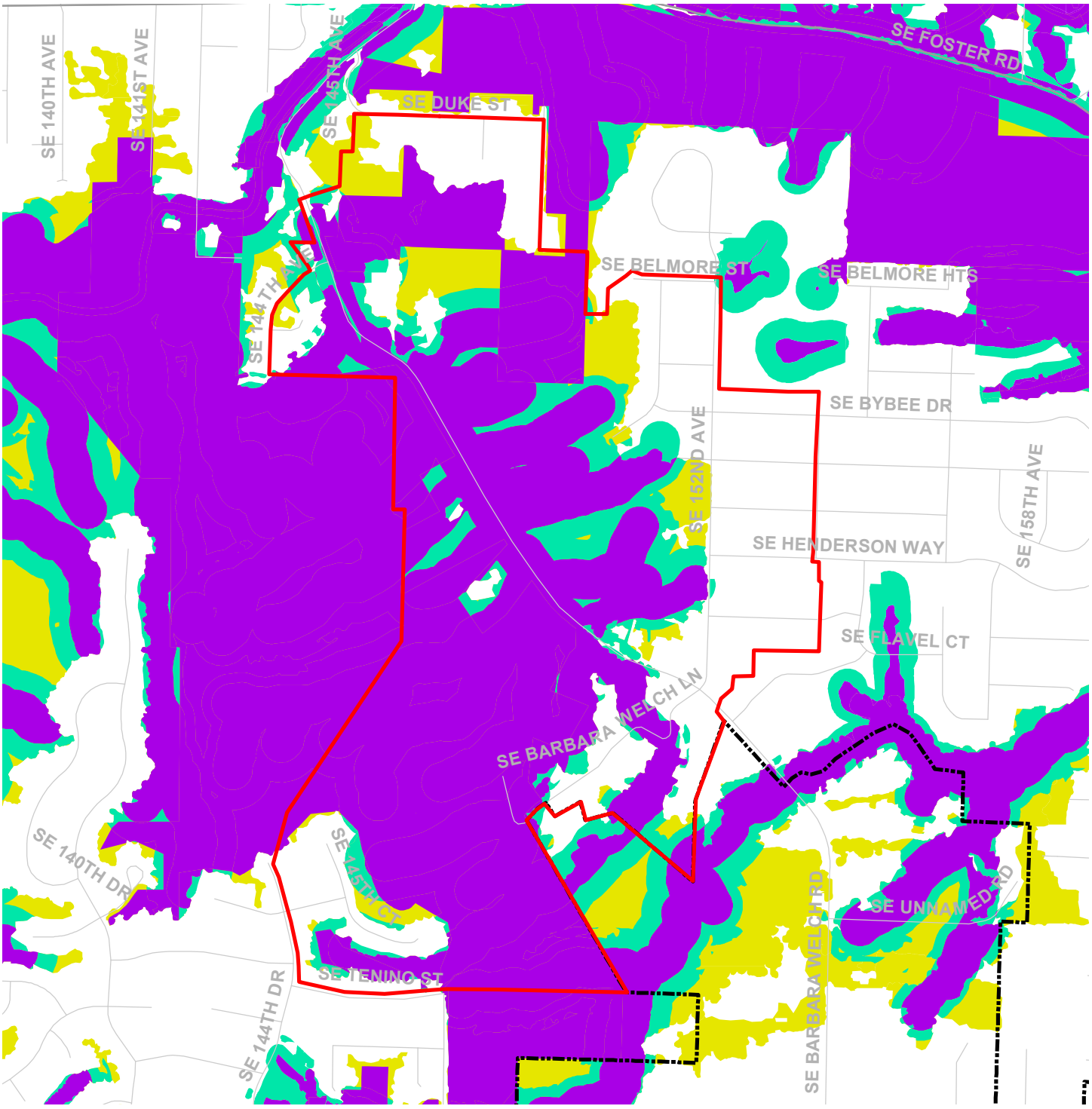
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL11

Updated: June 2020

NORTH

0 495 990 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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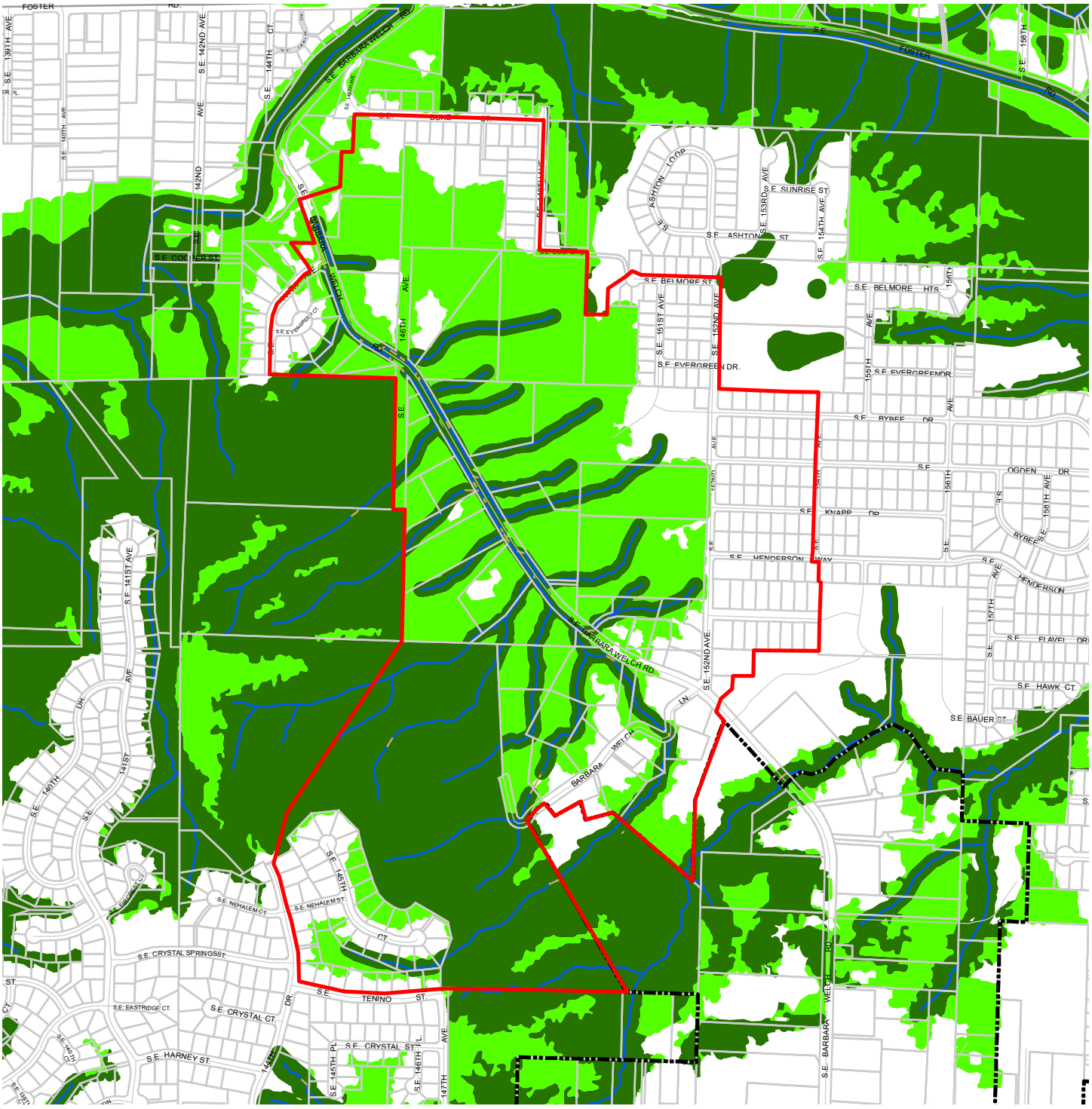
June 2020



Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL11

Updated: June 2020

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

NORTH

0 412.5 825 Feet

Proposed Draft

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Natural Resource Description

Within resource site BL11 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL11**
	Study Area
Stream (Miles)	3.7
Wetlands (acres)	0.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	118.9
Woodland (acres)	8.8
Shrubland (acres)	2.9
Herbaceous (acres)	10.5
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	131.8
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is centered on Barbara Welch Road between Clatsop Butte on the west and Cooper Bluff, Kelley Creek and Clatsop Creek watersheds on the east. The Buttes Natural Area extends over much of the land west of Barbara Welch Road. Large private and public land holdings are located along

the road's east side. Residential subdivisions are the prominent land use on the east side of the resource site. Most of the site is characterized by steep slopes of 25% or higher.

The natural resources in the resource site include Barbara Welch Creek, its numerous tributaries, habitat areas, and forested riparian corridors, slopes and upland areas. The riparian and upland cover remain relatively intact with mature high structure vegetation and native understory, providing habitat and preventing erosion on these steep slopes.

Barbara Welch Creek historically flowed through the valley between Clatsop Butte and Cooper Bluff. Barbara Welch Road was constructed over the historic channel and the channel was relocated into a narrowly constructed ditch to the west of the road. The stream is now disconnected from its eight tributaries to the east with the limited exception of five culverts under Barbara Welch road. The ditch on the east side of Barbara Welch Road is undersized causing sheet flows of stormwater runoff over the road during heavy rain. The tributaries on either side of Barbara Welch Road flow down steep slopes that are highly susceptible to erosion. Tributaries that flow down the north of Cooper Bluff have become highly incised from heavy flows that carry debris in the form of rock and sediment down onto Foster Road. Protecting these tributaries from development-related increases in impervious area and associated runoff will help prevent impacts to steep slopes and will promote human health and safety by reducing safety hazards to commuters using Barbara Welch Rd. Protecting these streams from erosion will help meet state and federal water quality standard to reduce TSS.

Beaver, which are a special status species, have been observed in this resource site. Special status bird species observed within or adjacent to this resource site include American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, willow flycatcher, and Wilson's warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL11				
Resource Site (acres) = 179				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	75.5	30.7	29.6	135.8
percent total inventory site area	42.1%	17.1%	16.5%	75.7%
Wildlife Habitat*				
acres	123.2	0.0	0.0	123.2
percent total inventory site area	68.7%	0.0%	0.0%	68.7%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	123.2	2.9	9.8	135.9
percent total inventory site area	68.7%	1.6%	5.4%	75.8%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called “effective impervious area.” The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL11, 2% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL11

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
179	17	3.2	2%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R20 and R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL11, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-

cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL11, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank (except along SE Barbara Welch Rd) or wetlands, and along SE Barbara Welch Rod land within 25 feet of stream top-of-bank.
2. Apply a conservation overlay zone (c zone) to land along SE Barbara Welch Rd between 25 and 40 feet of stream top-of-bank.
3. Apply a conservation overlay zone (c zone) to areas of forest and woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Apply a conservation overlay zone (c zone) to areas of forest and woodland vegetation that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
5. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL12 **Resource Site Name:** Cooper Bluff

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30j

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

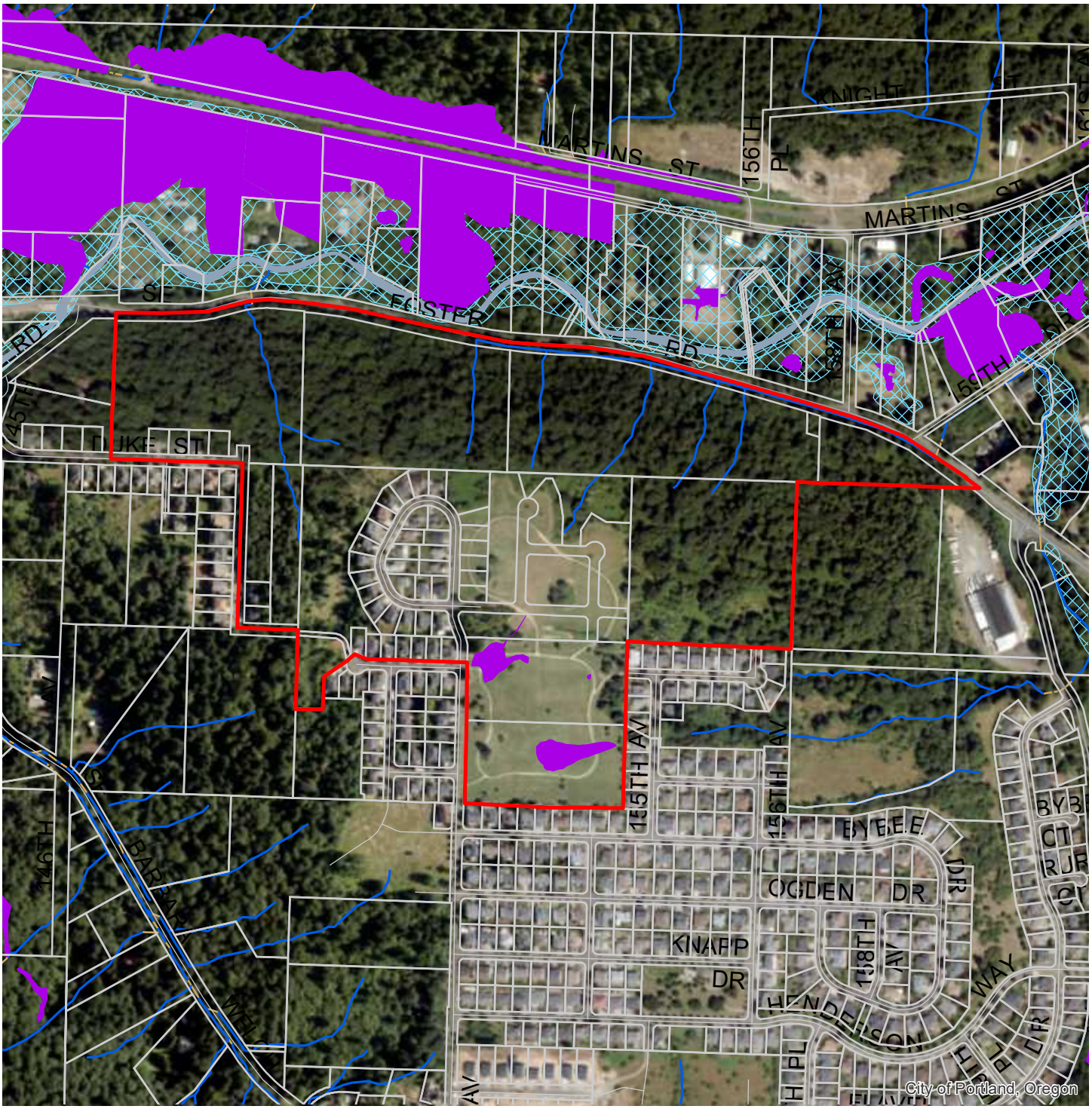
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL12 includes the following base zones (acres):

OS	64.3
R10	17.7
R20	0.0



Map A: Water Features

Resource Site: BL12

Updated: June 2020

NORTH

0 295 590 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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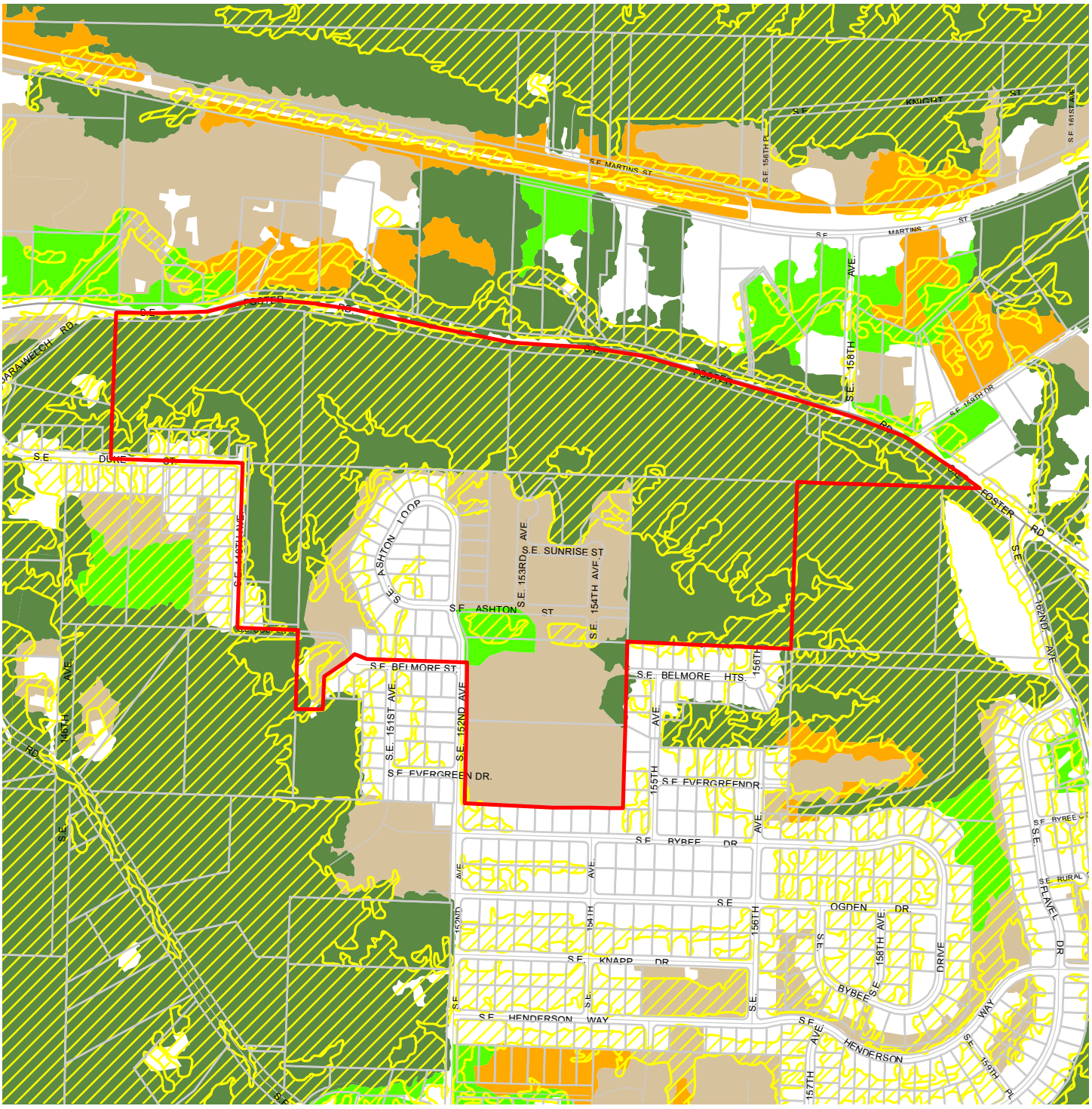

