

ENVIRONMENTAL OVERLAY ZONE MAP CORRECTION PROJECT

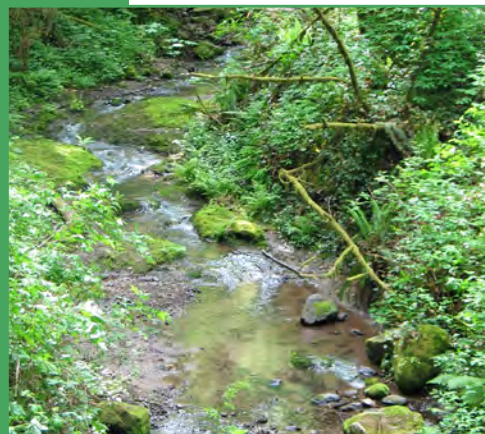
VOLUME 2, PART A1:

Forest Park and Northwest
District, Natural Resources
Inventory and Protection Decisions

(Resource Sites 1-20)

**PROPOSED DRAFT,
AS AMENDED**

July 2021



THE BUREAU OF
**PLANNING &
SUSTAINABILITY**

How to Testify

You may submit comments to the Portland Planning and Sustainability Commission on the Environmental Overlay Zone Map Correction Project Proposed Draft – As Amended 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
1810 SW 5th Ave, Suite 710
Portland, OR 97201

In person at the public hearings

The hearing on August 24, 2021 will be held virtually. The meeting starts at 5 p.m. Please check the PSC calendar at www.portland.gov/bps/psc/events 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 August 24 hearing is Monday, August 23 at 4:00 p.m. Individuals have two minutes to testify, unless otherwise stated by the Commission Chair at the meeting.

The City of Portland is committed to providing meaningful access. To request translation, interpretation, modifications, accommodations, or other auxiliary aids or services, contact 503-823-7700, Relay: 711

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Acknowledgements

This plan is the culmination of three 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 A1, includes the results for Resource Sites 1-20 in the Forest Park and Northwest Hills 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.

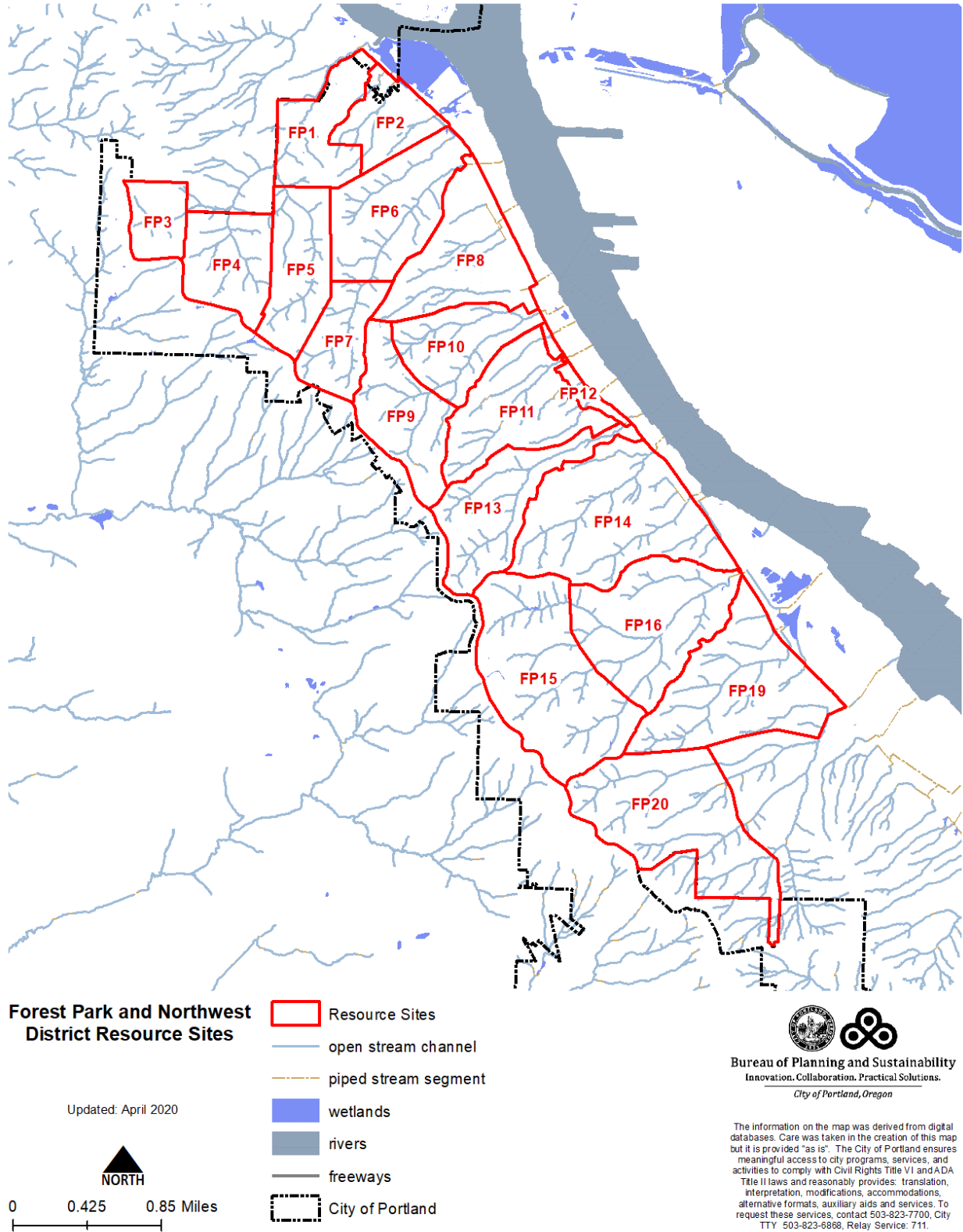
Area Descriptions

Volume 2, Part A1, 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 provided (also referred to in the zoning code as "functional values") 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: Forest Park and Northwest District Resource Geography (Resources Sites 1 – 20)

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.

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; a map of the features is sufficient. 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 city’s Natural Resources Inventory methodology, see Volume 3. The area descriptions provided at 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 assess natural resource impacts and mitigation alternatives during quasi-judicial reviews. Additional factual information about the resource functions may also be provided by a qualified professional.

Metro Title 13 and Oregon Goal 5 Compliance

An explanation of compliance requirements for Metro Urban Growth Management Functional Plan Title 13, Nature in Neighborhoods, and Oregon Statewide Land Use Planning Goal 5, Open Spaces, Scenic and Historic Areas, and Natural Resources is found in Volume 4. The natural resource protection requirements are summarized and recommendations are made for each resources site. For natural resources that are not a Title 13 Habitat Conservation Area, the general ESEE analysis and recommendations are affirmed, clarified or modified based on resource site-specific information. An ESEE decisions is made and describes the significant natural resource features and functions to protected from the impacts of conflicting uses.