Map B: Vegetation and Steep Slopes

Resource Site: BL12

Updated: June 2020

NORTH

0 295 590 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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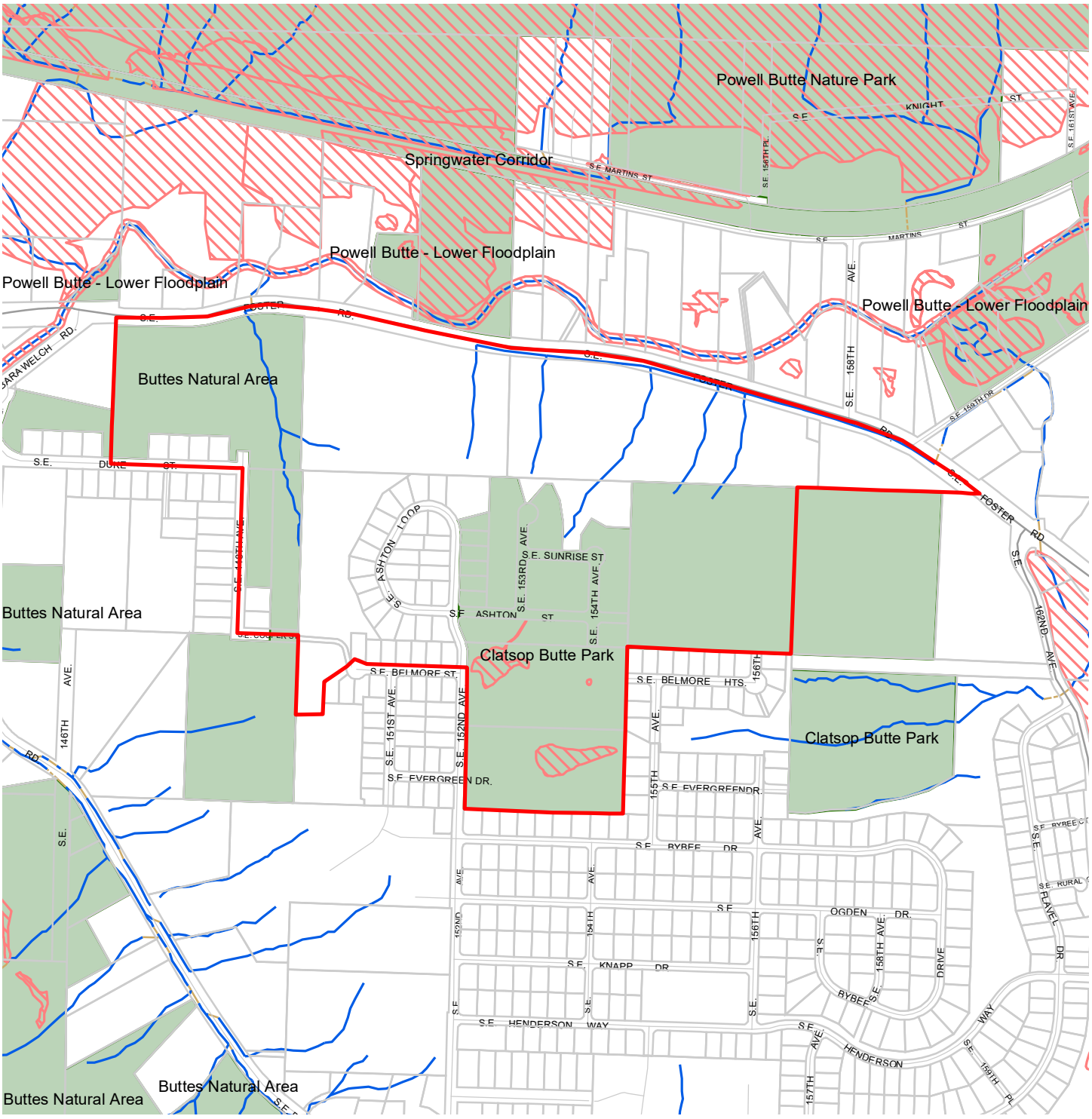

Map C: Special Habitat Areas

Resource Site: BL12

Updated: June 2020

NORTH

0 325 650 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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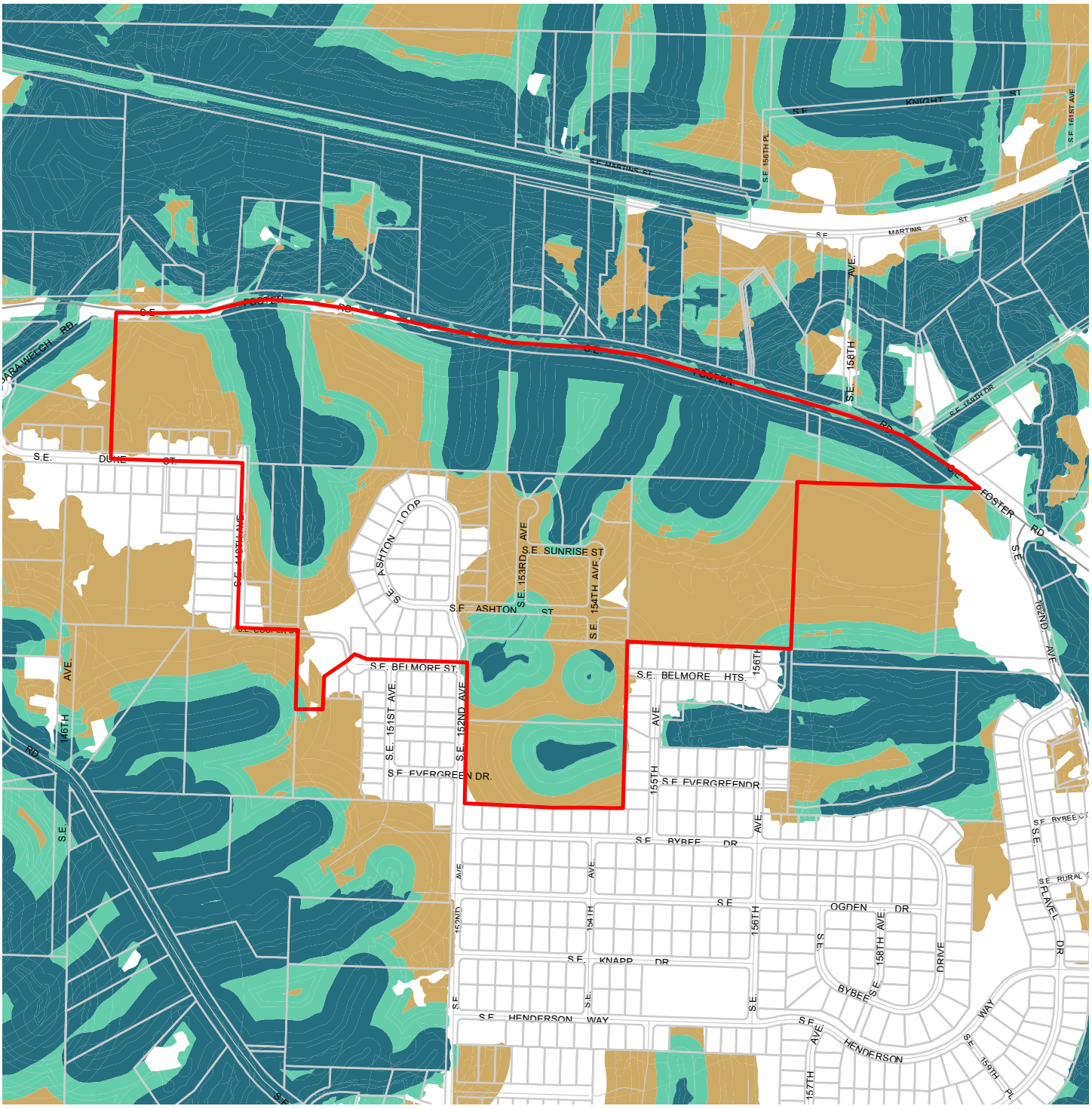

Map D: Riparian Corridors Habitat Classification

Resource Site: BL12

Updated: June 2020

NORTH

0 295 590 Feet

Proposed Draft

Resource Sites

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

City of Portland

Taxlots

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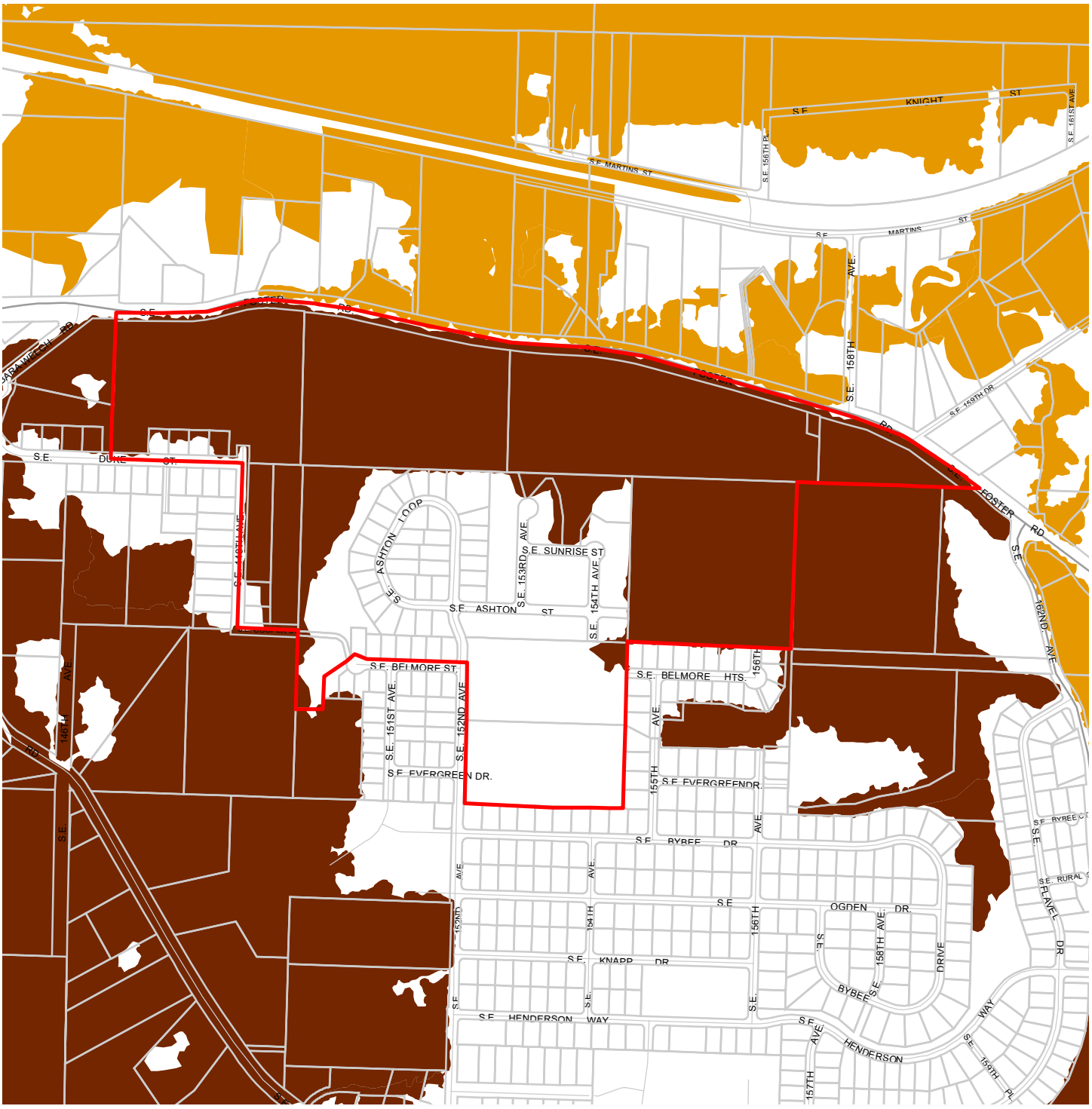

Map E: Wildlife Habitat Classification

Resource Site: BL12

Updated: June 2020

NORTH

0 240 480 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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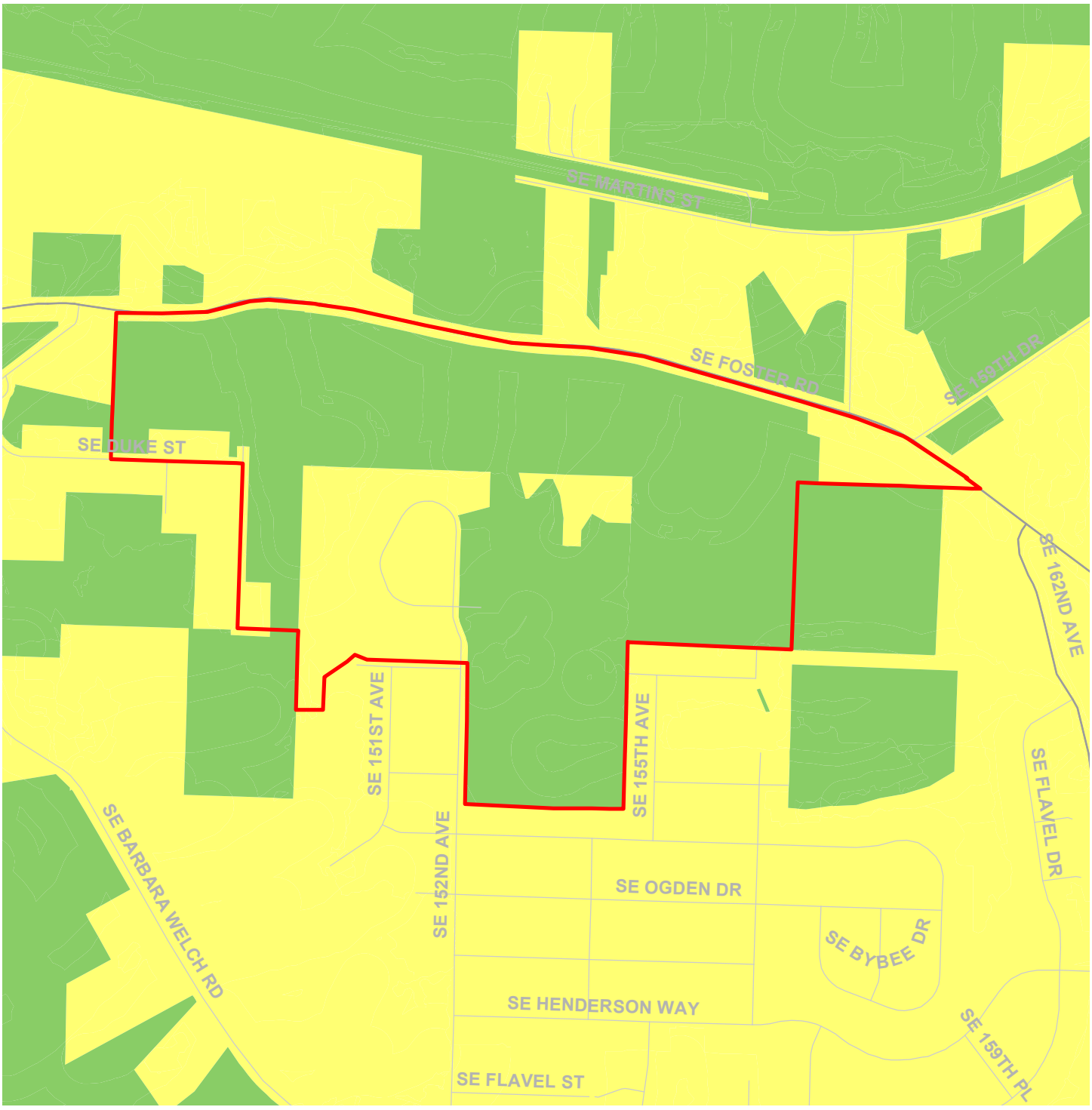
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL12

Updated: June 2020

NORTH

0 410 820 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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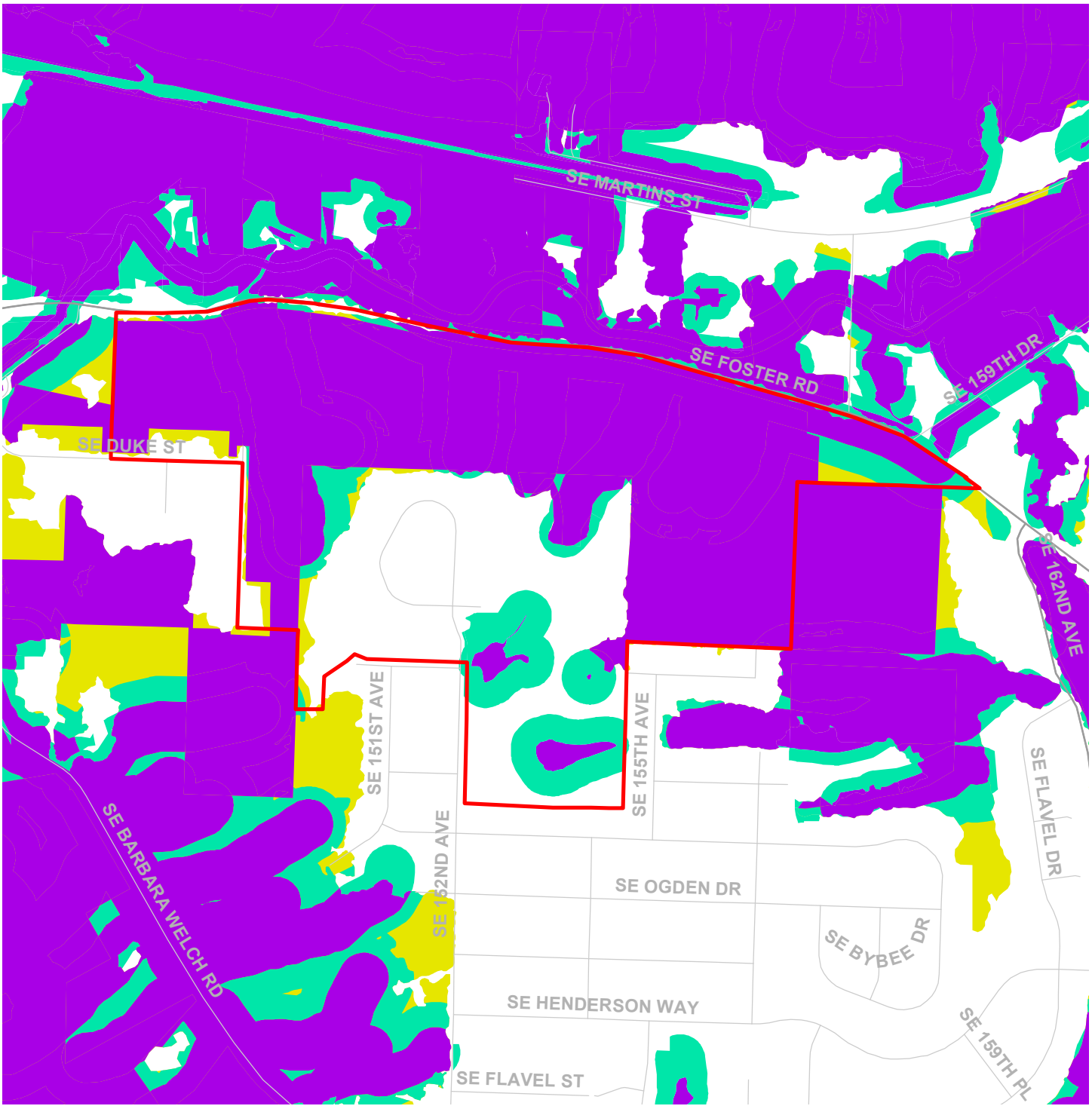
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL12

Updated: June 2020

NORTH

0 410 820 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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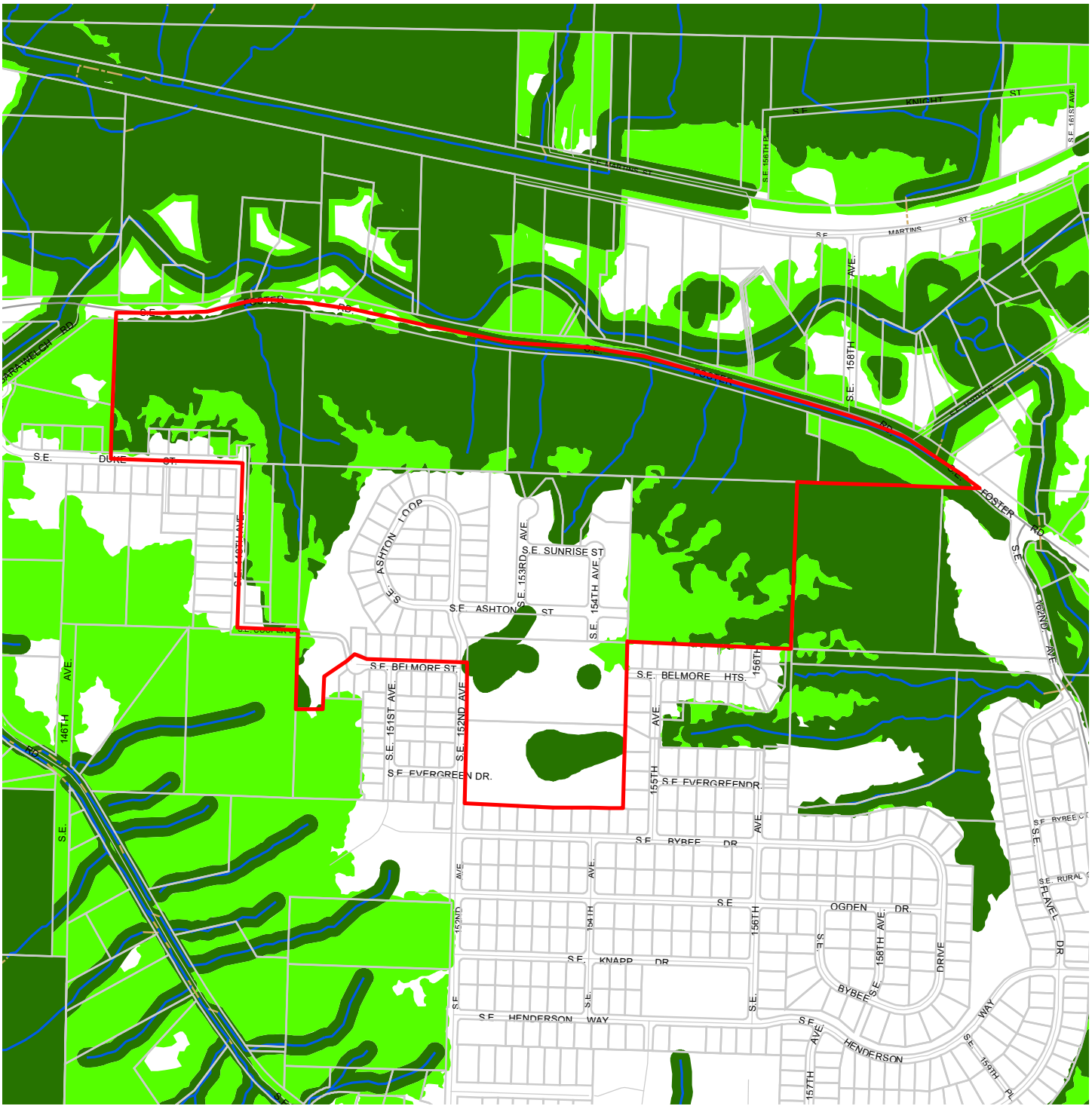

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL12

Updated: June 2020

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

NORTH
0 325 650 Feet
Proposed Draft

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Natural Resource Description

Within resource site BL12 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL12**
	Study Area
Stream (Miles)	1.1
Wetlands (acres)	0.9
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	53.1
Woodland (acres)	1.3
Shrubland (acres)	0.0
Herbaceous (acres)	19.3
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	46.5
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located south of Foster Road between Barbara Welch and Kelley Creek watersheds. Multnomah County owns steeply sloped land along Foster Road. Gilbert Ridge Natural Area is located on the northwest corner of the site. Clatsop Butte Park is located to the east. A residential subdivision is

located on flatter lands and includes large open space tracts with a combination of grassland, forest and wetlands.

The resources include forest habitat, wetlands, steep slopes and rock cliffs, and Johnson Creek tributaries. These tributaries flow from the bluff down steep slopes to Foster Road, then through culverts under the road into Johnson Creek to the north. High flows from heavy rain and altered hydrologic regime at the top of the butte created highly erosive forces that incised the headwater streams along the north slope of the bluff. Photo documentation show these tributaries have been down cut by up to six feet. Eroded rock and sediment created enough force to push heavy concrete barriers and debris onto SE Foster Road in 2009. Protecting these tributaries and the slopes development-related increases in impervious area and associated runoff will help prevent further road hazard and promote human health and safety while protecting habitat. Erosion from these tributaries contribute to TSS to Johnson Creek during rain events, a water quality concern regulated by city, state, and federal agencies.

Special status bird species observed within or adjacent to this resource site include American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, and willow flycatcher.

Table B: Quality of Natural Resource Functions in Resource Site BL12				
Resource Site (acres) = 82				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	22.9	18.6	30.7	72.3
percent total inventory site area	27.9%	22.7%	37.5%	88.0%
Wildlife Habitat*				
acres	52.7	0.0	0.0	52.7
percent total inventory site area	64.2%	0.0%	0.0%	64.2%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	53.6	6.3	12.3	72.3
percent total inventory site area	65.3%	7.7%	15.0%	88.0%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL12, 0.3% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL12

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
82	3.5	0.3	0.3%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat

Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL12, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL12, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation not on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL13 **Resource Site Name:** Clatsop Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30k

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

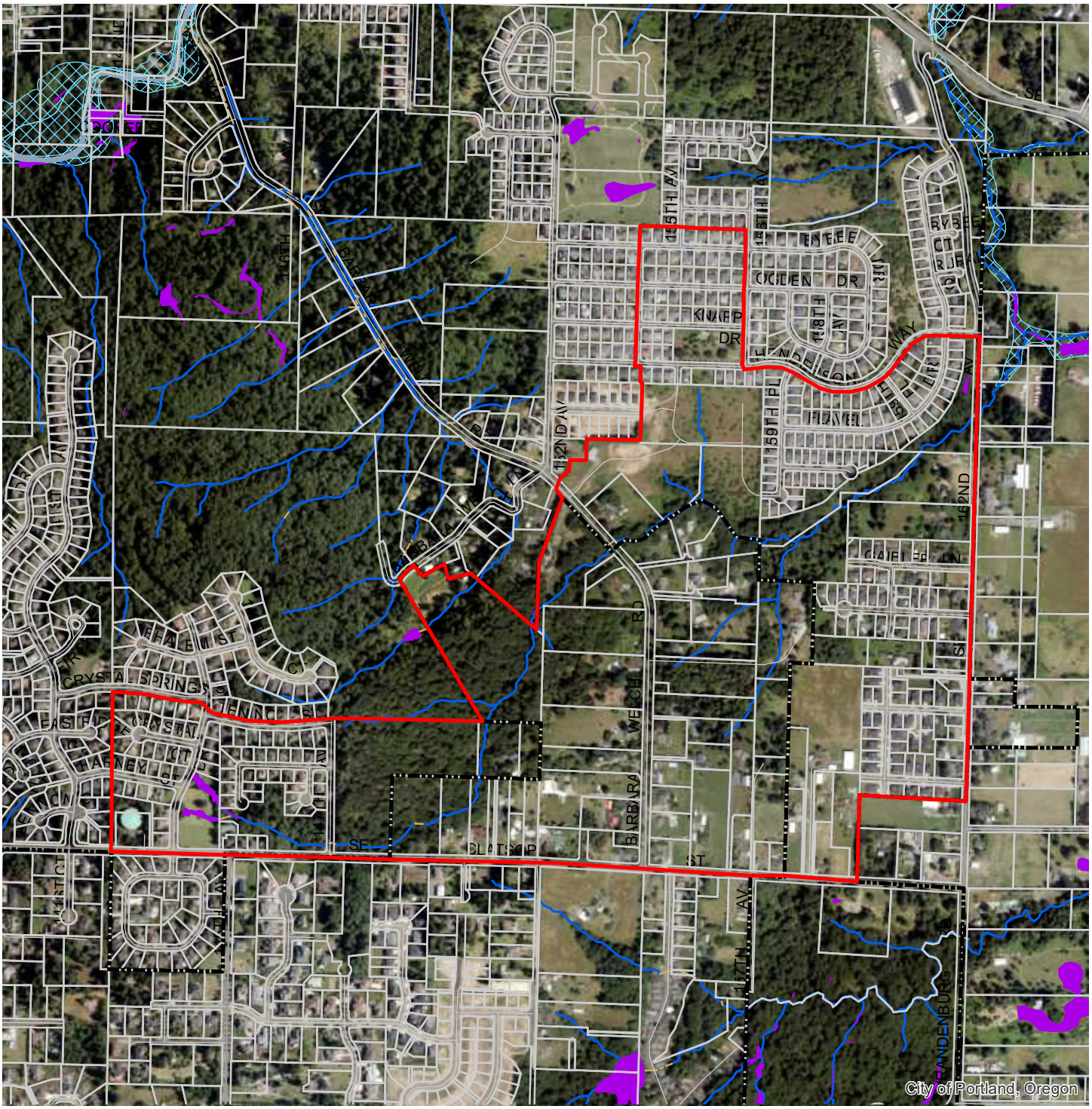
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL13 includes the following base zones (acres):

OS	11.4
R10	140.8
R20	0.0
RF	95.2



Map A: Water Features

Resource Site: BL13

Updated: June 2020

NORTH

0 460 920 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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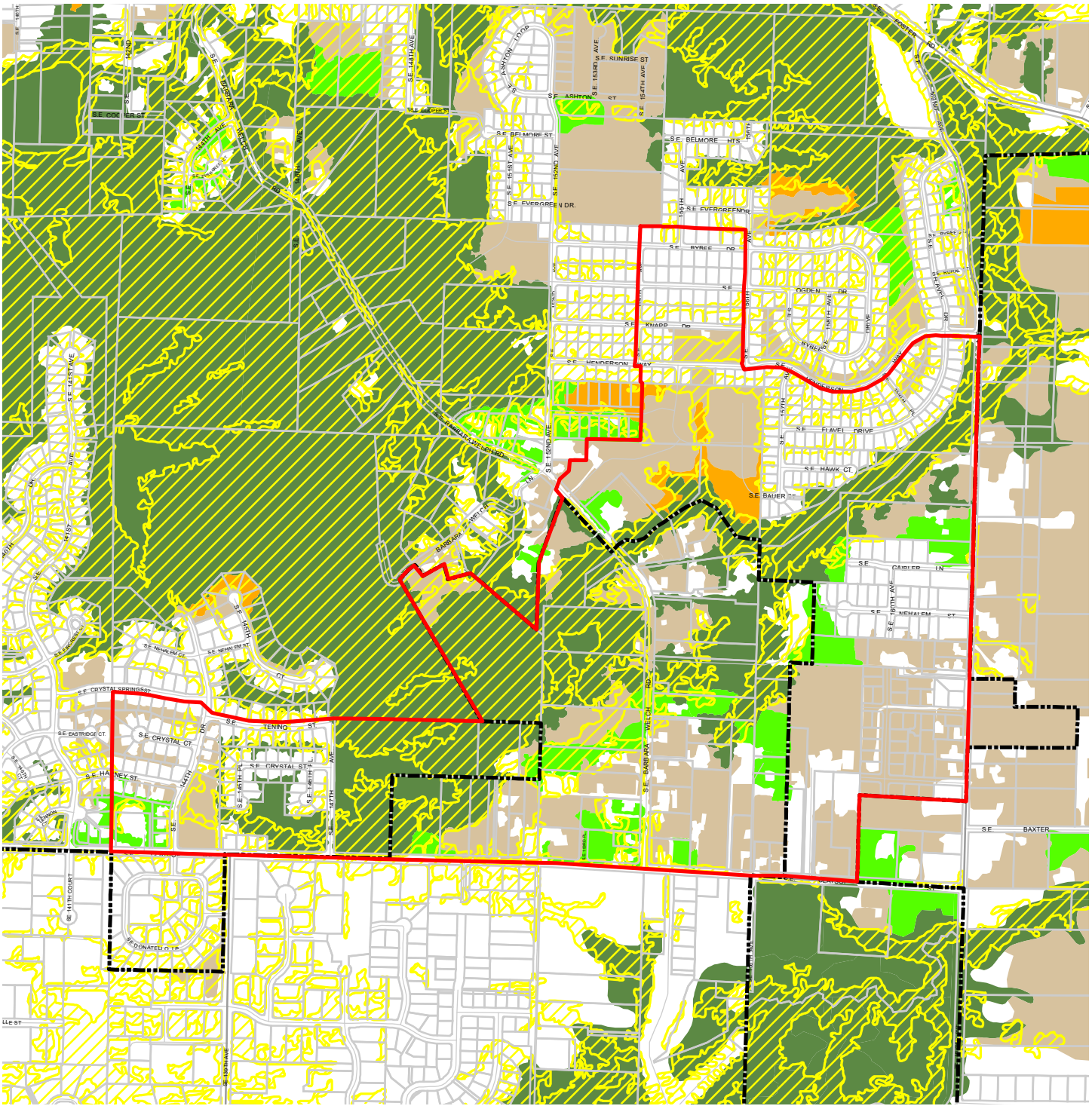

Map B: Vegetation and Steep Slopes

Resource Site: BL13

Updated: June 2020

NORTH

0 460 920 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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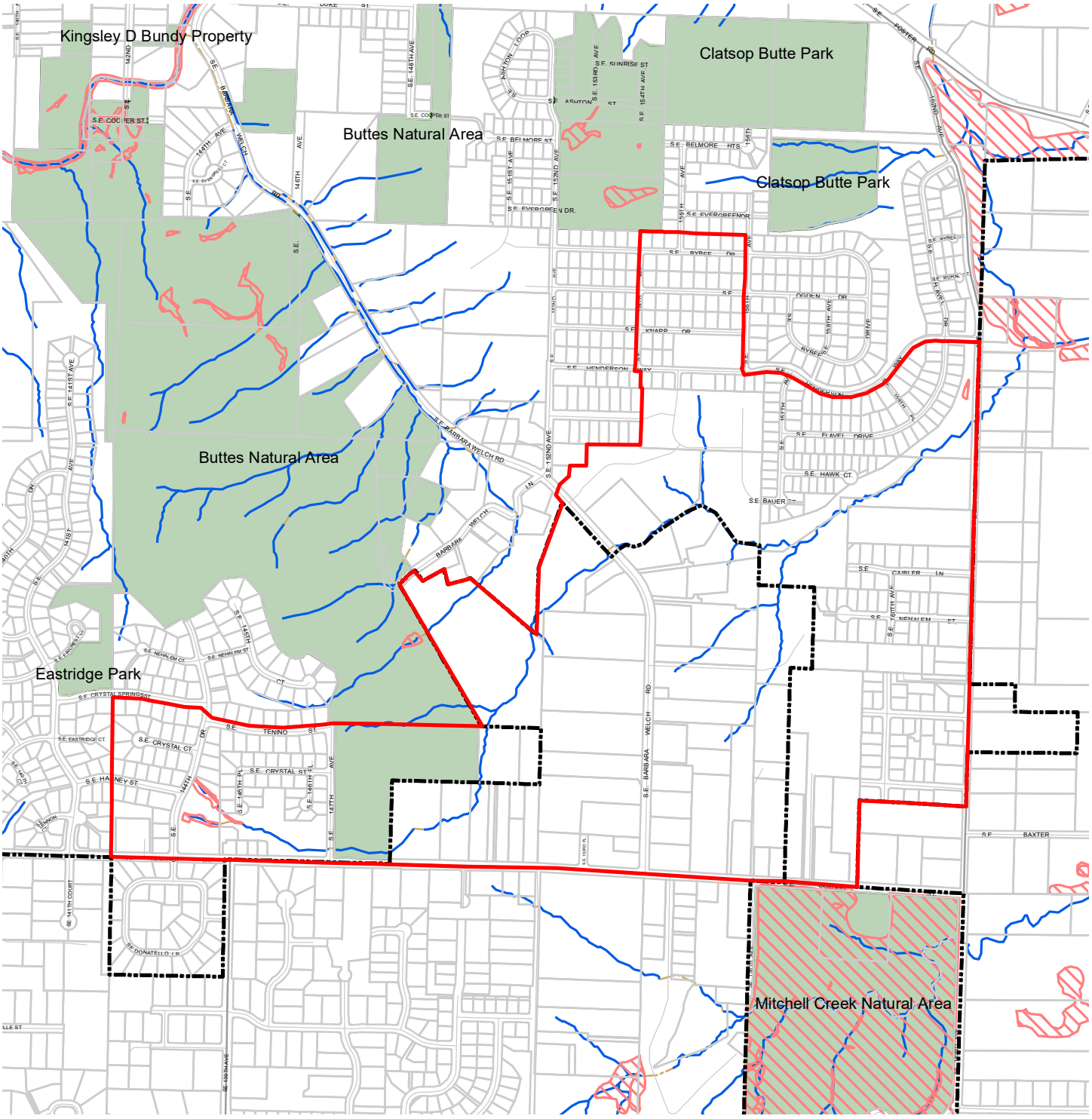
June 2020