Implementation

Results of Metro Title 13 and Oregon Goal 5 requirements are explained and presented in Map I for each resources site. The results are implemented by updates to the official zoning maps and zoning code, documented 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, the Special Flood Hazard Area (those areas with a 1% or greater chance of flooding in any given year), as well as areas that were inundated with water during the February 1996 floods.

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 plan.
2. Resource site boundaries were expanded to capture contiguous or similar and adjacent natural resource features that were not within a resource site.
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 Forest Park and Northwest Hills natural resources. The general description is applicable within 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 Descriptions – A narrative that provides additional site-specific information about the types, quantity, quality or functionality (aka resource functions or functional values) of the natural resource features present in the resource site.
3. Metro Title 13 and Oregon Goal 5 Compliance – The compliance requirements are documented in Volume 4 and summarized here. If there are natural resources that are not a Habitat Conservation Area present in the resource site, then the general ESEE recommendation (Volume 4) will be confirmed, modified or clarified based on resource site-specific conditions.
4. Natural Resource Protection 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 sections, the decisions in Volume 2, Part A take precedence.

E.1. Forest Park and Northwest District Natural Resources

The Northwest Hills forest protects and conserves important watershed resources such as streams, wetlands, and soils. Forest vegetation moderates the effects of winds and storms, stabilizes and enriches the soil, and slows runoff from precipitation, thereby minimizing erosion and allowing the forest floor to filter out sediments and nutrients as the water soaks down into groundwater reserves or passes into streams. By decreasing runoff and increasing groundwater infiltration, the forest protects downstream neighborhoods from flooding; by stabilizing the soil and reducing runoff and erosion, the forest protects the community from landslides and other land hazards.

The forest enhances habitat for terrestrial and aquatic organisms. Diverse layers of treetops, branches, trunks, shrubs and plants on the forest floor provide breeding, feeding and refuge areas for many species of insects, birds, and mammals. 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 as terrestrial wildlife. Also, by filtering out pollutants, the forest maintains quality drinking water for local residents who use wells. The ability of these diverse and interdependent elements of the forest community to function properly is an important measure of the general health and vitality of the local environment. A healthy forest ecosystem is crucial to the forest's value as a scenic, recreational and educational resource, and to its continued contribution to Portland's quality of life.

The forest moderates extreme heat events. The microclimate of the forest, created in part by the shade of the vegetation and the transpiration of water from the leaves, reduces extreme temperatures. The forest thus acts as a natural "air conditioner" for adjacent residential areas, cooling the air during the day and warming it at night.

The forest provides additional values to local landowners and broader segments of society. The dense, coniferous and deciduous forest acts as a buffer from the sights and sounds of the large urban metropolis. The forest mutes the noise of highways and nearby industrial activities and absorbs some air pollutants produced by auto and industrial emissions.

E.1.a Geology

Portland has been the site of a series of spectacular geologic events dating back 22 million years. These events have included some of the largest lava and water floods on the face of the earth (Price 1987). The major events leading to the formation of the Portland Hills (Tualatin Mountains) began sixteen million years ago during the Miocene period. Volcanic fissures far to the east of Portland began discharging hundreds of cubic miles of molten lava which flowed through an ancient Columbia River Gorge, flooding the Willamette River Basin region. The solidified lava, known today as Columbia River Basalt, covered the Scappoose Formation, a siltstone and shale deposit which had formed 22 million years ago when the Portland area was

submerged under marine waters. Today, after millions of years of weathering, the basalt measures roughly 700 feet in depth below the West Hills (Houle 1987).

Geologic disturbances continued through the late Miocene period, when the present-day Cascade and Coast Ranges were formed. At the same time, a large upheaval of Portland's basalt base created the Tualatin Mountain ridge and simultaneously formed the Portland and Tualatin valleys. The valley floors settled over the course of several million years until, in the Pliocene period, their basins breached, forming eddies in the Columbia River into which large quantities of quartzite and granite river rock were deposited. Today these deposits, known as the Troutdale Formation, cover the original basalt layer along the lower half of the West Hills and provide an excellent aquifer (Price 1987). Later in the Pliocene period, the West Hills became volcanically active. Small volcanoes along the Tualatin Mountain ridge began erupting Boring Lava, evident today in the form of a grey basalt found at several sites along the West Hills.

The last major activity affecting the soils of the Northwest Hills area were formed through the deposition of up to 100 feet of Portland Hills Silt at elevations above 600 feet. This silt was eroded from the Columbia River floodplain, carried down the gorge, and finally wind-deposited on the West Hills. In the more recent geological past, silt and sand (alluvium) deposits formed along the Willamette River flood plain (Price 1987).

The presence of Portland Hills Silt along the Tualatin Mountains has important implications for land use and development. The silt becomes very unstable when wet and the potential for slope failure is particularly high after winter rains have saturated the soil. Landslides, mud slides, and slumps are common on steep areas in the West Hills. These slope failures, often associated with logging and building activities that remove trees and vegetation, have substantially altered the face of the hillside over the last century.

E.1.b Soils

Soils in Northwest Hills belong to the Goble-Wauld series as identified in the Multnomah County Soil Survey (Green 1983). This soil group is comprised predominantly of silt and gravel loams high in volcanic ash weathered from the parent material, Columbia River Basalt.

Most of the west hills are made up of Goble soils. The soil is dark, greyish brown silt loam to a depth of about 14 inches, below which a silty clay loam mixes with silt loam forming a yellowish brown, mottled fragipan at a depth of 30 to 48 inches. This fragipan is a hard, brittle soil layer with low permeability: a hardpan that impedes percolation of groundwater causing a thin groundwater table to develop, perched above the regional water table.¹ The fragipan restricts rooting depth for plants to 30 to 48 inches. The Goble silt loams have severe limitations for building site development and septic systems.

¹ Perched water tables in the West Hills normally develop during the fall, winter and spring seasons.

The Wauld soils are made up of gravelly loams and commonly occur on steep slopes along the larger drainages in the planning area. The top six inches of the soil are dark brown, gravelly loam. Below the surface layer is a gravelly clay loam 24 inches thick, which overlies basalt bedrock at a depth of 30 inches. Soil permeability is moderate and effective rooting depth is 20 to 40 inches. The Wauld soils also have severe limitations for building site development and septic systems.

The soils along the broad, rolling slopes of the Tualatin Mountain ridge are classified as Cascade silt loam, an associate of the Goble-Wauld soils. The soil's top layer is a dark brown silt loam which overlies a dark brown, mottled, silt loam fragipan at a depth of 20 to 30 inches. Permeability is slow and effective rooting depth is limited by the fragipan layer.

E.1.c. Topography and Slopes

The eastern face of the Tualatin Mountain range has many streams flowing northeast to the Willamette River. The streams flow through, or are piped through, the lowland area between the Willamette River and Highway 30 (with elevations ranging from 30 to 40 feet mean sea level). Climbing southwest from Highway 30, the hillside slopes become steep before leveling off near the ridgetop along Skyline Boulevard. Elevations range between 900 and 1,180 feet mean sea level along the crest of the Tualatin Mountains.

The principle creeks and secondary ridges descend from the main Tualatin Mountain ridge northeast to the Willamette River lowlands, creating a marked dichotomy between northwest- and southeast-facing slopes which can reach a gradient of 50 percent or more locally.

A physiographic inventory of Portland (Redfern 1976) classified slopes in excess of 30 percent as generally having "severe landslide potential." Between 90 and 95 percent of the upland slopes within the study area exceed 30 percent. Slopes of only 15 percent have been known to fail in the West Hills, particularly during the saturated soil conditions in mid-winter (Redfern 1976). Most soils in the West Hills drain poorly. The subsoil usually includes a fragipan, which is a layer less permeable to water than the upper layers. Fragipans limit the rooting depth of many plants. A seasonal water table is perched on top of fragipans every winter. The typical soil profile amounts to high erosion and slumping hazard due to the seasonal water table, slow permeability, low strength, and the tendency of the upper layers to slide over the fragipan whenever they become saturated.

Slumping is common in the West Hills, especially when bare soil is exposed to rainfall or when soil is cut or filled. Several major landslides have occurred in the West Hills. The instability of the soil is a major reason why much of the West Hills have not been developed and is now included in parkland, wildlife sanctuaries, open space, farm, and forest zones. Extreme care must be taken when disturbing these soils, and vegetation must be reestablished quickly on disturbed areas to prevent erosion, sliding, and slumping.

E.1.d. Surface Water and Flooding

Surface water resources within the study area were identified using USGS topographic map, LiDAR data, National Wetlands Inventory maps, aerial photos, and field work. Stream lengths and drainage basin areas are calculated using a Geographical Information System (GIS) and LiDAR data.

There are approximately 76 miles of streams within the project study area. All but one of the streams drain east/northeast into the Willamette River; Miller Creek drains into the Multnomah Channel, a Willamette distributary channel near the north end of Sauvie Island.

Most of these streams flow as intermittent riverine systems; however, Saltzman, Doane and Miller Creeks are classified as perennial (high gradient, fast water velocity, year-round flow). As described earlier, all of the stream channels in this resource area have steep to moderately steep gradients which result in high flow velocities and a large capacity for sediment transport and erosion.

Palustrine wetlands in the resource area formed principally as a result of mining and roadway excavations, beaver damming activity, and natural depressions in the uplands and along the Willamette River floodplain. Natural Resources Inventory identifies large forested wetlands and smaller emergent and scrub/shrub wetlands near the split of Multnomah Channel from the Willamette. Four miles south, a remnant of Doane Lake (the lake was bisected by railway embankments) is also identified as a palustrine wetland. Additional smaller wetlands were identified through field verifications or using off-site wetland determination methodology (See Volume 3, Natural Resource Inventory for the wetland mapping protocols).

Surface water drainage between the crest the Tualatin Mountains and Highway 30 is primarily through natural channels. Most of the creeks pass through culverts under Highway 30 and the Burlington Northern Railroad and from there enter natural channels, ditches, concrete flumes or sewers, or a combination of these systems before flowing into the Willamette River.

Most recorded flood events in the plan area have occurred where streams are forced into undersized culverts underneath Highway 30. Flooding of Doane and Saltzman Creeks, near NW 35th and NW 105th Avenues, respectively, occurs on a regular basis.

E.1.e. Vegetation

Information on plant communities, successional patterns and general vegetation resources was compiled from several sources. Data on vegetation types, distribution and resource values was gathered through aerial photo interpretation and field visits.

The eastern slopes of the Tualatin Mountains are clothed by coniferous forest of the *Tsuga heterophylla* (western hemlock) vegetation zone. This zone extends throughout the wet, mild,

maritime climate of British Columbia, western Washington and western Oregon. A vegetation zone delineates a region of essentially uniform macroclimatic conditions with similar moisture and temperature gradients where one plant association predominates. The lowlands immediately adjacent to the forest are part of the more prairie-like Willamette Valley Zone. Emergent, scrub-shrub and forested wetland plant communities reside along some of the creeks and in the palustrine wetlands that occur within the study area.

Western hemlock and western red cedar (*Thuja plicata*) are considered climax species within the Western Hemlock Zone based on their potential as dominants. The subclimax Douglas fir (*Pseudotsuga menziesii*), however, tends to dominate large areas within this region. Historically, Douglas fir has dominated forest regeneration over much of the zone in the last 150 years.

While virtually all of the plants characteristic to the Western Hemlock Zone occur in the Tualatin Mountain forests, two hardwood species, bigleaf maple and red alder, have become widely established as a result of repeated disturbance to the natural vegetation caused by various land uses. Over time, these events have depleted nutrients from the soil. The depletion of nutrients, coupled with the depletion of mycorrhizal fungi which help to process nutrients for plant uptake and are particularly important to conifers, has given the hardwoods an edge over the firs, cedars and hemlocks. Pioneer species such as red alder, a species common only in riparian areas under natural conditions, have colonized these disturbed areas and are now widely established on the upland slopes. Thus, past disturbances have strongly influenced the composition of the plant communities in the Northwest Hills.

The *Tsuga heterophylla*/*Polystichum munitum* (western hemlock/sword fern) association generally characterizes the herb-rich community found in the Northwest Hills forests. Overstory species of this association typically include Douglas fir, western red cedar and western hemlock. In areas where invasive species like ivy have not taken over, the understory is dominated by a lush growth of herb species including sword fern, wild ginger, inside-out flower, Oregon oxalis, trillium, Smith's fairybells and deer fern. Shrubs occurring in the understory include red huckleberry, Oregon grape, trailing blackberry, Wood's rose and salmonberry.

While factors such as soils, slope aspect, moisture and topography have an important influence on plant associations in the Northwest Hills forest, the composition and distribution of most forest types can most clearly be traced to past logging activities and fires. The last major fire, in August of 1951, burned 1,200 acres of what had only three years earlier been dedicated as "Forest Park."

The forest types occurring in the Northwest Hills represent a sequence of successional stages of forest regeneration following logging and fire. These stages closely parallel those of the Western Hemlock Zone as described by Franklin and Dyrness (1988) and Hall (1980). Six distinct successional stages are evident within the study area; their patchwork distribution reflects the location, degree and chronology of past disturbances. Houle (1982) describes the stages of the West Hills forest succession as: grass-forb, shrub, hardwood with young conifer, hardwood topped by conifer, mid-aged conifer and old growth vegetation types. One additional

vegetation type, mature hardwood, is also recognized but is not related to the Western Hemlock Zone successional sequence. This type typically occurs in moist to wet areas at lower elevations although occasionally it is found on dryer, upland sites. The distinguishing characteristics of the mature hardwood type are the dense stands of bigleaf maple and red alder and the sparse distribution of conifers.

The grass-forb stage is comprised of low, herbaceous plants such as fireweed, bracken fern and Canadian thistle which initially colonize an area after removal of vegetation. This stage lasts approximately two to five years and occurs along fire lanes, power-line rights-of-way and in open fields along the crest of the hills and in lowland areas. The early seral shrub stage often develops as a thicket of thimbleberry, salmonberry, blackberry, red huckleberry, salal and Indian plum. This stage typically lasts between three and ten years but will persist as long as 30 years in the absence of conifer regeneration.