Map C: Special Habitat Areas

Resource Site: BL13

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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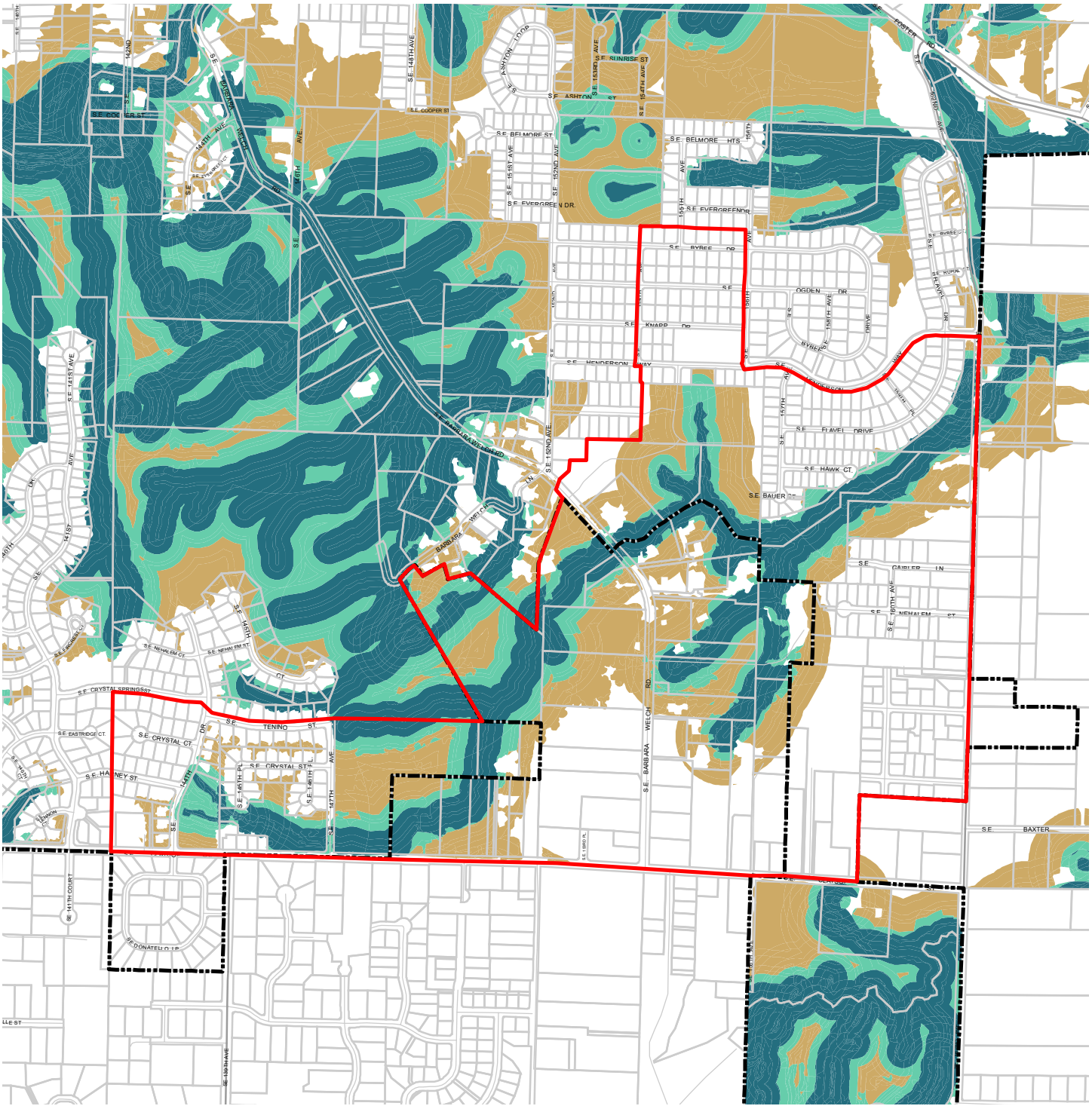

Map D: Riparian Corridors Habitat Classification

Resource Site: BL13

Updated: June 2020

NORTH

0 460 920 Feet

Proposed Draft

Resource Sites

City of Portland

Riparian Corridors

Taxlots

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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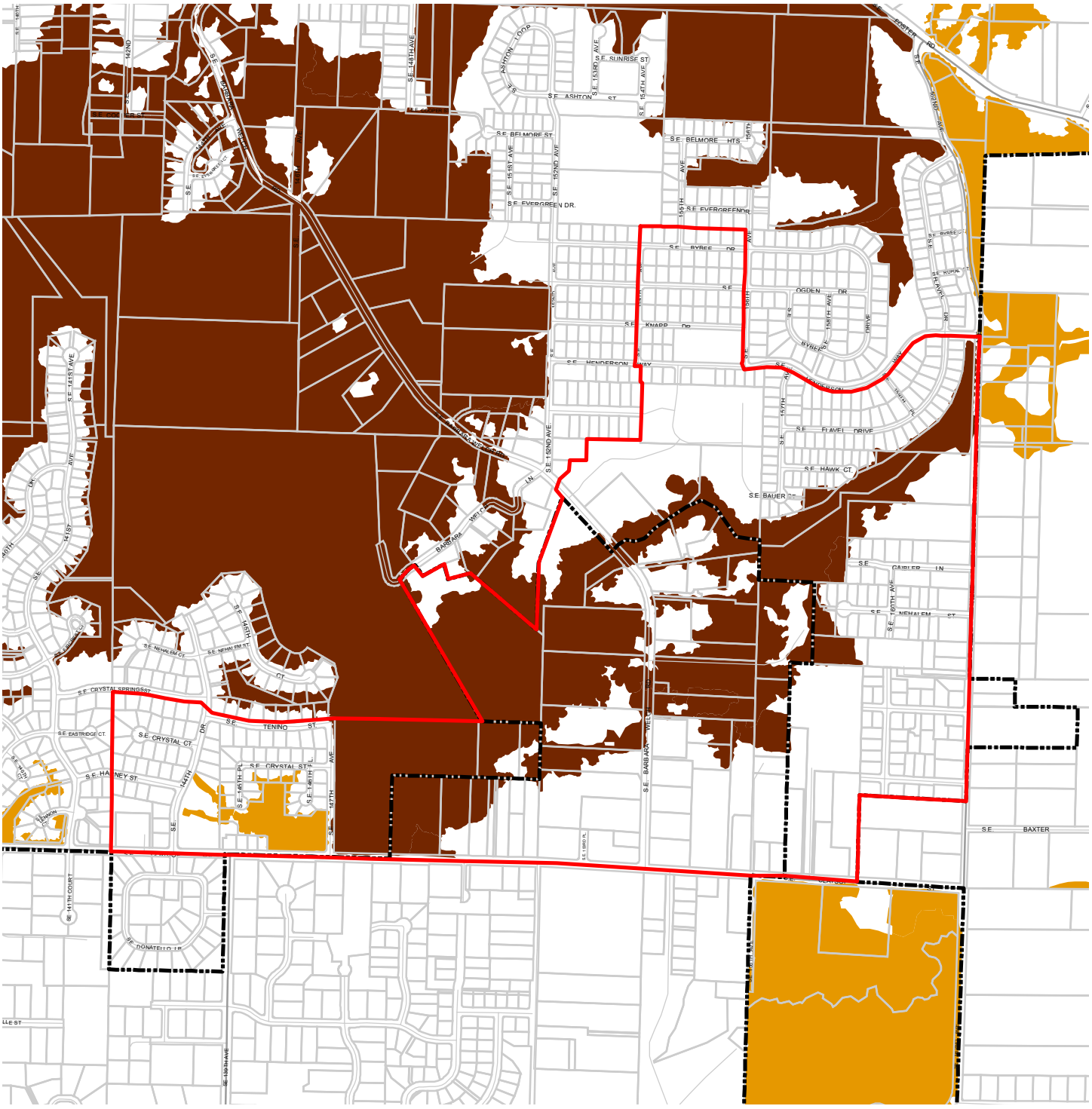

Map E: Wildlife Habitat Classification

Resource Site: BL13

Updated: June 2020

NORTH

0 370 740 Feet

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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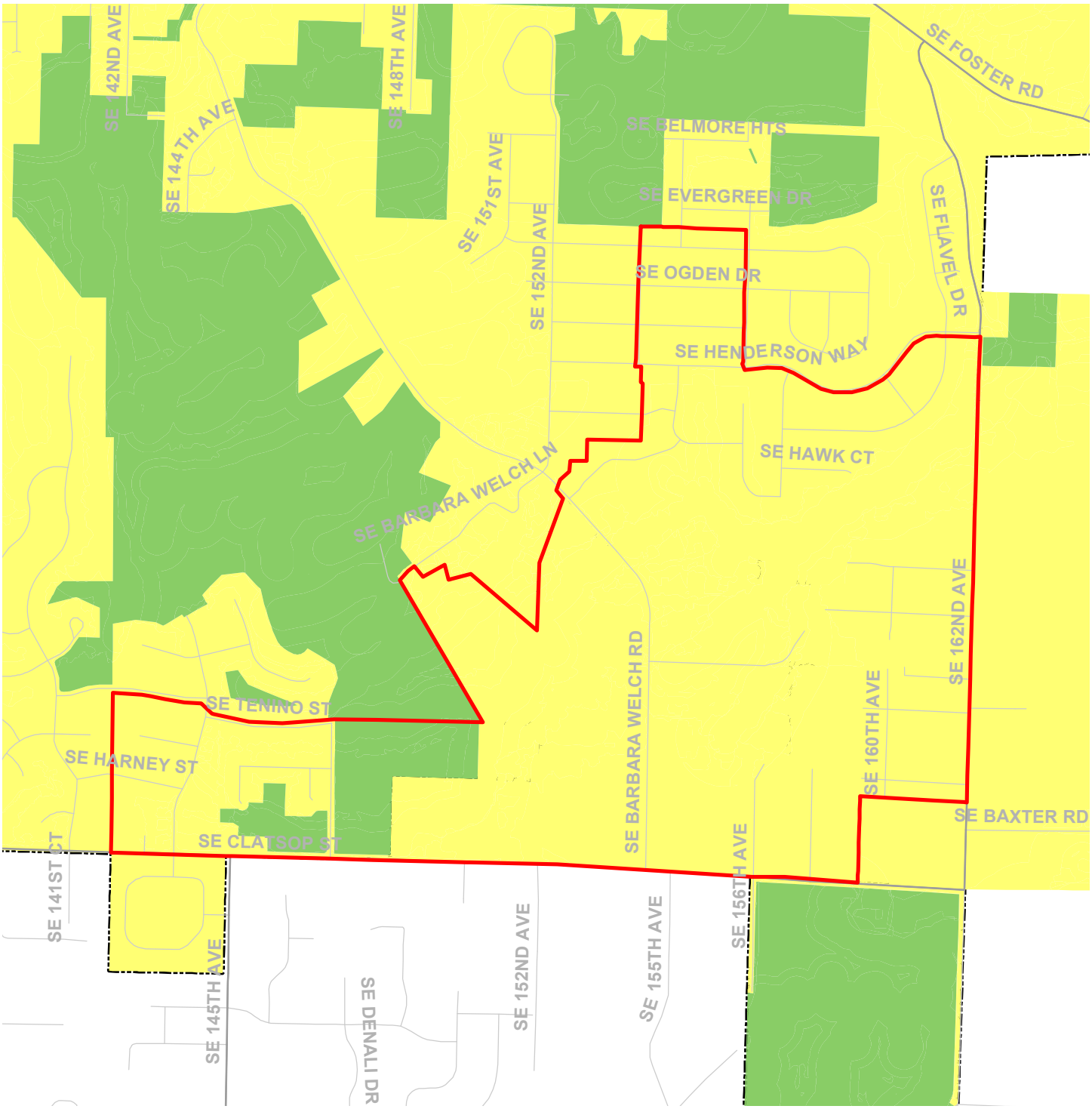

Map F: Urban Development Value (Title 13)

Resource Site: BL13

Updated: June 2020

NORTH

0 600 1,200 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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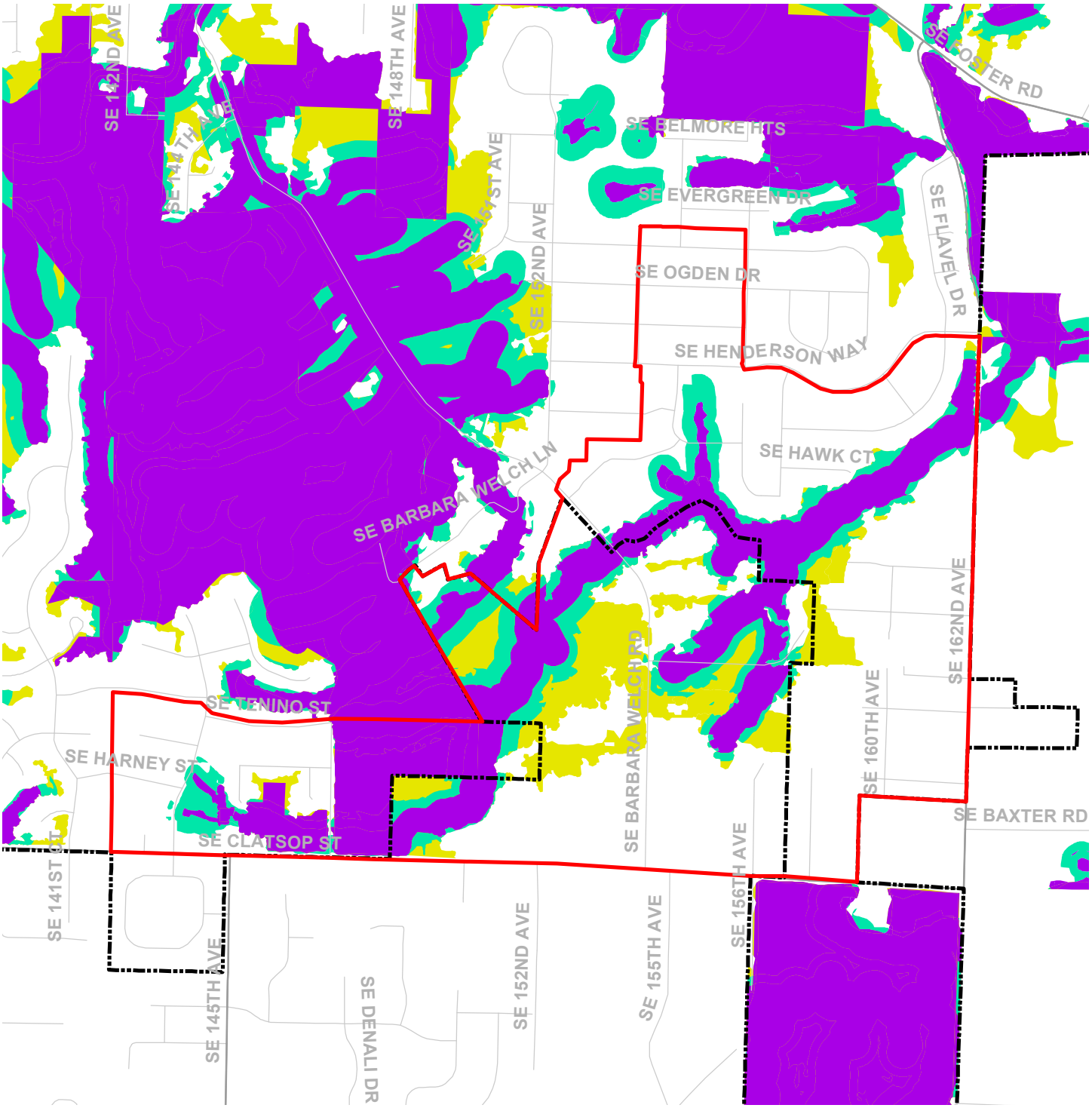
June 2020



Map F: Urban Development Value (Title 13)

Resource Site: BL13

Updated: June 2020

NORTH

0 600 1,200 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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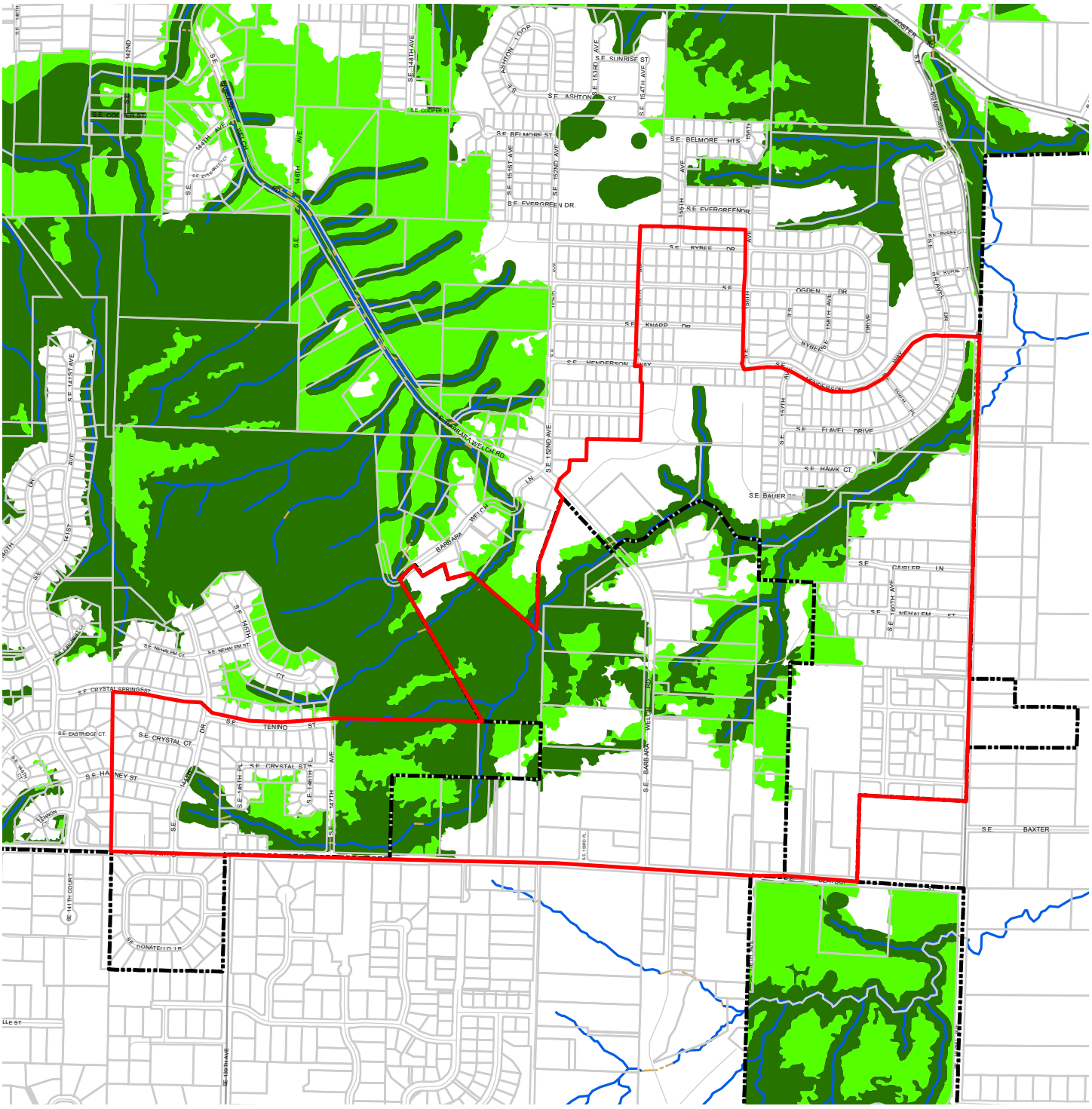

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL13

Updated: June 2020

NORTH

0 500 1,000 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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City of Portland, Oregon

Natural Resource Description

Within resource site BL13 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: None

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL13**
	Study Area
Stream (Miles)	2.1
Wetlands (acres)	0.5
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	76.3
Woodland (acres)	18.7
Shrubland (acres)	3.4
Herbaceous (acres)	71.9
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	78.7
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

The resource site is bounded by Clatsop Street to the south and SE 162nd Avenue to the east. Resource sites BL11 and BL14 are found to the north. The site is very low density residential and farm uses to the south. Single family residential development is found to the north and near SE 162nd Avenue. The southwest portion of the site includes part of the Buttes Natural Area. Much of the watershed is in

unincorporated Multnomah County. Clatsop Creek runs southwest to northeast through the site, in steeply sloped lands, crosses Barbara Welch Road. Clatsop Creek is a tributary to Kelley Creek.

Natural resources identified on the site include Clatsop Creek, creek tributaries, riparian corridors, steep ravines, scrubland and forest habitat. Coho salmon, which are Endangered Species Act-listed, and steelhead trout Endangered Species Act-listedhave been observed in Clatsop Creek and its tributaries. Beaver, which are a special status species, have been observed in this resource site.

Special status bird species observed within or adjacent to this resource site include American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, and willow flycatcher.