The hardwood with young conifer stage is a young, vigorous, broadleaf forest predominantly made up of red alder and big-leaf maple, though often includes bitter cherry, black cottonwood and juvenile Douglas fir. Understory species include sword fern, Oregon grape and red elderberry. This young, second growth forest usually occurs ten to 35 years following a disturbance.

The fourth stage of succession, conifer-topping hardwood, is still a vigorous, though now mixed, hardwood and conifer forest. While the alders and maples approach 100 feet in height during this stage, conifers, primarily Douglas fir, break through the hardwood canopy and grow to heights of 180 feet or more. Characteristic conifer species also include young western red cedar and western hemlock. This mixed stage of second growth forest follows 30 to 80 years after disturbance.

The next successional stage, mid-aged conifer, is dominated by Douglas fir. Young, shade-tolerant western hemlock, western red cedar and pacific yew are gradually making their way up through the understory, while some of the older hardwoods such as alder and cherry are beginning to fall to the forest floor. Sword fern, salal, Oregon grape, red huckleberry and vine maple thrive as the older trees begin to fall. Eighty to 250 years have passed since the last major disturbance.

If the forest is left undisturbed following the *mid-aged conifer* stage, it progresses into an old growth forest community. The *old growth* stage is self-perpetuating and will continue indefinitely unless fire, logging or other disturbance sets it back to an earlier stage of succession. Though western hemlock and western red cedar are climax species, long-lived seral species can remain a component of the community for several hundred years. Remnant old growth stands in the Northwest Hills, for example, are dominated by Douglas fir. In addition to large trees of 250 or more years of age, the old growth stage is characterized by the presence of large snags and downed logs in various stages of decay. Old growth stands within the study area are rare; remnant stands occur in small isolated pockets, three to twelve acres in size, near Germantown,

Newton and Newberry Roads. These old growth stands make up less than one percent of the study area.

The Tualatin Mountain forest is home to several special or unique flora features. The Pacific yew (*Taxus brevifolia*), is an exceptionally slow growing climax tree species most abundant in ancient forests of the Pacific Northwest. In recent years, a cancer fighting substance known as “taxol” was discovered in the bark of the yew. Taxol has proven effective in fighting ovarian cancer and early results indicate that the substance may also prove effective for treating leukemia and colon, lung, mammary, prostate and pancreatic cancers (Wood 1990; Norse 1990).

Though virtually all of the forest in the west hills is second growth, a substantial proportion of it is mature enough to support rare saprophytic orchids such as the phantom orchid (*Cephalanthera austini*), fairy slipper (*Calypso bulbosa*), rattlesnake-plantain (*Goodyera oblongifolia*), and three coral root species (*Corallorhiza maculata*, *C. striata* and *C. mertensiana*). The western wahoo (*Euonymus occidentalis*) inhabits moist, creek side habitats in the Northwest Hills. The wahoo was placed on the “1976 Provisional List of Rare and Endangered Plants in Oregon.” Its populations have now substantially recovered.

English ivy (*Hedera helix*), was introduced to the area at the end of 19th century as a horticultural plant and is identified as an escapee as early as 1929 (Christy et al. 2009). As time has progressed, so has the distribution of this invasive species. In the west hills, English ivy is dominant throughout the disturbed edges of the forests, including backyards. In 1994, in an effort to provide meaningful employment for local youth while raising the profile of English ivy as an invasive species, the No Ivy League was born with help various community partners. In 2004, the City of Portland conducted a vegetation inventory of Forest Park, which makes up much of the west hills. This survey revealed that over 2,300 acres or 49% of the park had no presence of English ivy (City of Portland Parks and Recreation 2011). Of the total acreage, approximately 1,112 acres or 23% of the park included trace amounts of English ivy which is defined as less than 1 percent of a given area. From this analysis the conclusion can be drawn that over 70% of the park is not significantly impacted by English ivy. It is critical that its distribution be controlled to ensure that the larger percentage of the park continues to remain free of ivy. Figure 1 shows the distribution of English Ivy in Forest Park (2004).

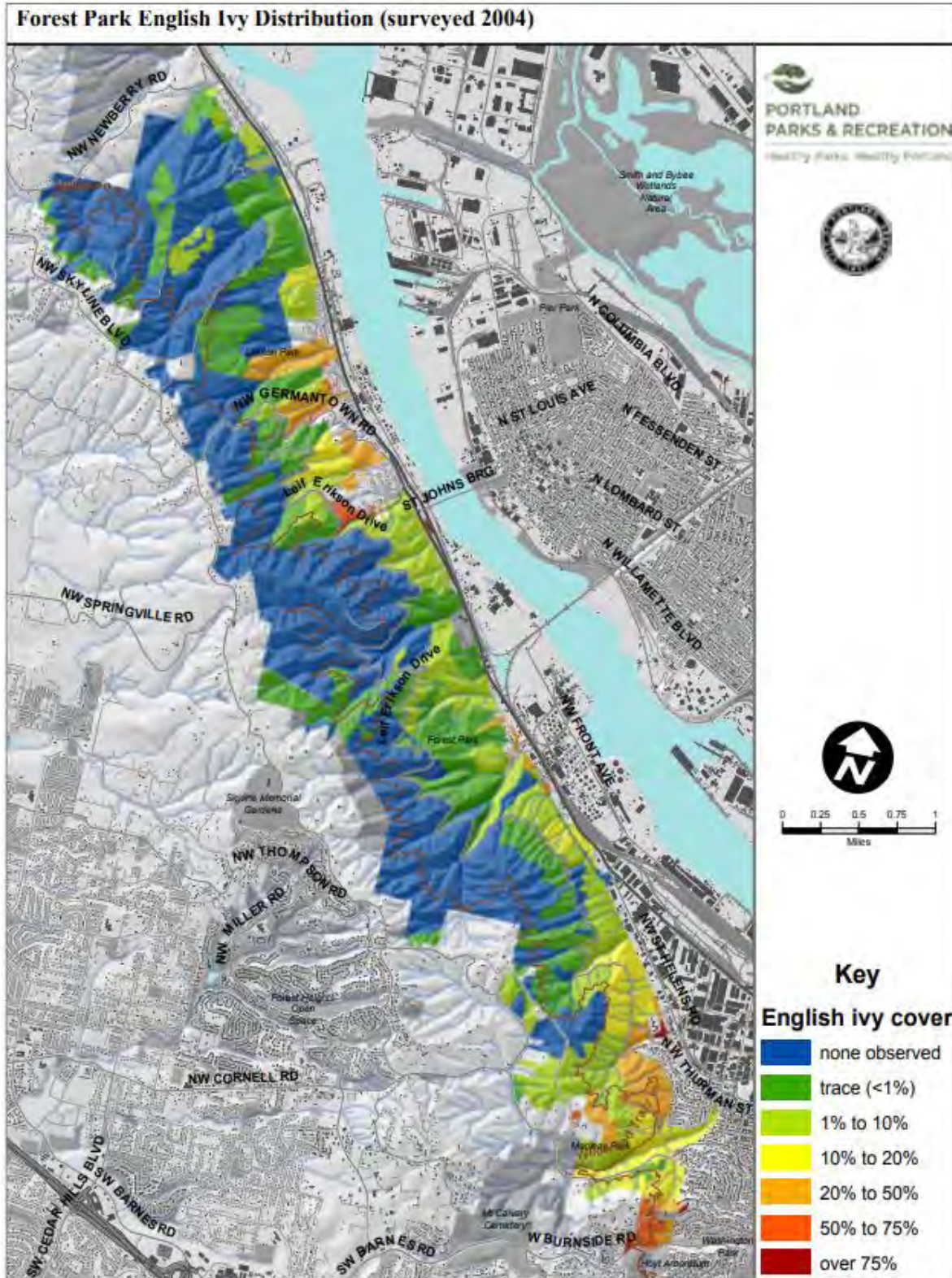


Figure 1: Distribution of English Ivy in Forest Park (2004)