Table B: Quality of Natural Resource Functions in Resource Site BL13

Resource Site (acres) = 247

	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	41.0	24.4	51.6	117.0
percent total inventory site area	16.6%	9.8%	20.8%	47.3%
Wildlife Habitat*				
acres	79.5	4.5	0.0	84.0
percent total inventory site area	32.1%	1.8%	0.0%	34.0%
Special Habitat Areas**				
acres	0.0			
percent total inventory site area	0.0%			
Combined Total+				
acres	83.4	9.6	27.7	120.7
percent total inventory site area	33.7%	3.9%	11.2%	48.8%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much

of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL13, 0.1% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL13

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
248	27	0.2	0.1%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas; generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the RF and R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL13, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL13, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation not on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL14 **Resource Site Name:** Kelley Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30m

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

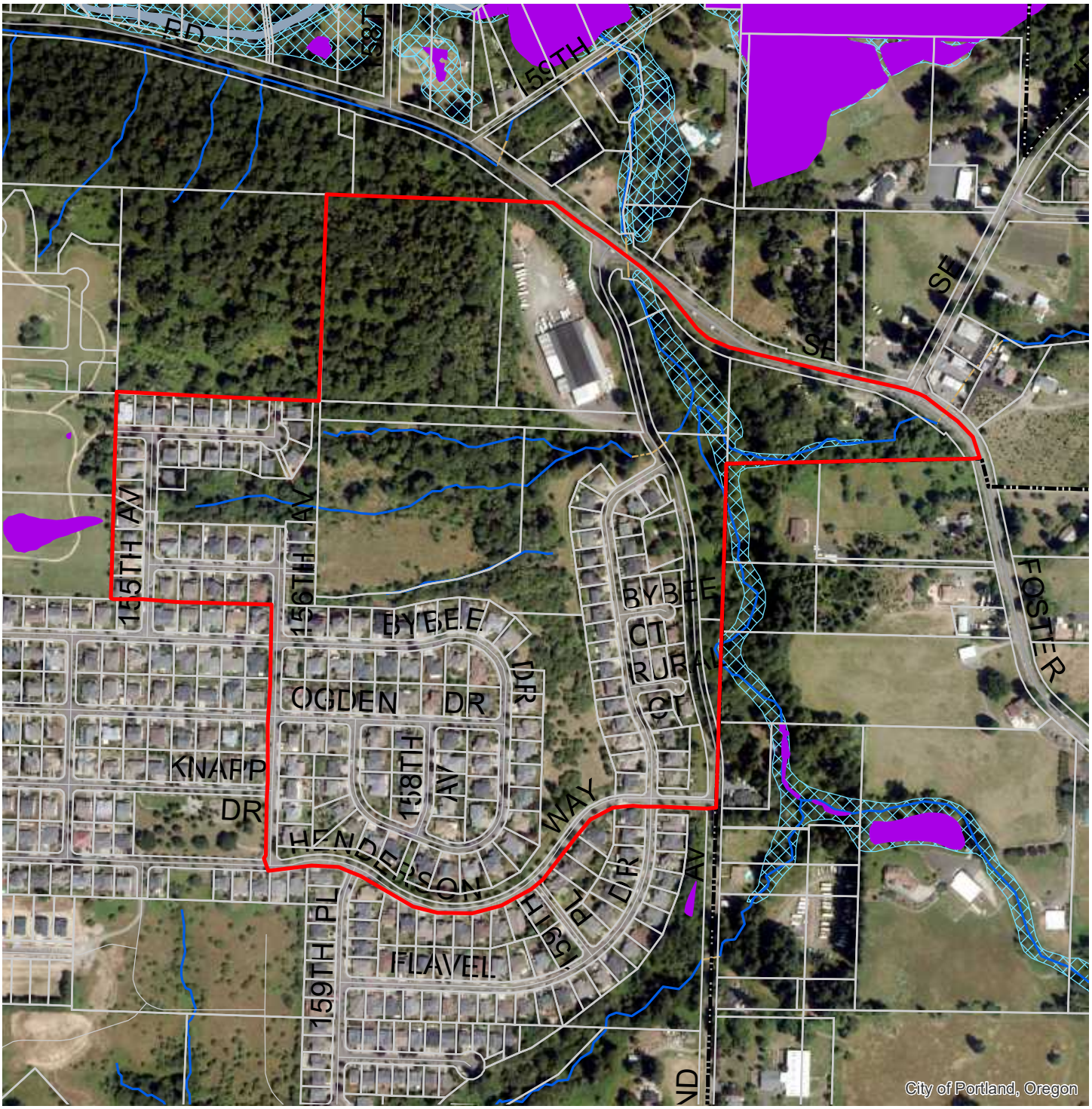
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL14 includes the following base zones (acres):

CE	0.0
OS	16.6
R10	61.7



Map A: Water Features
Resource Site: BL14

Updated: June 2020

NORTH

0 240 480 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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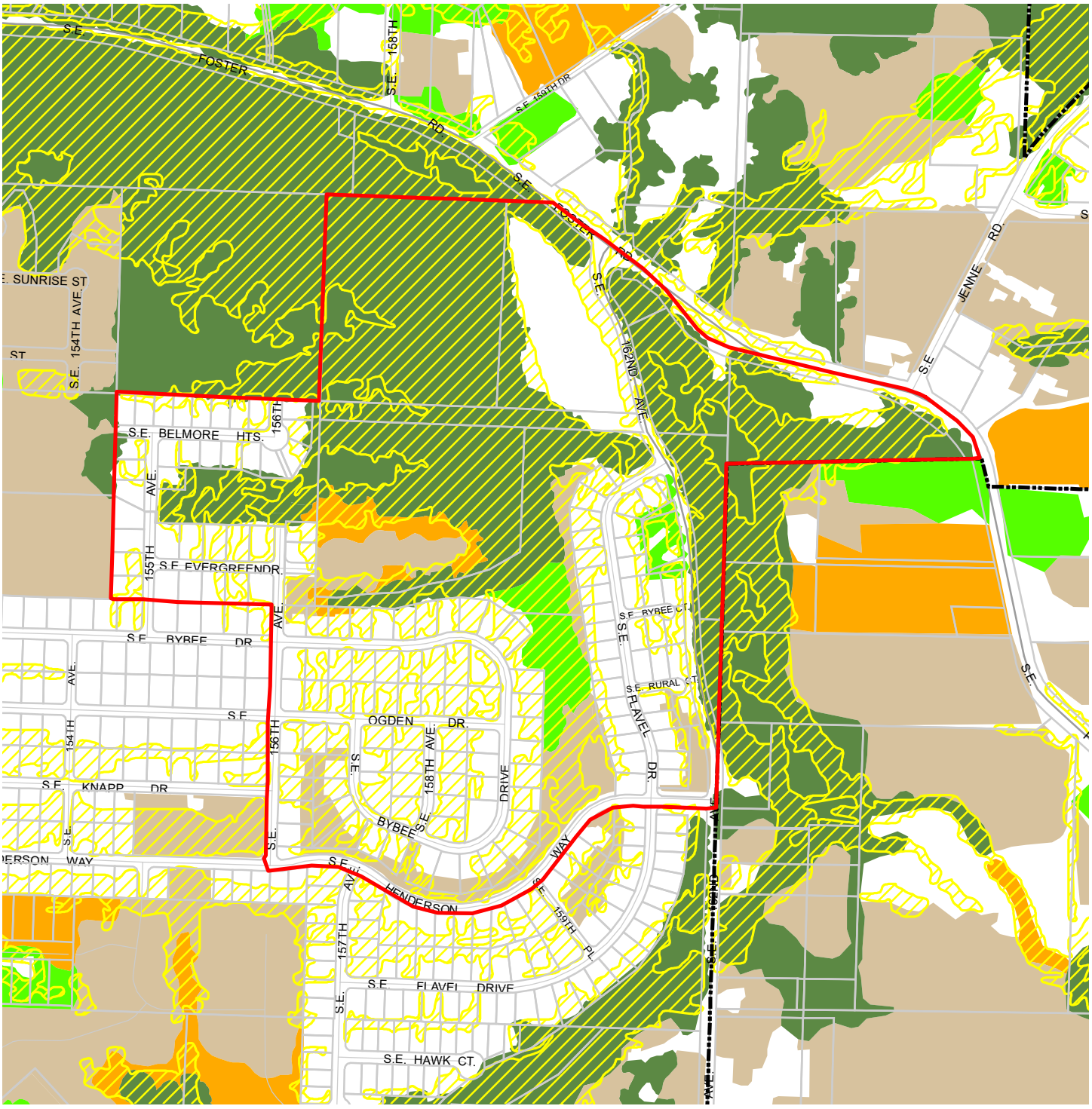
June 2020



Map B: Vegetation and Steep Slopes

Resource Site: BL14

Updated: June 2020

NORTH

0 240 480 Feet

Proposed Draft

- Resource Sites
- slopes >25%
- forest vegetation
- woodland vegetation
- shrubland vegetation
- herbaceous vegetation
- City of Portland
- Taxlots

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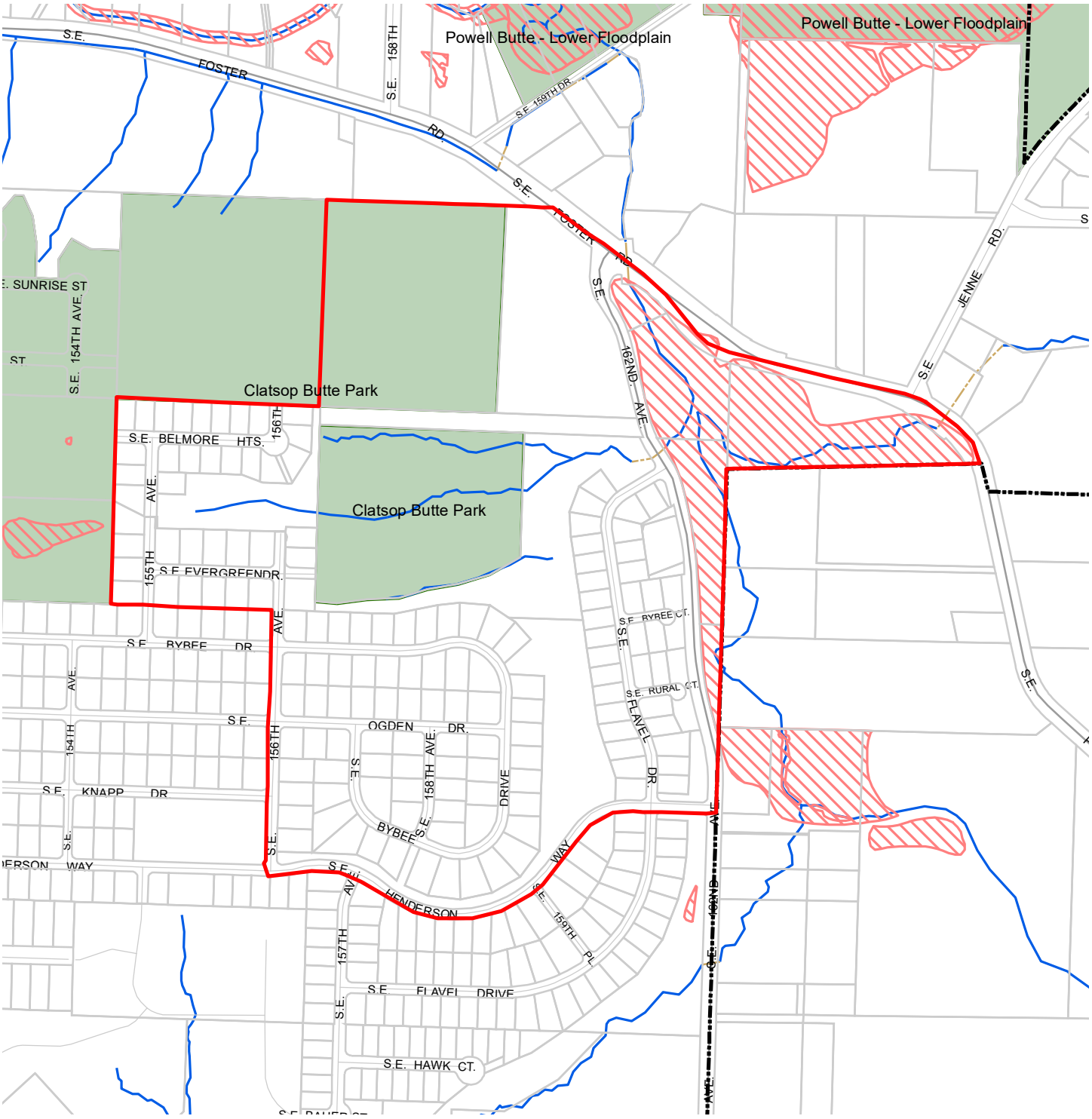

Map C: Special Habitat Areas

Resource Site: BL14

Updated: June 2020

NORTH

0 260 520 Feet

Proposed Draft

- Resource Sites
- Special Habitat Areas (SHAs)
- open stream channel
- piped stream segment
- parks
- schools
- Taxlots
- City of Portland

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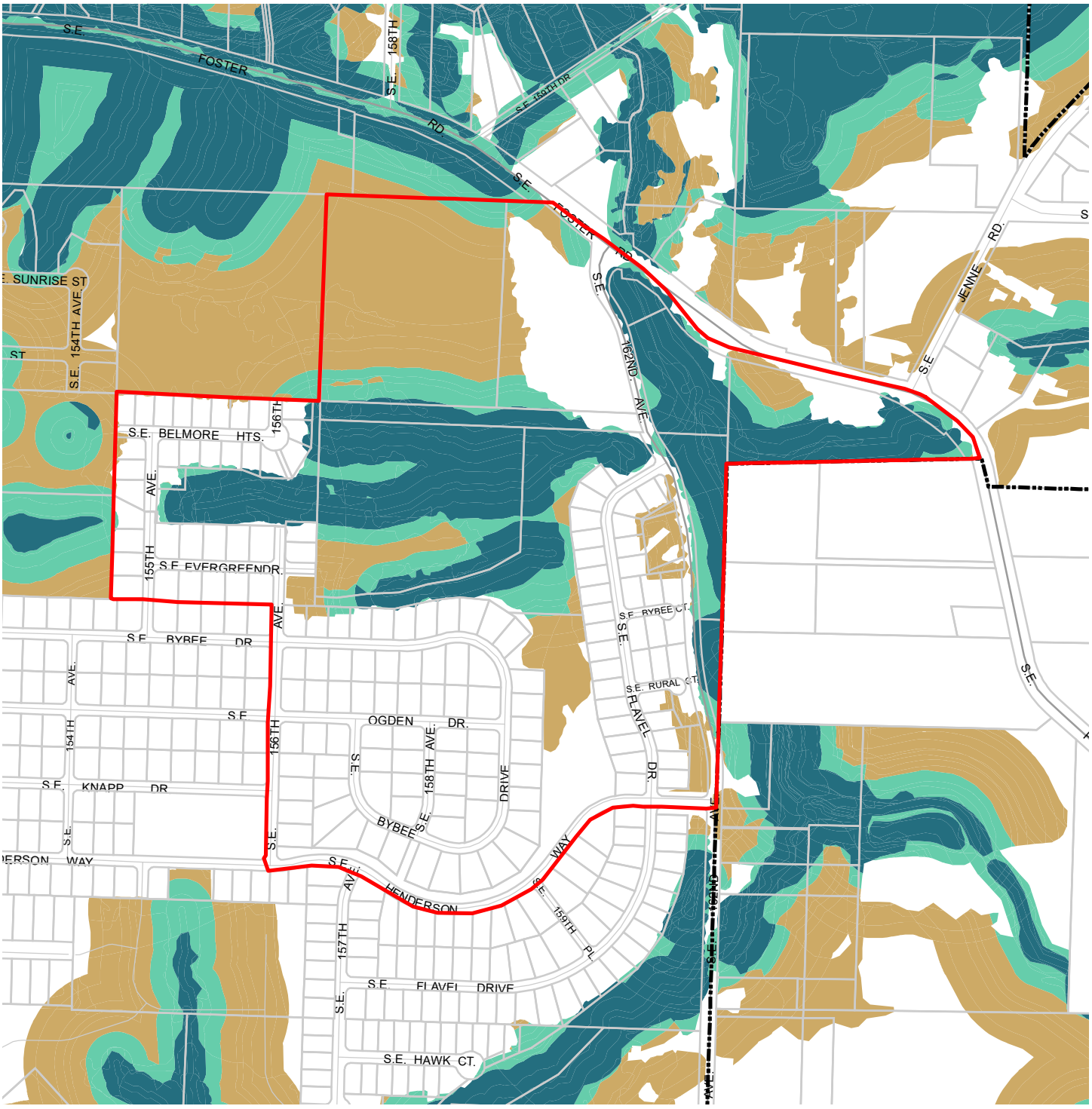

Map D: Riparian Corridors Habitat Classification

Resource Site: BL14

Updated: June 2020

NORTH

0 240 480 Feet

Proposed Draft

Resource Sites

City of Portland

Taxlots

Riparian Corridors

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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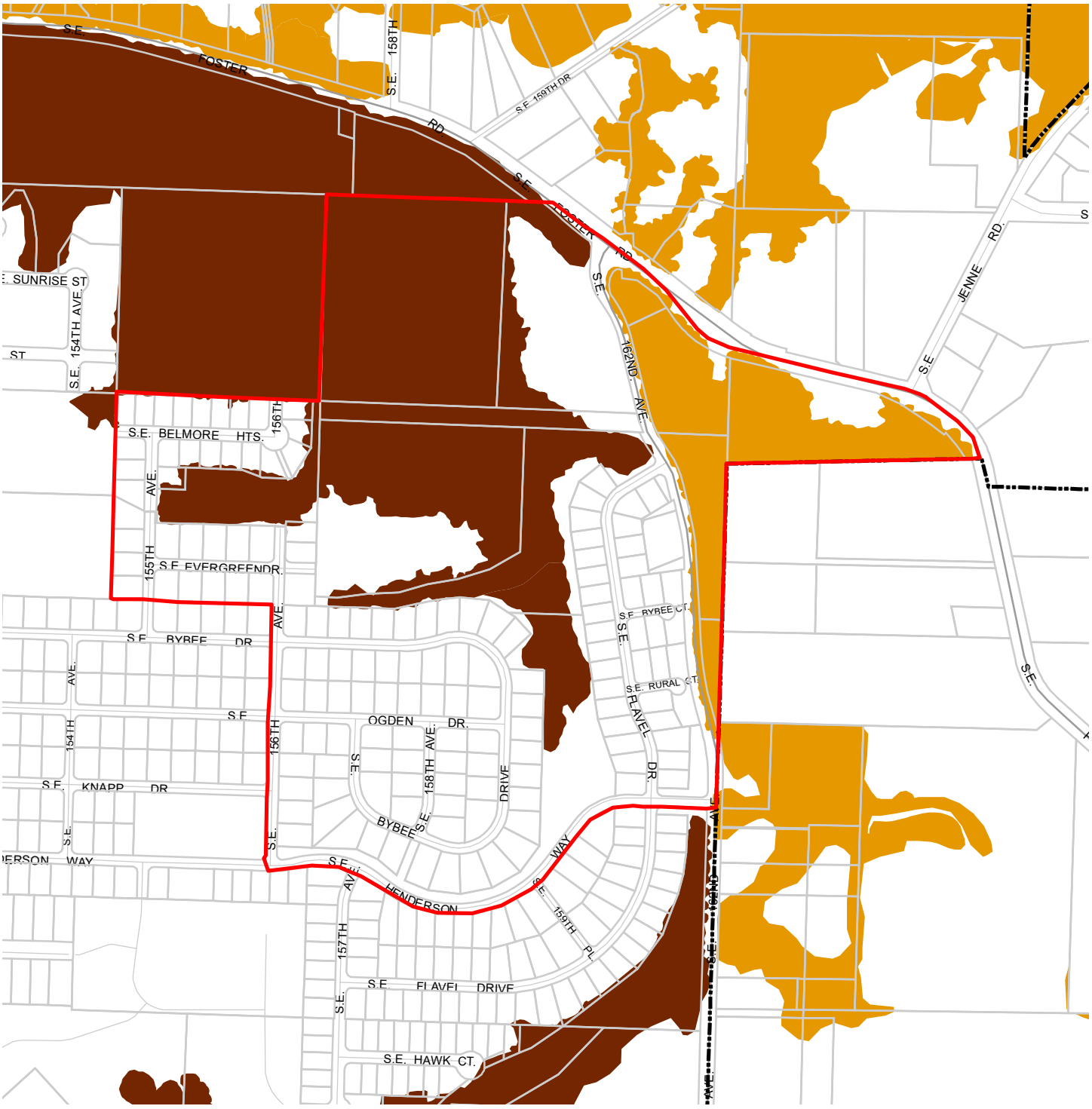

Map E: Wildlife Habitat Classification

Resource Site: BL14

Updated: June 2020

NORTH

0 195 390 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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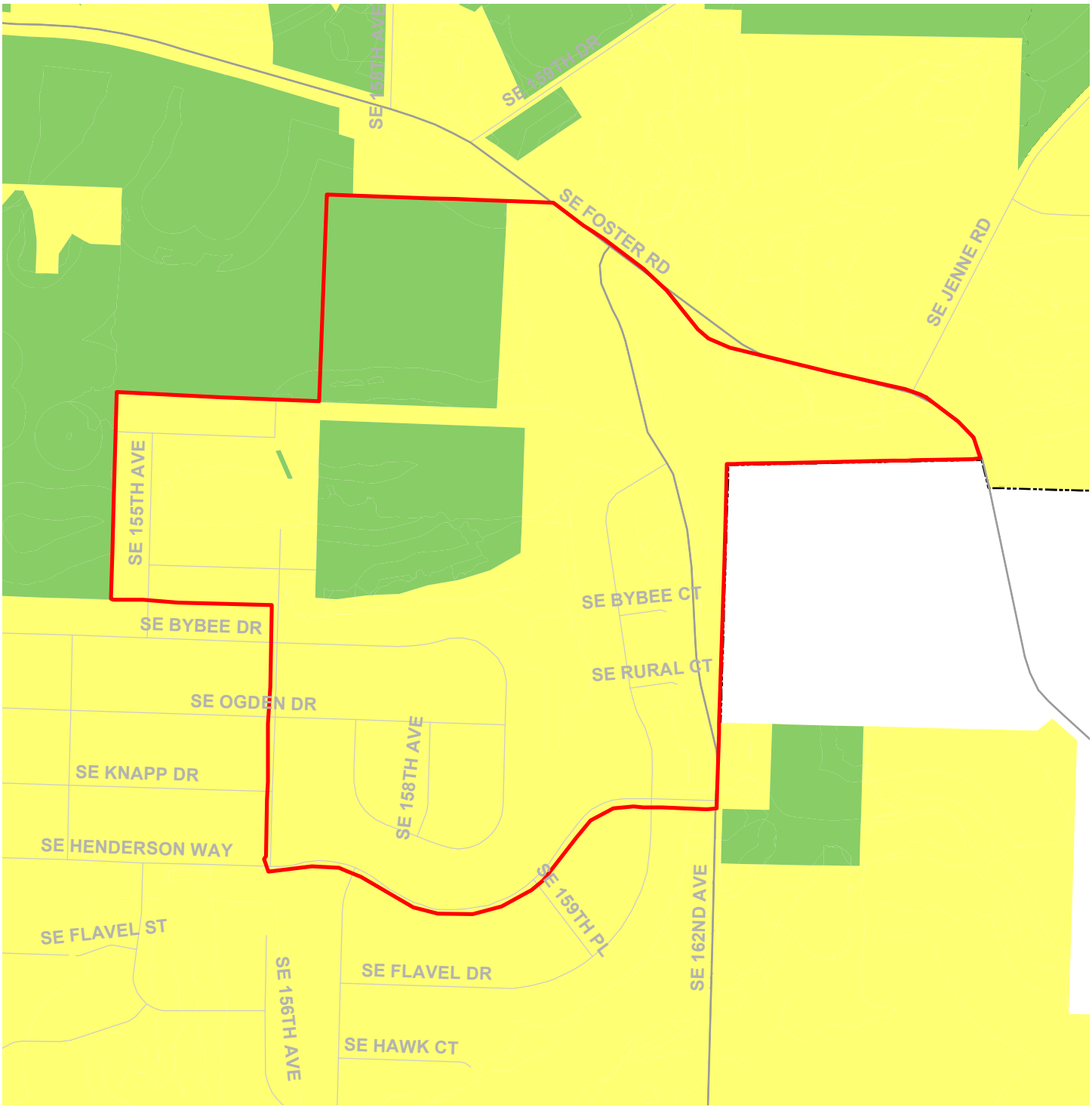

Map F: Urban Development Value (Title 13)

Resource Site: BL14

Updated: June 2020

NORTH

0 330 660 Feet

Proposed Draft

- Resource Sites
- High Urban Development Value
- Medium Urban Development Value
- Low Urban Development Value
- Parks
- City of Portland

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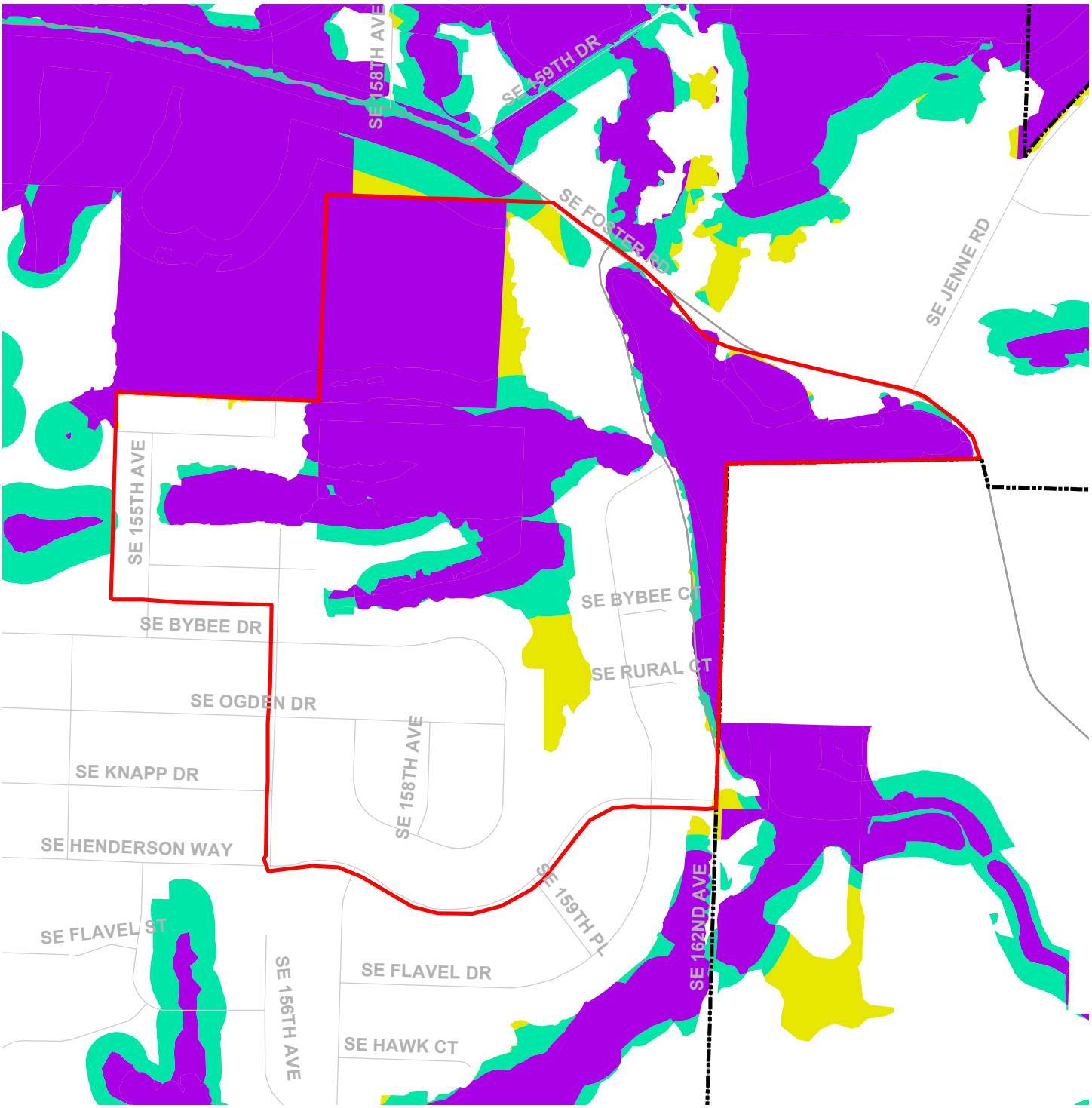

Map F: Urban Development Value (Title 13)

Resource Site: BL14

Updated: June 2020

NORTH

0 330 660 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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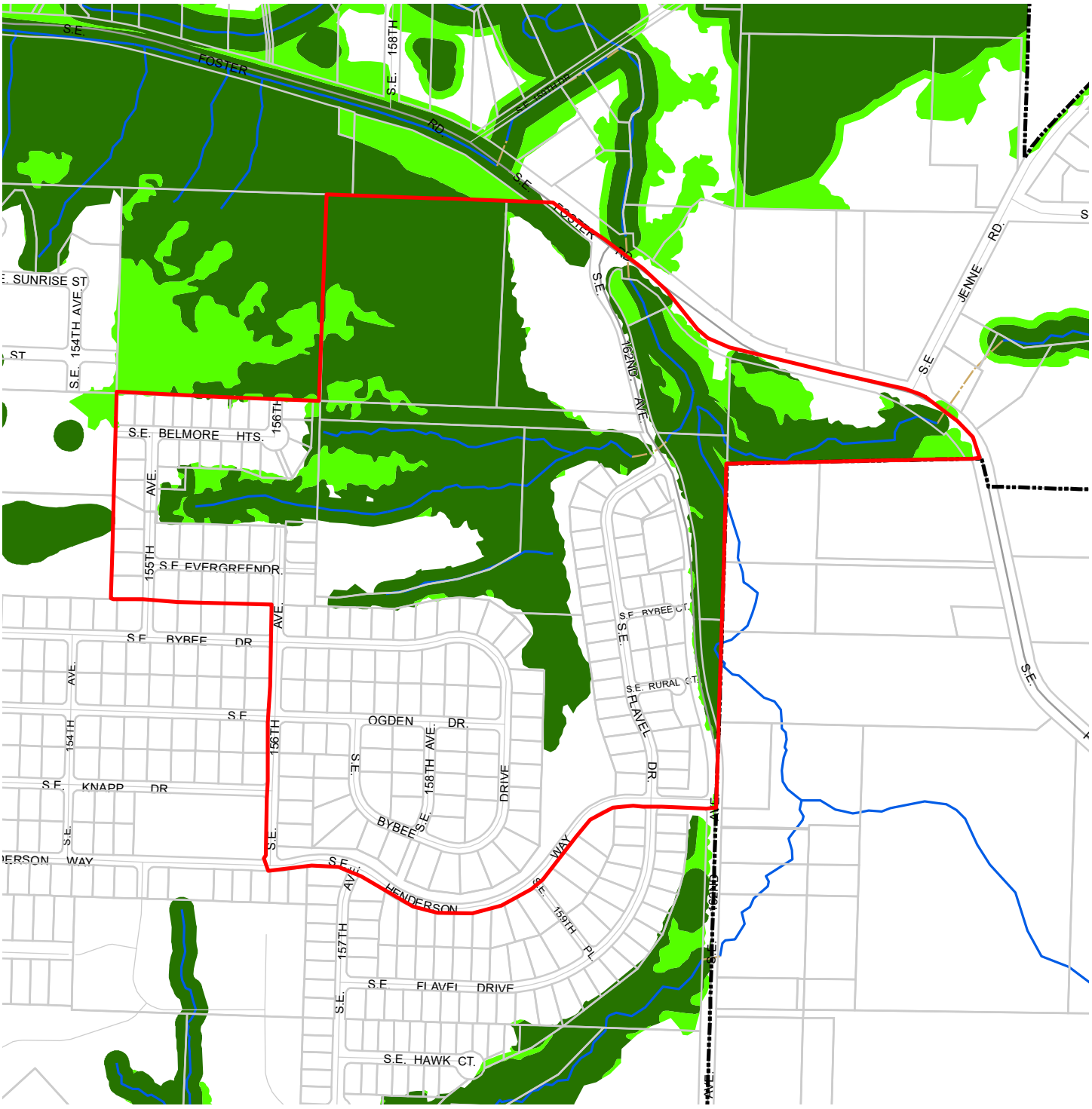

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL14

Updated: June 2020

NORTH

0 262.5 525 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL14 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; flood area; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: Kelley Creek Refuge (S, B, C)

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL14**
	Study Area
Stream (Miles)	0.9
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	30.3
Woodland (acres)	2.5
Shrubland (acres)	1.5
Herbaceous (acres)	6.6
Flood Area*	
Vegetated (acres)	1.6
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	46.1
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located in the northeast corner of the Boring Lava Domes site in the vicinity of SE Foster Road and SE 162nd Avenue. The northwest portion of the site is part of Clatsop Butte Park, which is characterized by forested steep slopes. To the east of the park is a large stable and horse arena. Most of the remaining portions of the resource site are in single family residential development.

The resource site contains Kelley Creek tributaries flow down the east side of the butte to the Kelley Creek mainstem then through a culvert under SE 162nd Avenue, before joining with Jenne Creek between SE 162nd Avenue and Foster Road. Other natural resources in the site include forested riparian and upland habitat areas. Much of the site is characterized by steep slopes of 25% or higher.

ESA-listed coho and chinook salmon have been sampled using both the Kelley and Jenne Creek tributaries to Johnson Creek, as have steelhead trout and Pacific lamprey. Beaver, which are a species of concern, have also been observed in this resource site.
Special status bird species observed within or adjacent to this resource site include American kestrel, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pacific wren, pileated woodpecker, purple finch, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, and willow flycatcher.

Table B: Quality of Natural Resource Functions in Resource Site BL14

Resource Site (acres) = 78

	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	17.7	7.0	12.7	37.4
percent total inventory site area	22.6%	8.9%	16.3%	47.7%
Wildlife Habitat*				
acres	23.4	8.7	0.0	32.1
percent total inventory site area	29.9%	11.1%	0.0%	41.0%
Special Habitat Areas**				
acres	8.0			
percent total inventory site area	10.2%			
Combined Total+				
acres	32.6	2.1	2.9	37.6
percent total inventory site area	41.7%	2.7%	3.7%	48.1%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL14, 3% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL14

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
78	16	2.1	3%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

The General ESEE analysis, Volume 4, describes the conflicting uses and provides an overarching analysis of the economic, social, environmental and energy consequences of prohibiting, limiting or allowing the conflicting uses within areas of significant wildlife habitat that is not a Metro Title 13 Habitat Conservation Area. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

Conflicting Uses

The common impacts of conflicting uses in the resource site include clearing vegetation; grading activities and soil compaction; adding impervious surface; modifying streams, wetlands and flood areas;

generating pollution; landscaping with non-native or invasive vegetation; building fences or other wildlife barriers; and other impacts such as noise, light, litter and pets.

Within the resource site residential uses are allowed outright or conditionally in the R10 base zones. Open space uses are allowed in the OS base zone. Development of new uses may involve vegetation clearing, grading, filing, and soil compaction, as well as the addition of impervious surfaces and landscaping with non-native plants, with associated impacts on the natural resources. Basic utilities and other infrastructure are allowed in all base zones. New or upgraded utility corridors may be cleared of vegetation and may fragment wildlife habitat.

ESEE Analysis

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site BL14, with the following additional information that clarifies the analysis.

Strictly limiting or *limiting* conflicting uses would retain the wildlife habitat functions provided by significant natural resource features including maintaining habitat for at risk plant, fish and wildlife species, maintaining vegetation on steep slopes, and maintaining the stormwater management and air-cooling functions of the tree canopy. Mitigation for negative consequences of additional development in areas of Class A or Class B wildlife habitat should be required.