While English ivy might be the most publicly recognizable invasive species in the west hills, other species pose a threat to ecosystem health. In addition to English ivy and clematis (*Clematis vitalba*), invasive tree species such as English holly (*Ilex aquifolium*), non-native laurel (*Prunus lusitanica* and *P. laurocerasus*), non-native cherry (*Prunus avium*), English hawthorn (*Crataegus monogyna*), horse chestnut (*Aesculus hippocastanum*), and Norway maple (*Acer platanoides*) are found. In Forest Park, of particular concern is English holly as it is present in greater numbers than other invasive trees and was found to be the most widely distributed invasive species in Forest Park (City of Portland 2004).

A coordinated campaign to address garlic mustard (*Alliaria petiolata*) throughout the Portland Metro area and in the west hills has been ongoing. In Forest Park, garlic mustard is found along roadsides and trails; it has been inadvertently distributed by park users and domesticated and wild animals. This particular species is of significant concern because of its documented ability to disturb woodland ecosystems. Garlic mustard exudes chemicals from its roots that may prevent other plants from thriving. As a result, it has the capacity to significantly alter the native woodland herbaceous plant community – reducing plant diversity, destroying palatable forage for wildlife, and reducing opportunities for pollinators.

The potential for the introduction of new invasive species to Forest Park due to the disturbed edge that exists along the park boundary and the proximity to residential properties is high. This requires constant vigilance and a quick response to new invasive plants as they appear. Portland Parks and Recreation is addressing several invasive species that have newly arrived to the park's perimeter, primarily through the illegal dumping of yard debris. These species include lesser celandine (*Ranunculus ficaria*), yellow archangel (*Lamium galeobdolon*), butterbur (*Petasites japonica*), and spurge laurel (*Daphne laureola*). Long-term protection of Forest Park from invasive species will require a significant outreach program to private property landowners to address invasive species control at the interface between public and private property.

Within Forest Park, Portland Parks and Recreation and the Bureau of Environmental Services have conducted restoration and enhancement projects. As part of the Renew Forest Park Initiative started in 2014, a significant investment has been made by Portland Parks and Recreation, and partners, to control invasive weeds and replant with native species in this Resource Site. As part of Restore Forest Park a significant investment has been made by a partnership including City of Portland, Bonneville Power Administration and Metro to control invasive weeds and plant native pollinator species within the powerline corridors.

E.1.f. Aquatic Species

Most of the streams and their tributaries flowing through the study area are cool, well-shaded, and well-aerated free-flowing aquatic systems. However, many roads and trails bisect Forest Park streams, and where culverts pass flows through undersized culverts (such as Leif Erikson Drive), surcharging, erosion, and debris flow events can occur.

Special status fish species observed in the study area include coho salmon, cutthroat trout, and steelhead trout. All resource area streams flow into the lower Willamette River, designated as critical habitat for five populations of Pacific salmon and steelhead. One stream in particular, Miller Creek, is designated critical habitat for Lower Columbia River coho salmon. Miller Creek also supports a population of steelhead trout, although it is not federally designated specifically as critical habitat for this species. Miller, Saltzman, and Balch Creeks continue to serve coastal cutthroat trout as both spawning and rearing habitat.

During the summers of 2019 and 2020, staff from the Oregon Department of Fish and Wildlife (ODFW) conducted stream habitat surveys in the Portland area using ODFW’s wadeable stream survey protocol.² As part of the surveys, ODFW staff walked each stream, measuring and characterizing each individual habitat unit (e.g. riffles, pools, glides, culverts) they observed. At each unit, staff measured the size (wetted length, width, and water depth), slope, streambank condition, large wood volume, canopy cover, and substrate composition. Along each stream reach, staff measured the bankfull width, terrace height, floodprone width, and valley width. The surveys also included a riparian assessment, where staff assessed a 30-meter (approx. 100 feet) transect perpendicular to the stream and characterized canopy closure, ground cover, and tree abundance.

The data was then analyzed by city staff to characterize the current quality of stream habitat in Portland’s streams. Stream condition is characterized by stream reach (segments of the stream that are approximately 0.5–1 mile long). The habitat quality of a stream reach represents how well the physical characteristics of the stream can support fish and other aquatic organisms by providing sources of food, refuge from predators, and areas to spawn. The metrics used to evaluate how well each stream reach provides these ecological functions are:

Grouping	Metric	Metric Description
Bank Condition	Percent artificial bank stabilization	Percent of the reach with artificial bank stabilization or riprap
Floodplain Condition	Floodplain connection	Vertical containment of the stream channel, calculated as floodprone width/bankfull width
	Floodplain development	Percentage of the current floodplain with vegetation
Habitat Connectivity	Percent Piped	Percentage of the stream flowing through pipes or culverts

² Kelly Moore, Kim Jones, Jeff Dambacher, Charlie Stein, et al. May 2021. Methods for Stream Habitat and Snorkel Surveys. Version 31.1. Oregon Department of Fish and Wildlife, Aquatic Inventories Project, Conservation and Recovery Program, Corvallis, OR.

<https://odfw.forestry.oregonstate.edu/freshwater/inventory/pdffiles/hmethd21.pdf>
https://odfw.forestry.oregonstate.edu/freshwater/inventory/basin_portland_reports.html

Grouping	Metric	Metric Description
	Road crossings	Number of road crossings per kilometer
Large Wood	Large wood volume	Volume of wood with diameter \geq 15cm & length \geq 3m, normalized by stream length
Pool Habitat	Pool frequency	The number of channel widths (active channel width) between pools in the reach
	Pool habitat cover	Cover includes a combination of residual pool depth, wood pieces per 100m, boulder count per 100m ² , undercut banks, debris jams
Riffle Habitat	Percent gravel	Percent of riffle area composed of gravel-sized substrate
	Percent fines	Percent of riffle area composed of fine substrate (silt, organic matter, sand)
	Riffle frequency	The number of channel widths (active channel width) between riffles in reaches where stream gradient is between 0.2 and 6%.
Riparian Condition	Shade	Current riparian shade as a proportion of the site potential
	Invasive cover	Invasive species cover in the riparian area (30 m)
	Natural Resource Inventory	Percentage of undeveloped high, medium and low quality riparian area as ranked by the NRI (50 ft)

The stream habitat metrics are computed for each stream reach and then converted to an index score that represents the ecological function provided by that metric. Index scores provide a consistent way of characterizing condition across a variety of habitat metrics and stream reaches. ODFW stream habitat benchmarks³ and the City’s Watershed Health Index⁴ were used to establish the stream conditions that correspond to high quality habitat and which correspond to poor quality habitat for each metric.

Streams with ‘excellent’ stream habitat quality (dark blue lines on the map) are those where close to all of the habitat metrics meet or exceed the desired thresholds. These are areas with very high quality habitat that can support a variety of fish and aquatic organisms across their many different life stages. Conversely, stream reaches with ‘very poor’ stream habitat quality (red lines on the map) are those with little to no physical habitat that fish and other aquatic organisms require to survive.

Figure 2 shows the results of the streams survey within the Forest Park and Northwest Hills area.

³ Scott Foster, Charles Stein, Kim Jones. 2001. A guide to interpreting stream survey reports. Edited by P.A. Bowers. Information Reports 2001-06. Oregon Department of Fish and Wildlife, Portland, OR.
<https://odfw.forestry.oregonstate.edu/freshwater/inventory/pdf/files/interpgd.pdf>

⁴ City of Portland Bureau of Environmental Services, Watershed Health Index and Report Cards.
<https://www.portlandoregon.gov/bes/reportcards>.



Figure 2: Stream survey results

E.1.f. Wildlife

For additional information about wildlife species within Forest Park please refer to the Forest Park Wildlife Report, Portland Parks and Recreation, December 2012 (<https://www.portlandoregon.gov/parks/article/427357>).

Wildlife use Northwest Hills forest habitats to complete various life cycle stages such as mating, feeding and denning. The vegetative structure of the habitat (e.g., downed logs, snags, herb, shrub and tree layers) is a key factor in shaping the distribution and abundance of wildlife (Thomas 1979). Each stage of forest succession in the Northwest Hills has its own specific structure. Wildlife species have known preferences for structural components found in distinct successional stages and use these vegetation types to meet all or part of their life cycle requirements (Maser and Thomas 1978; Harris 1984).

A broad range of terrestrial vertebrates use the forested riparian and upland habitats found in the west hills. Salamanders use stream and riparian habitat and moist uplands, where they feed on insects and other invertebrates such as slugs, and are prey to other amphibians (frogs), reptiles (snakes), birds (hawks), and mammals (weasels, raccoons). These local salamanders are

dependent on a moist, forested environment and cool, high quality water. Coastal giant salamanders are abundant as neonates in the low reaches of major streams in the park, and adults are occasionally found in streams and nearby upland habitat. A single survey in Saltzman Creek in 2011 found 90 juvenile giant salamanders there.

Several frog species are also dependent on the moist forested environment found in the Northwest Hills. These species feed on salamanders, insects and other invertebrates, and are prey to many local snakes, birds and mammals. Northern red-legged frogs, an Oregon vulnerable species and federal species of concern, are relatively common in both riparian and upland habitats in Forest Park. Special status amphibians observed in the study area includes coastal giant salamander, northwestern salamander, and spotted frog. The presence of these native amphibians is of further significance because of the decline of amphibian populations worldwide due in part to predation (e.g., by bullfrogs) and to increased UV radiation that results from deforestation.

Several species of snakes and lizards are also found in the area. Undeveloped forest areas provide good breeding grounds for these non-poisonous, beneficial reptiles, serving as a source of replenishment to developed areas. Snakes are also an important source of food for birds of prey and carnivorous mammals.

The mature conifer, conifer-topping hardwood and old growth stages of the forest described in the previous section support populations of breeding birds. Bald eagles are observed throughout Forest Park. Other birds of prey include Cooper's hawk and sharp-shinned hawk which rely on tall conifers for nest sites. Several nocturnal avian predators including screech, sawwhet and northern pygmy owls also occur in the Northwest Hills. These owls are cavity-nesters that rely on snags with holes excavated by pileated woodpeckers or flickers.

Wildlife biologists and forest managers often use the presence or absence of one or more "indicator species" to predict whether an area of habitat is suitable for a variety of species having similar habitat requirements (USDA Forest Service 1985). Several species serve as indicators of the health of the Northwest Hills ecosystem. The pileated woodpecker is one such species; other indicator species in the west hills are sharp-shinned hawk, Roosevelt elk, white-footed vole and red-legged frog.

One hundred and four avian species are known to occur in Forest Park, and about a dozen of these are rare (City of Portland, Parks and Recreation 2012). Several migratory bird species, which typically nest at higher elevations or further north, use the west hills forest as an over-wintering ground due in part to the area's mild climate. Still other species, which migrate from Central and South America, use the forest as a stop-over and resting place on their journey along the Pacific Flyway. These birds (e.g., flycatchers, warblers, vireos, etc.) use prominent geographic landforms such as the western terminus of the Columbia Gorge and the confluence of the Willamette and Columbia Rivers to orient themselves when migrating. Many of these species are "forest-interior" birds that only use large forested areas, and the west hills provide the largest forest near the river confluence. In recent years, the varied thrush, a Special Status

Species, has been detected singing in the North Management Unit throughout the spring and early summer, and is now considered a breeding species in the park. In contrast, large flocks of varied thrush overwinter in the park annually.

Many mammal species use the west hills forest habitat. Forty-five species of mammals representing seven taxonomic orders are known to occur in Forest Park (City of Portland, Bureau of Parks and Recreation 2012). These species include northern flying squirrel, Townsend's chipmunk, black-tailed deer, mountain beaver, and bobcat. Bobcat are secretive and nocturnal, but adults with young have been photographed near Balch Creek. Bobcats breed annually beyond the park boundary along Cedar Mill Creek on the west side of the Tualatin Mountains. Bobcats are presumed to occupy and use Forest Park at the low densities typical for medium-sized, wide-ranging carnivorous species. Cougar have never been reported in Forest Park. Coyote, raccoons, striped skunks, long-tailed weasels, and short-tailed weasels are relatively common and well distributed in Forest Park. All of these species are primarily active at night and are seldom encountered by park visitors. In contrast, several other carnivores are considered rare in Forest Park.

Many of the species found in the area are also found in the natural areas of the Oregon Coast Range. In addition to its habitat functions, the forested hills extend northwest from Portland toward the coast and serve as a travel corridor for wildlife, facilitating the seasonal and longer-term dispersal of individuals, thus maintaining genetic and biological diversity.

E.1.g. Special Habitat Areas

Special Habitat Areas are habitat or unique features 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.

There are many areas in the west hills that are designated Special Habitat Areas because of the presence of special status species (S criterion). Special status species found in the study area include: bobcat, elk, mountain beaver, North American porcupine, red fox, spotted skunk, long-eared myotis, long-legged myotis, Yuma myotis, bald eagle, band-tailed pigeon, black-throated gray warbler, brown creeper, bufflehead, bushtit, chirping sparrow, common yellowthroat, downy woodpecker, great blue heron, Hammond's flycatcher, hermit warbler, Hutton's vireo, Nashville warbler, northern pygmy-owl, olive-sided flycatcher, orange-crowned warbler, osprey, pacific wren, pacific-slope flycatcher, pileated woodpecker, purple finch, purple martin, red crossbill, rufous hummingbird, Swainson's thrush, varied thrush, Vaux's swift, western wood-pewee, white-breasted nuthatch, Wilson's warbler, and yellow warbler. Special status fish species observed in the study area include coho salmon, cutthroat trout, and steelhead trout.