Steep slopes are susceptible to erosion and landslides. Development should be clustered away from steep slopes and trees and vegetation should be maintained to reduce the landslide risks. New or expanded development on steep slopes should be *limited*.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL14, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank and land within 40 feet of stream top-of-bank.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation not on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: BL15 **Resource Site Name:** Mitchell Creek

Previous Plan: Boring Lava Domes Supplement **Previous Resource Site No.:** 30l

The results of the analysis found in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation, are presented in the following maps:

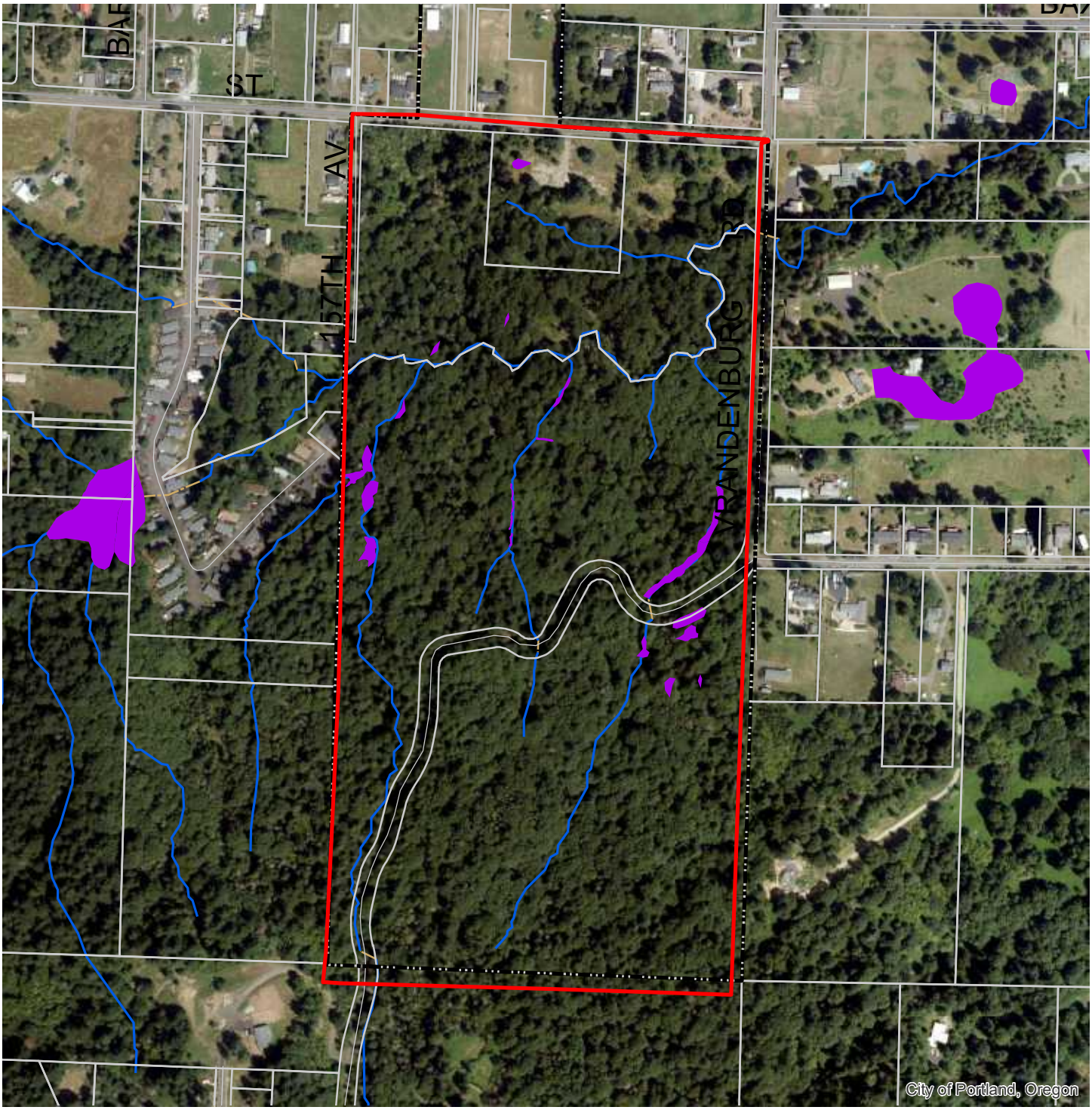
A. Water Features – rivers, streams, wetlands and flood areas
B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
C. Special Habitat Areas
D. Riparian Corridor Classifications
E. Wildlife Habitat Classifications
F. Urban Development Value
G. Metro Title 13 Habitat Conservation Areas
H. Statewide Planning Goal 5 Areas
I. Recommended Natural Resource Protections

Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site BL15 includes the following base zones (acres):

OS	76.9
R10	0.0
RF	0.0



Map A: Water Features

Resource Site: BL15

Updated: June 2020

NORTH

0 235 470 Feet

Proposed Draft

Resource Sites
City of Portland
Taxlots
rivers and major streams
wetlands
open stream channel
piped stream segment
flood area
2019 aerial photos

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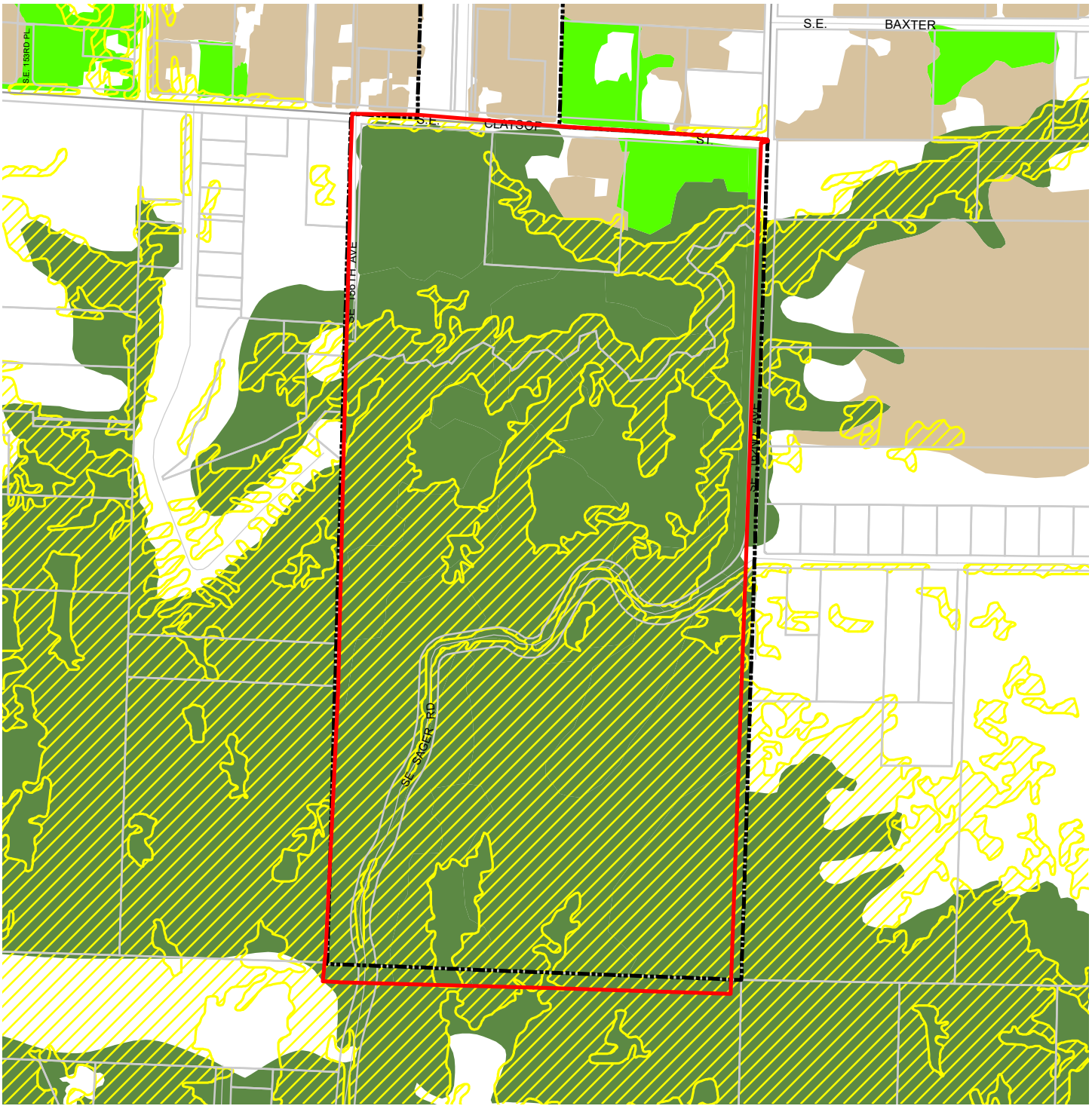

Map B: Vegetation and Steep Slopes

Resource Site: BL15

Updated: June 2020

NORTH

0 235 470 Feet

Proposed Draft

Resource Sites
slopes >25%
forest vegetation
woodland vegetation
shrubland vegetation
herbaceous vegetation

City of Portland
Taxlots

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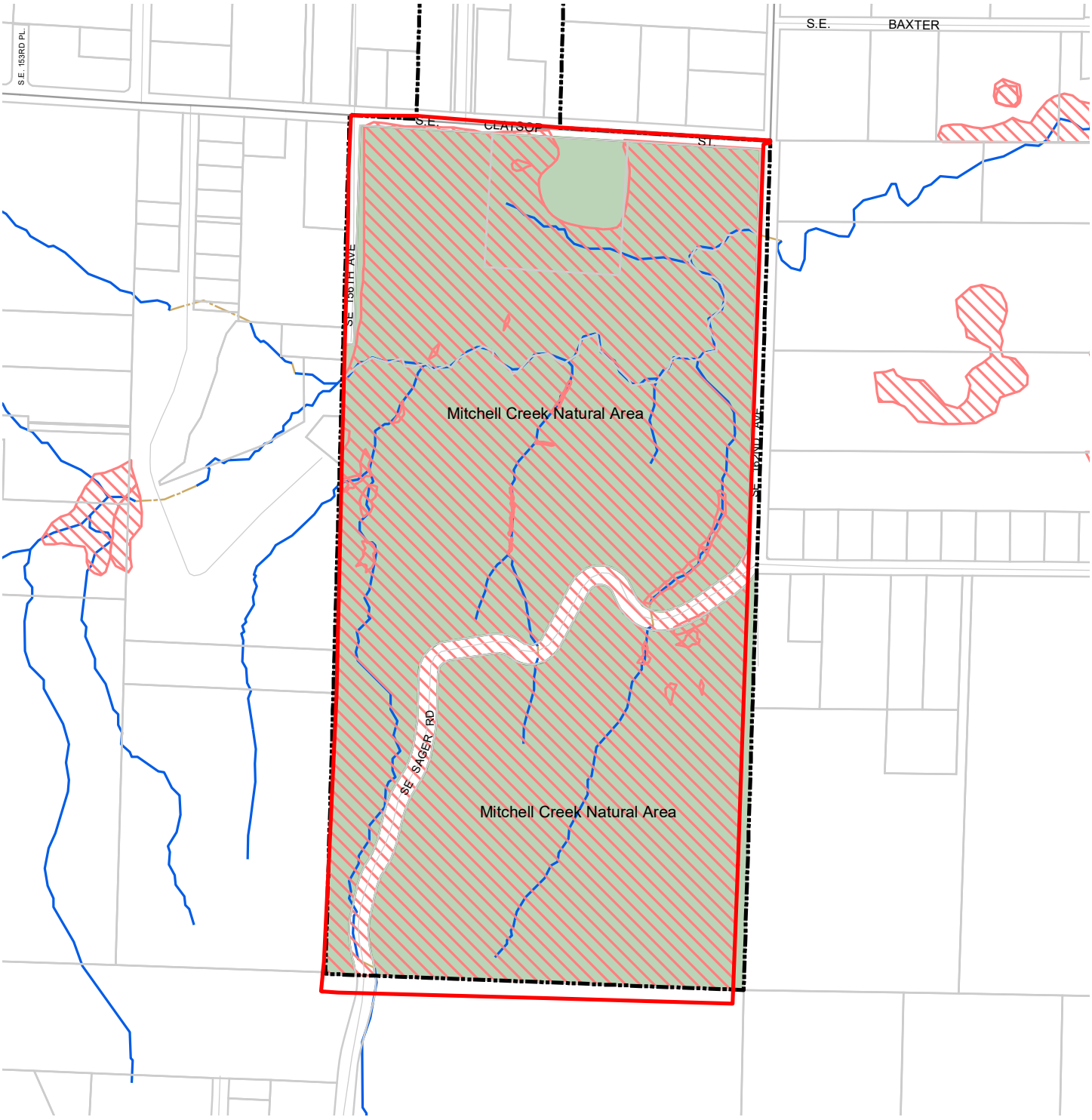

Map C: Special Habitat Areas

Resource Site: BL15

Updated: June 2020

NORTH

0 250 500 Feet

Proposed Draft

Resource Sites
Special Habitat Areas (SHAs)
open stream channel
piped stream segment
parks
schools
Taxlots
City of Portland

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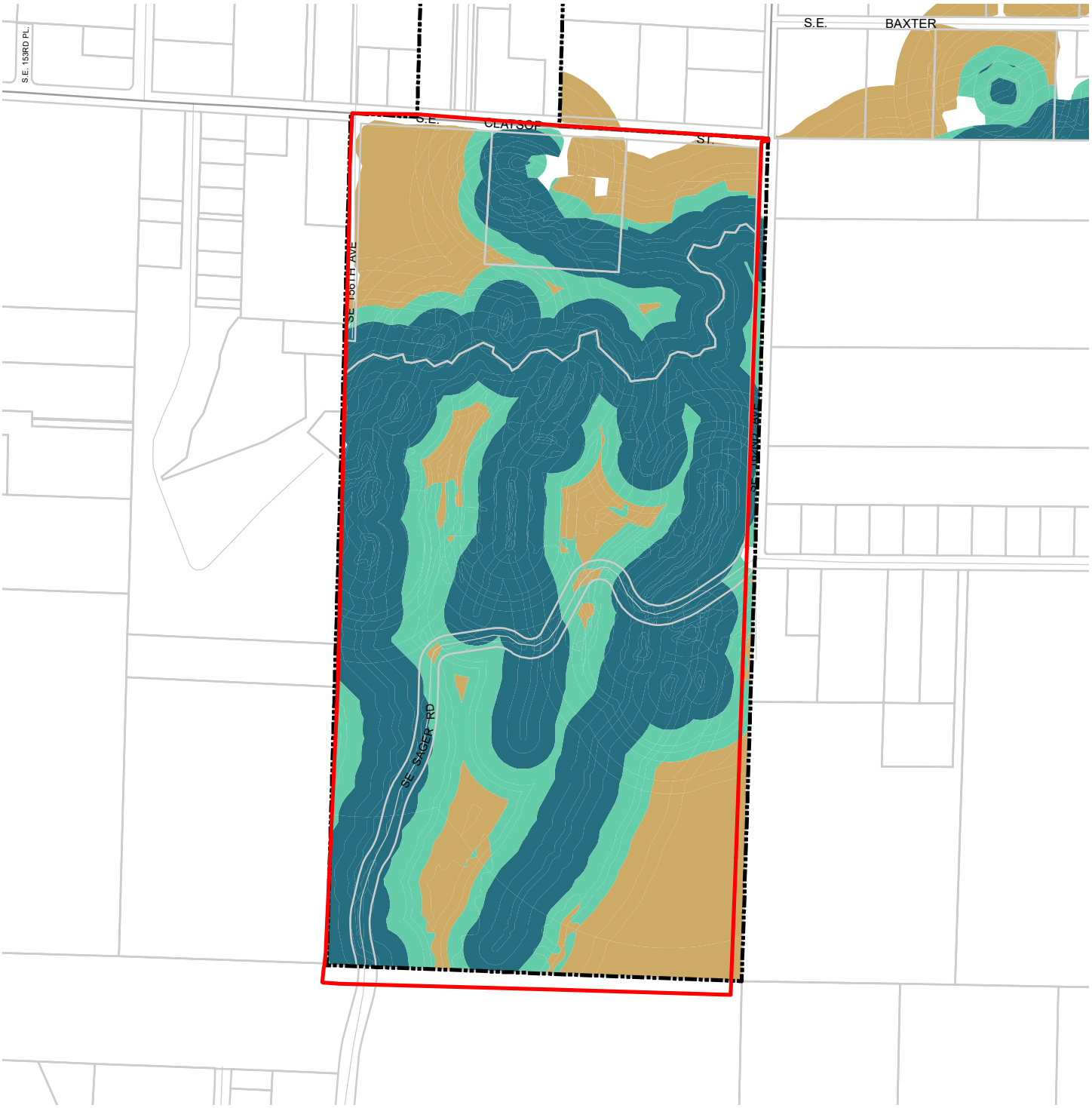

Map D: Riparian Corridors Habitat Classification

Resource Site: BL15

Updated: June 2020

NORTH

0 230 460 Feet

Proposed Draft

Resource Sites

City of Portland

Riparian Corridors

Taxlots

Class I (high rank)

Class II (medium rank)

Class III (low rank)

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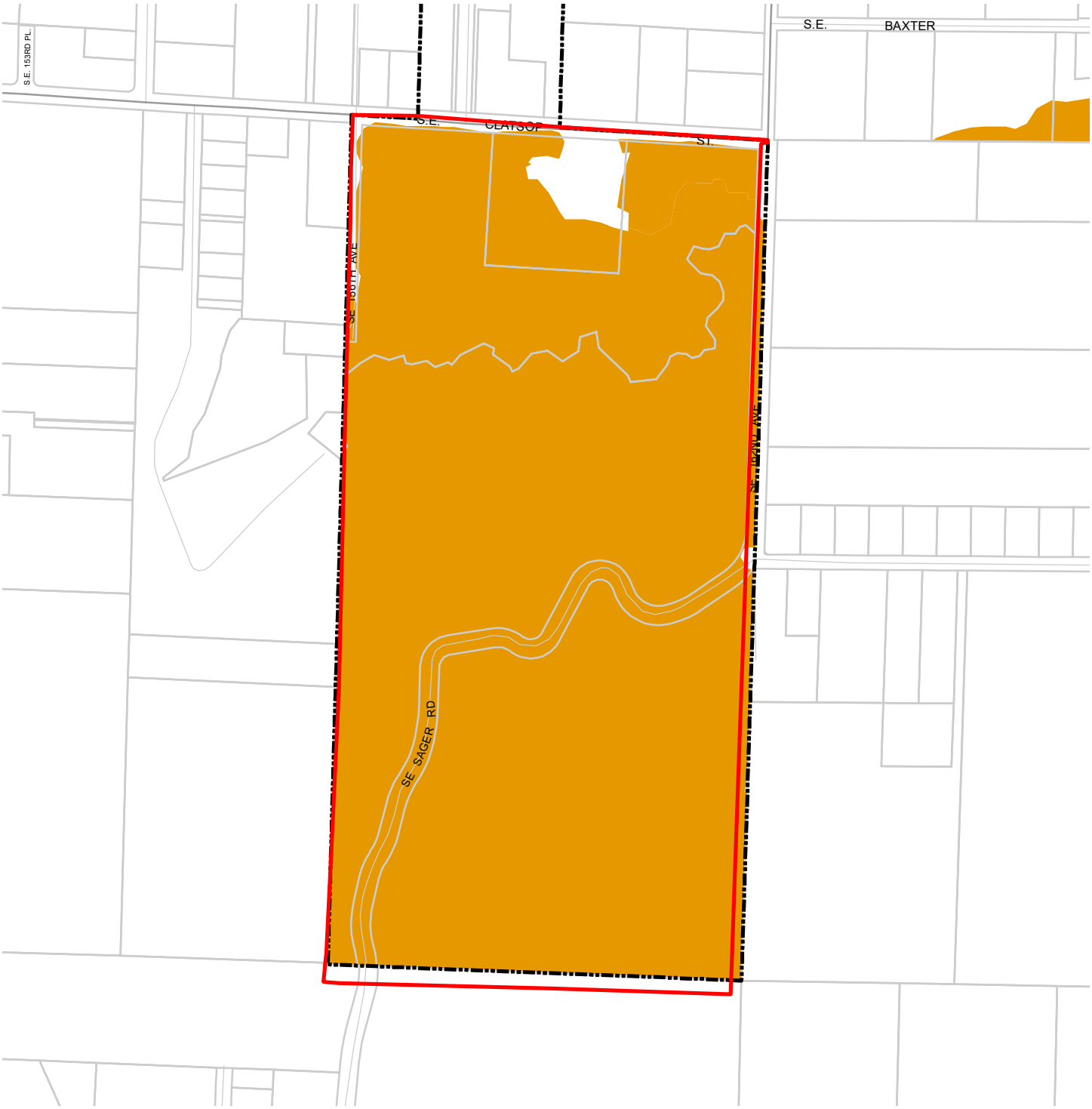

Map E: Wildlife Habitat Classification

Resource Site: BL15

Updated: June 2020

NORTH

0 190 380 Feet

Proposed Draft

Resource Sites

Wildlife Habitat

Class A (high rank)

Class B (medium rank)

Class C (low rank)

City of Portland

Taxlots

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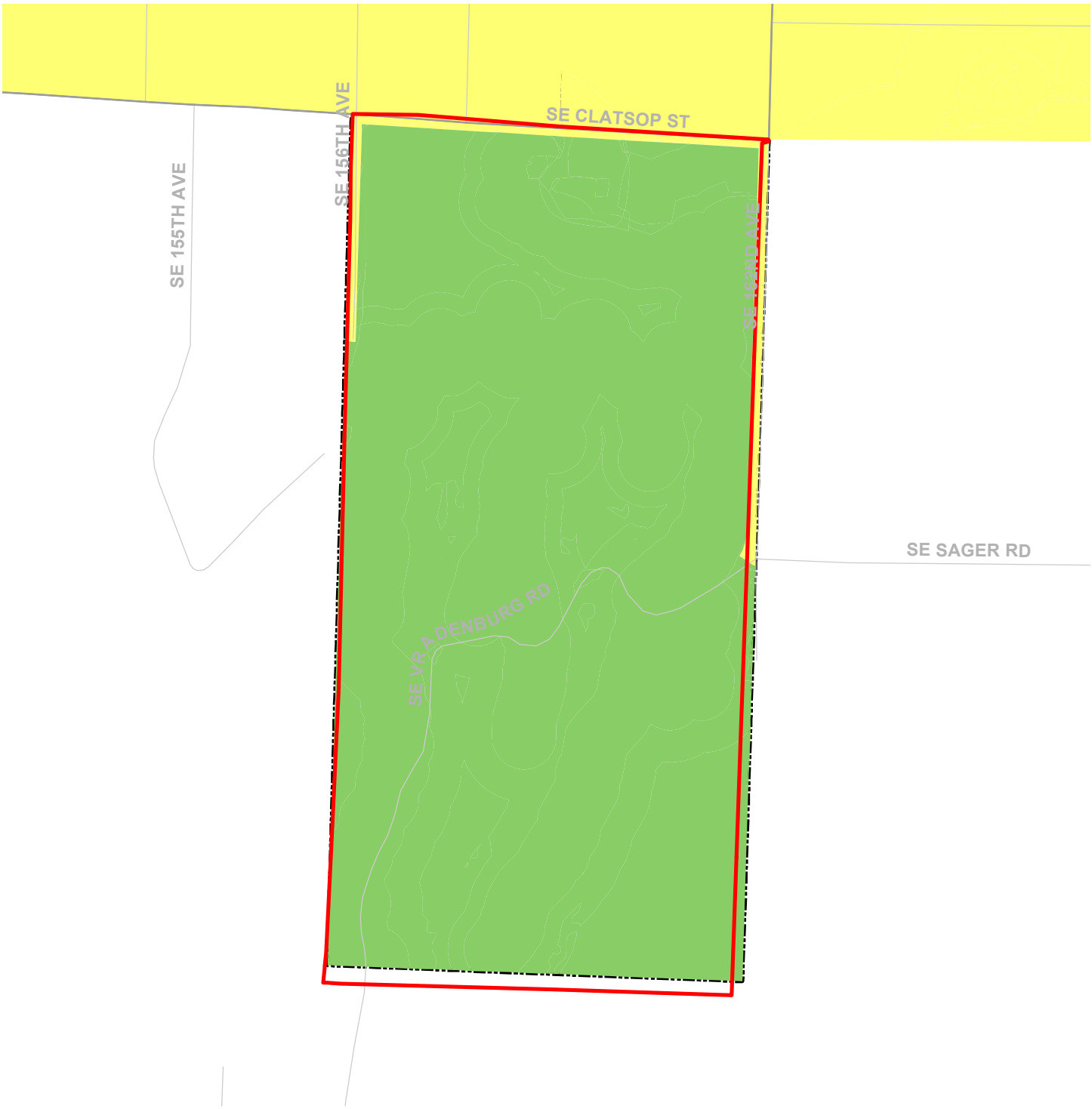

Map F: Urban Development Value (Title 13)

Resource Site: BL15

Updated: June 2020

NORTH

0 320 640 Feet

Proposed Draft

Resource Sites
High Urban Development Value
Medium Urban Development Value
Low Urban Development Value
Parks
City of Portland

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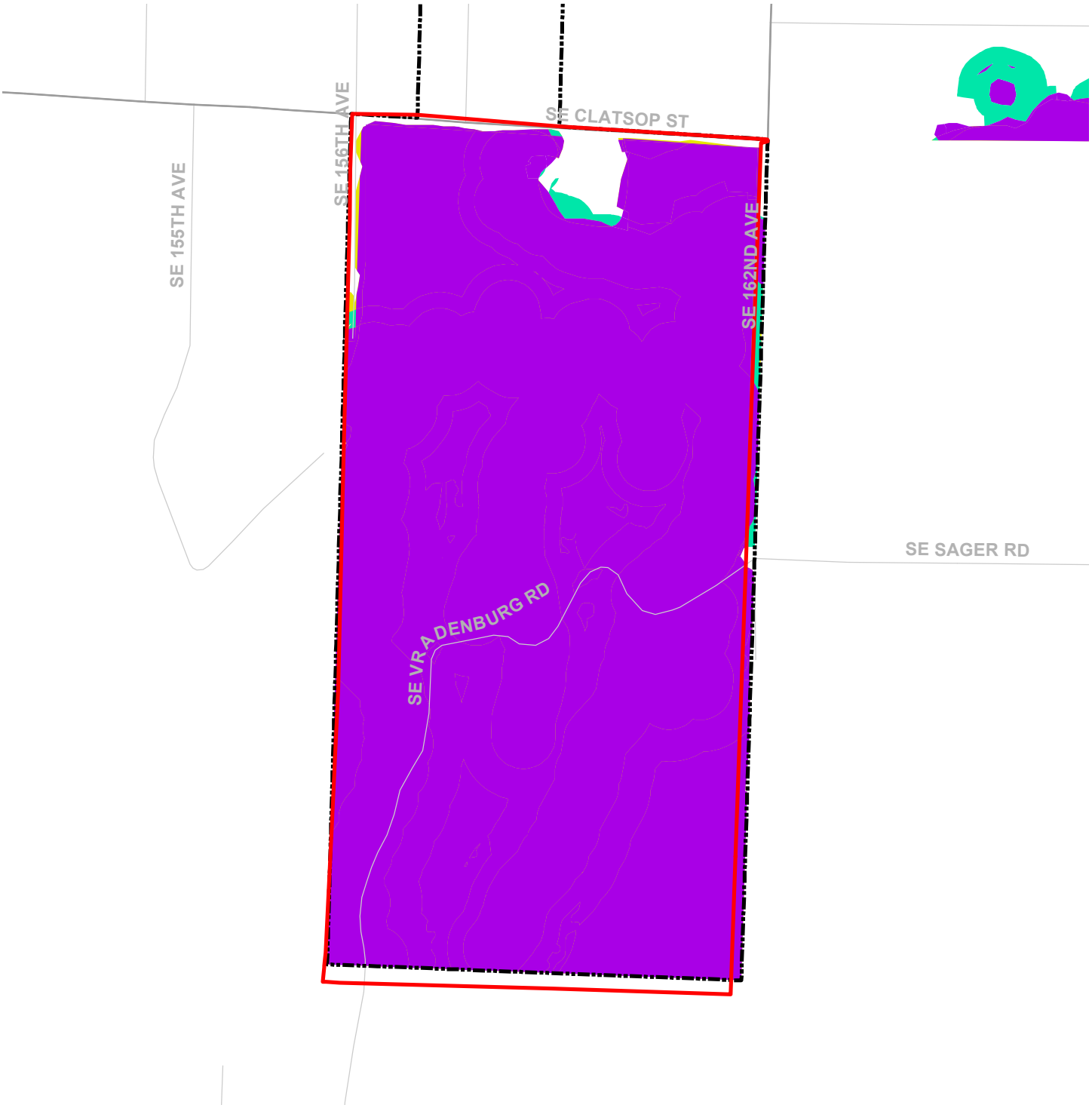

Map F: Urban Development Value (Title 13)

Resource Site: BL15

Updated: June 2020

NORTH

0 320 640 Feet

Proposed Draft

Habitat Conservation Values

- High Value
- Moderate Value
- Low Value
- Goal 5 Significant Natural Resources

- Resource Sites
- City of Portland

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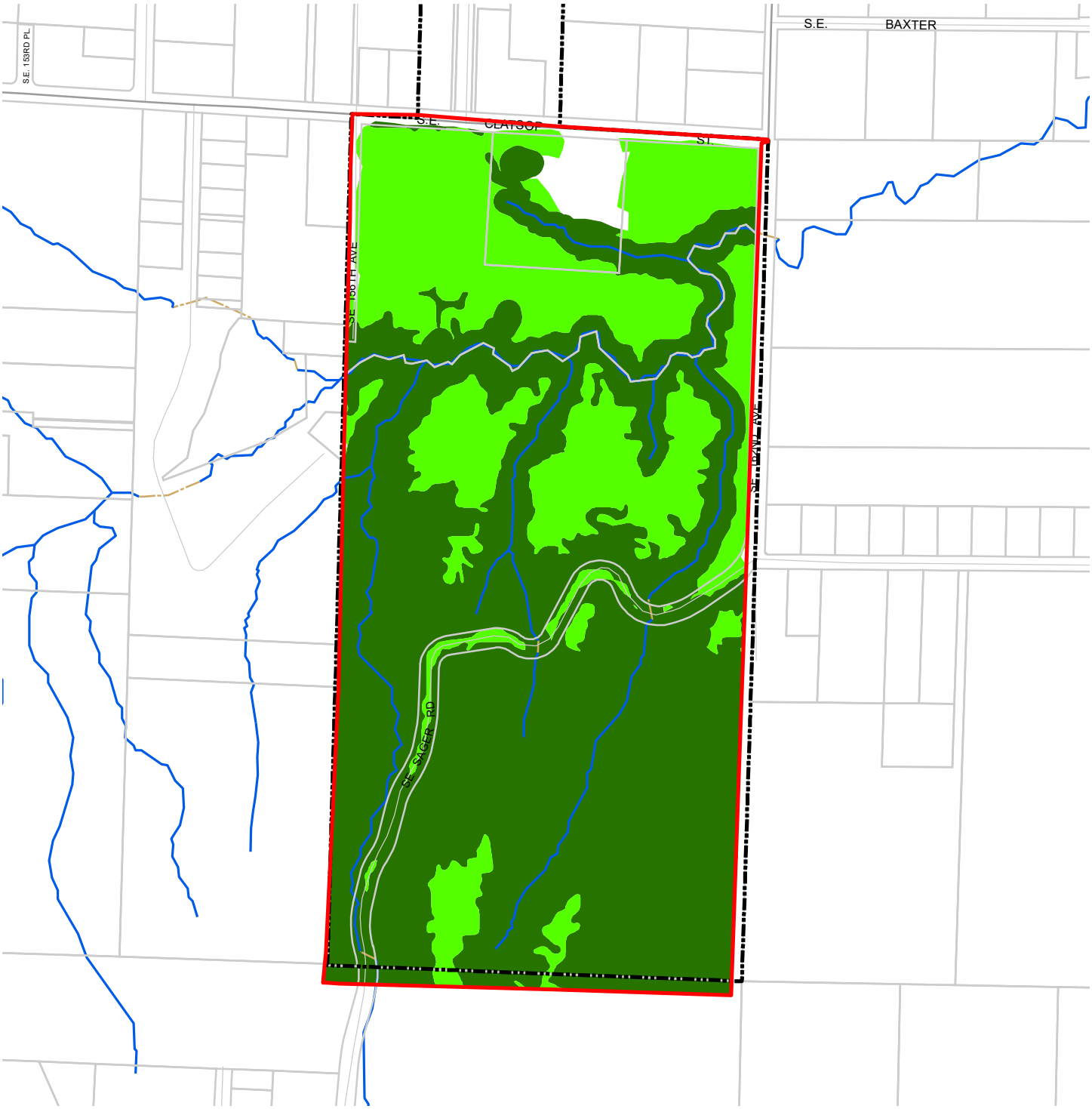

Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: BL15

Updated: June 2020

NORTH

0 255 510 Feet

Proposed Draft

Resource Sites
open stream channel
piped stream segment
conservation zone
protection zone

City of Portland
Taxlots
open stream channel
piped stream segment

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Natural Resource Description

Within resource site BL15 the following significant natural resource features and functions are present:

Significant Riparian Corridor Features: open stream; wetland; land within 50 feet of waterbodies; forest, woodland, shrubland and herbaceous vegetation within 300 feet of waterbodies; and forest vegetation on steep slopes (>25% slope) contiguous to and within 780 feet of waterbodies.

Significant Wildlife Habitat Features: forest patches, and associated and contiguous wetlands, two acres in size or larger.

Special Habitat Areas: Scouter Mountain (S, C)

Riparian Corridor Functions: microclimate and shade; stream flow moderation and water storage; bank function and sediment, pollution and nutrient control; large wood and channel dynamics; organic inputs, food web and nutrient cycling; and riparian wildlife movement corridor.

Wildlife Habitat Functions: interior area; food and water; resting, denning, nesting and rearing; movement and migration; reduction of noise, light and vibration; and habitat patches that support special status fish and wildlife species.

Table A: Quantity of Natural Resource Features in Resource Site	**BL15**
	Study Area
Stream (Miles)	1.7
Wetlands (acres)	0.7
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	72.6
Woodland (acres)	1.9
Shrubland (acres)	0.0
Herbaceous (acres)	1.1
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	49.8
* The flood area includes the FEMA 100-year flood plain plus the adjusted 1996 flood inundation area.	
**Slopes are derived from LiDAR. Steep slopes are areas with a slope greater than 25%.	

This resource site is located south of Clatsop Street between SE 156th and SE 162nd Avenues, in Clackamas County, but within Portland's jurisdiction. The entire site is natural area owned by Portland Parks & Recreation. To the west, the site is immediately adjacent to publicly owned natural areas outside the City of Portland.

The predominant natural feature of the site is Mitchell Creek, which is a tributary to Kelley Creek. The resource site is heavily forested with mixed-age, mixed conifer and deciduous forest. Other features include several significant north and east-trending ravines that contains Mitchell Creek, its tributaries, riparian areas, adjacent wetlands, Along the main stem of Mitchell Creek, a significant corridor ranging in width from 200 feet (near 162nd Avenue) to 400 feet (near 157th Avenue) contains highly intact resources. The southern portion of the site and the stream corridors are characterized by steep slopes of 25% or higher.
Beaver have been observed within this resource site.

Special status bird species observed within or adjacent to this resource site include bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, common yellowthroat, downy woodpecker, hermit warbler, Hutton's vireo, Nashville warbler, olive-sided flycatcher, orange-crowned warbler, pacific wren, pacific-slope flycatcher, pileated woodpecker, purple finch, purple martin, rufous hummingbird, Swainson's thrush, varied thrush, Western wood-pewee, willow flycatcher, and Wilson's warbler.

Table B: Quality of Natural Resource Functions in Resource Site BL15

Resource Site (acres) = 77				
	Class 1/A	**Class 2/B**	**Class 3/C**	**Total**
Riparian Corridors*				
acres	40.7	17.9	17.0	75.5
percent total inventory site area	52.8%	23.2%	22.0%	98.1%
Wildlife Habitat*				
acres	0.0	74.5	0.0	74.5
percent total inventory site area	0.0%	96.8%	0.0%	96.8%
Special Habitat Areas**				
acres	73.8			
percent total inventory site area	95.9%			
Combined Total+				
acres	74.1	0.8	0.8	75.7
percent total inventory site area	96.2%	1.0%	1.1%	98.4%

* Class I riparian resources, Special Habitat Areas, and wildlife habitat include open water.

** Metro Title 13 designated all Special Habitat Areas as Class I riparian corridors.

+Because riparian resources, Special Habitat Areas, and wildlife Habitat overlap, the results cannot be added together to determine the combined results.

Stormwater runs off impervious surfaces (e.g., rooftops, driveways, parking areas, streets, etc..) rapidly. Without a place to retain the water (such as wetlands or adequate stormwater facilities), stormwater runoff results in spikes in stream levels which can cause or exacerbate flooding and increase stream

erosion. In addition, when water runs off quickly, it does not have a chance to infiltrate and recharge streams or aquifers to provide water during drier periods.

The type and capacity of stormwater facilities to manage the runoff from impervious surfaces varies in the city, affecting the local rate and amount of runoff, and the amount of pollutants in the water. Much of the city was developed prior to any stormwater regulations and receives limited or no management prior to discharging to pipes and surface waters.

Table C shows the total amount of impervious area within the resource site and how much of that impervious area lacks stormwater management; the percentage of total impervious area that is not managed is called "effective impervious area." The higher the percent of effective impervious area in a watershed, the greater the negative impacts of stormwater runoff to streams. Stream science indicates that when effective impervious area reaches 10% of a watershed, negative stream impacts become significant; and at 25%, these impacts on waterways can be substantial. An additional consideration is the differences in soil conditions and other factors that influence the ability of pervious areas to retain, infiltrate or filter pollutants from stormwater. For example, a mature forest is much more effective in managing stormwater than a manicured lawn; both areas would have a lower effective impervious surface percentage than a developed site, but they have different outcomes for stormwater management.

For Resource Area BL15, 0% of the total area is effectively impervious. This indicates a significant degree of stormwater management and/or existing natural resources that should be preserved. Areas with very low impervious cover and existing vegetation are more likely to be functioning properly to support biologic systems.

Table C. Impervious Area within Resource Site BL15

Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
79	3.3	0	0%

*Total unmanaged impervious area refers to the number of acres within a resource area that receives no formal stormwater management measures to regulate flow or treat pollutants before they reach surface waters, also referred to as effective impervious area.

Resource Site Specific ESEE

All of the significant natural resources within resource site BL15 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required. Note – All of the upland wildlife habitat in FP6 is also designated Special Habitat Area and therefore a Class I riparian area per Title 13.

Decisions

Based on the analysis presented in Volume 3, Natural Resources Inventory, Volume 4, Title 13 and Goal 5 Compliance, and the resource site-specific evaluation for BL15, the following decisions are applied to protect the significant riparian corridors and wildlife habitat:

1. Apply a protection overlay zone (p zone) to stream channels from top-of-bank to top-of-bank, wetlands, land within 40 feet of stream top-of-bank and land within 40 feet of wetlands.
2. Apply a protection overlay zone (p zone) to areas forest or woodland vegetation on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
3. Apply a conservation overlay zone (c zone) to areas of forest or woodland vegetation not on steep slopes that are contiguous to but more than 40 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

The *Environmental Overlay Zone Map Correction Project* plan documents:

Volume 1A – Project Report, Summary of Results and Implementation

The purpose of the Project Report is to document the overall project approach and methodology, summarize public engagement, and provide an at-a-glance summary of the results by resource site.

Volume 1B – Zoning Code and Map Amendments

Amendments to zoning code chapter 33.430, Environmental Zones, and the official zoning maps.

Volume 2 – Resource Site Inventory and ESEE Decisions

For the each of the geographies listed below, each document presents an inventory of natural resource features and functions, a site-specific Economic, Social, Environmental and Energy Analysis (ESEE), and the ESEE decisions regarding which natural resource should be protected for each resource site.

Part A1 – Forest Park and Northwest District, Resource Sites 1 – 20

Part A2 – Forest Park and Northwest District, Resource Sites 21 – 41

Part B – Skyline West

Part C – Tryon Creek and Southwest Hills East

Part D – Fanno Creek

Part E – East Buttes and Terraces

Part F – Johnson Creek

Part G – Boring Lava Domes

Volume 3 – Natural Resources Inventory

Approach and methodology used to produce the citywide Natural Resources Inventory. The results of the inventory are presented in Volume 2, Part A – G.

Volume 4 – Compliance Report

Compliance with Metro Urban Growth Management Plan Title 13 for Habitat Conservation Areas and Oregon State Planning Goal 5 for significant natural resources that are not a Habitat Conservation Area. The results, recommendations and implementation are reported in Volume 2, Part A – G, and Volume 1, Part B.

Volume 5 – Appendices