Forest Park 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.
- Special Status Plants (P) – An area where rare or unique plant species have been documented. (Note – Because rare plants are often sought out for harvesting, the exact location of these species will not be documented in this report.)
- Native Oak (O) – An area that contains Oregon white oaks; other tree species and vegetation may be present.
- Bottomland Hardwood Forest (B) – An area that contains remnant bottomland hardwood forest species; other tree species and vegetation may be present.
- Elk Migratory Corridor (E) – Areas that the Oregon Department of Fish and Wildlife has designated as elk migratory corridors.
- 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

Wetlands are also designated Special Habitat Areas because they meet the Title 13 criterion for 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 special status species. Some of these wetlands are found within Forest Park and others are on private property outside of the park. The relationship between forests and wetlands, in and outside of Forest Park is particularly important to red-legged frog.

E.1.h. Stormwater Management

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.

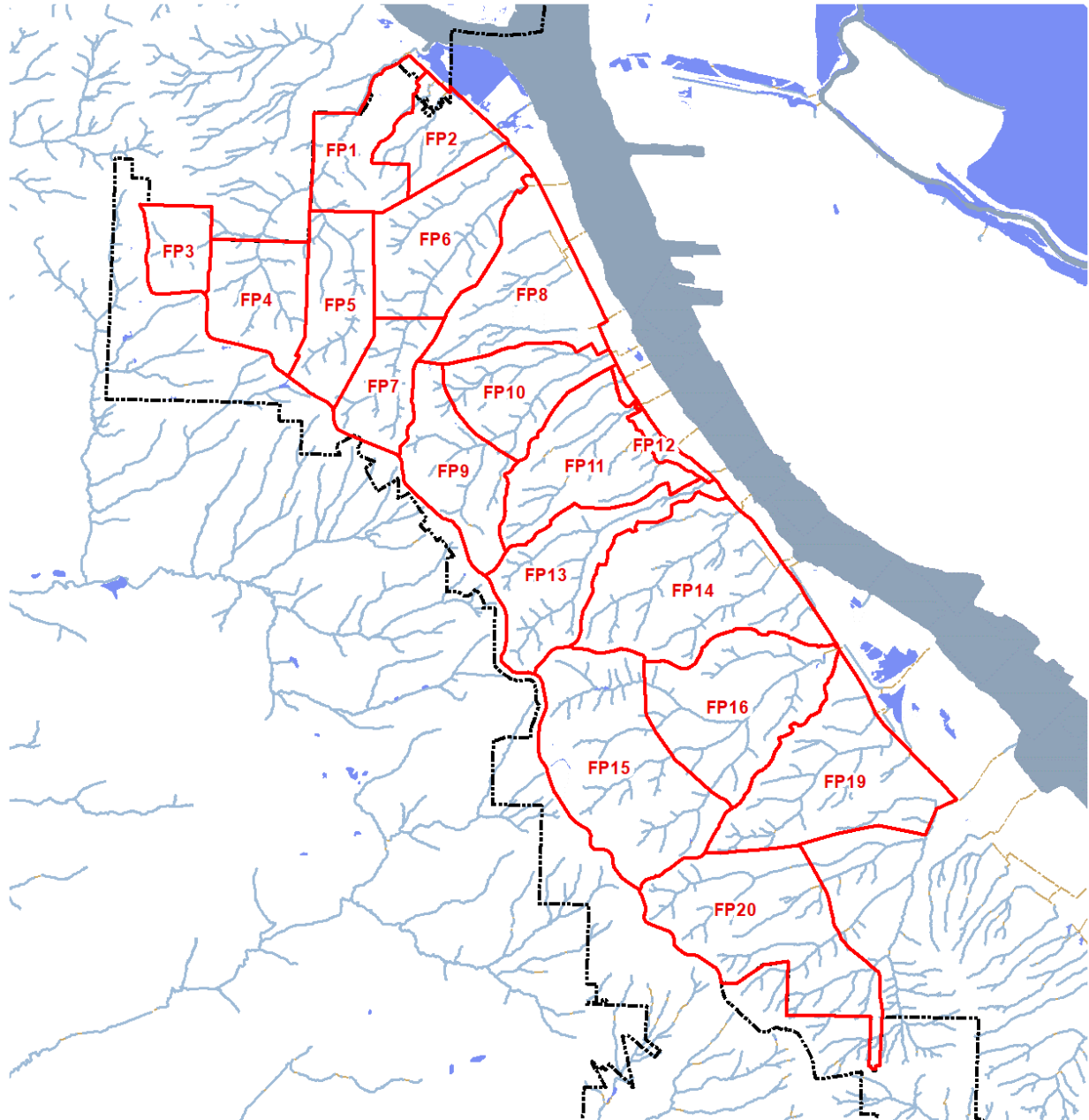
When natural areas are developed, the services provided by those natural areas are lost. Many of these services are critical to the healthy functioning of natural resources and are difficult or

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.

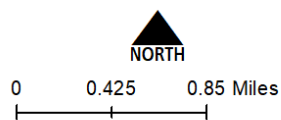
E.2. Resource Sites



Forest Park and Northwest District Resource Sites

-  Resource Sites
-  open stream channel
-  piped stream segment
-  wetlands
-  rivers
-  freeways
-  City of Portland

Updated: April 2020



Bureau of Planning and Sustainability
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City of Portland, Oregon

The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

Map 2: Forest Park and Northwest District Resource Sites 1 - 20

Resource Site No.: FP1 **Resource Site Name:** Lower Miller Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 106

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:

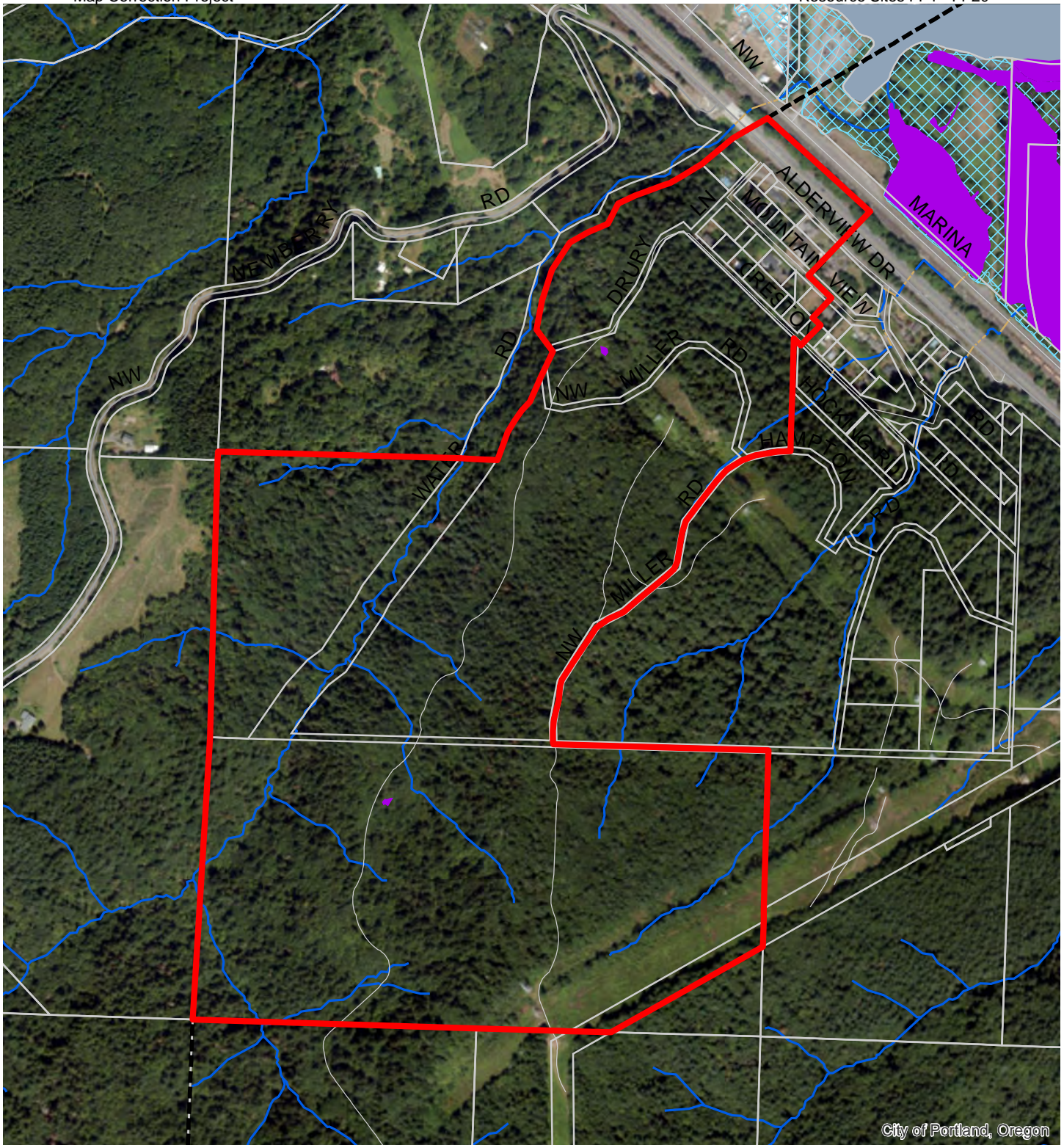
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP1 includes the following:

Site (acres)	171.2
Base zones (acres)	
OS	161.7
R10	9.0
RF	0.5



Map A: Water Features
Resource Site: FP1

Updated: July 2021



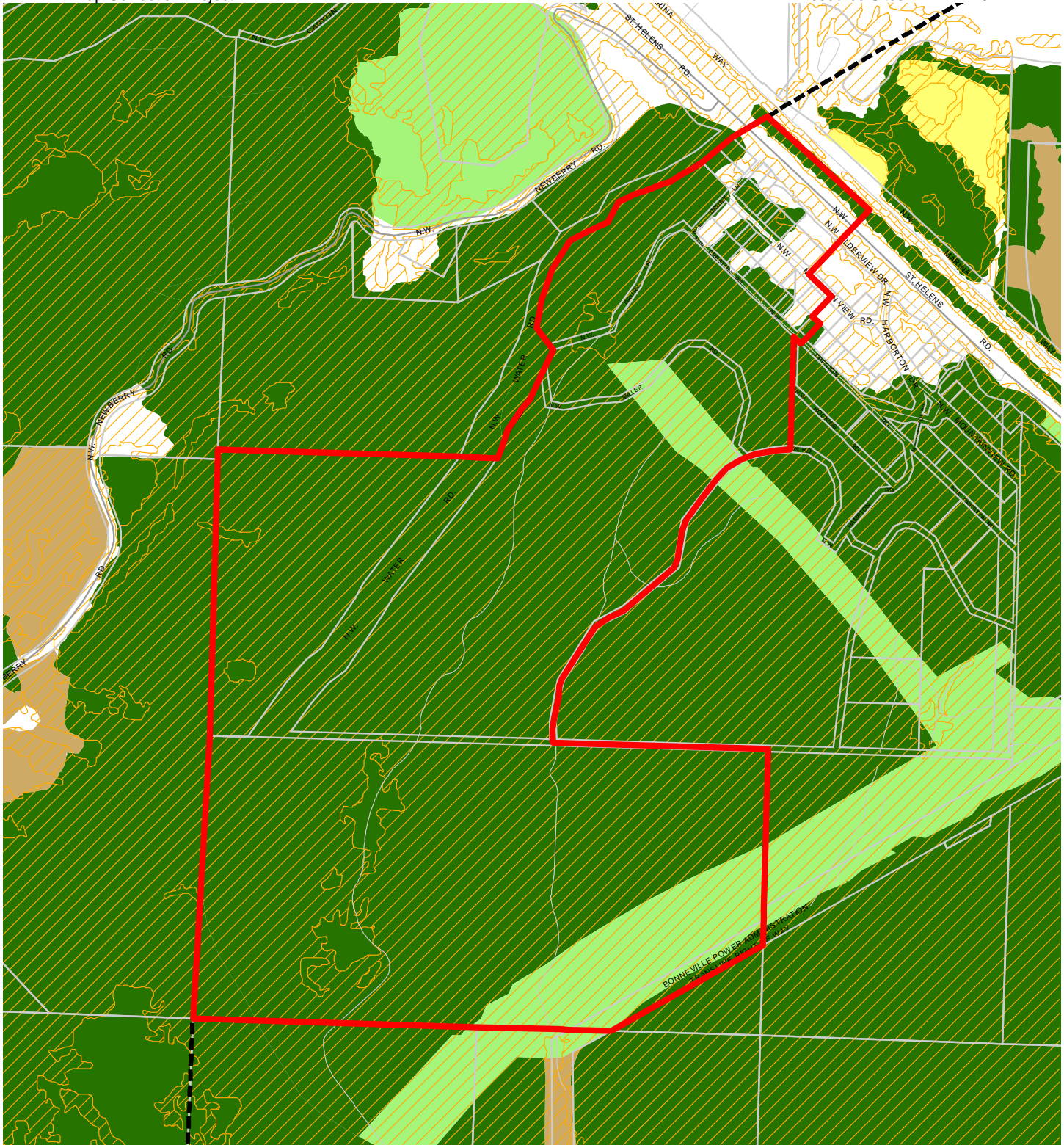
0 335 670 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



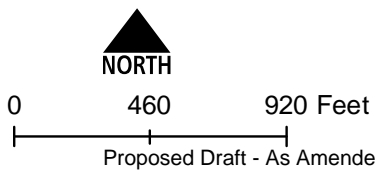
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July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP1

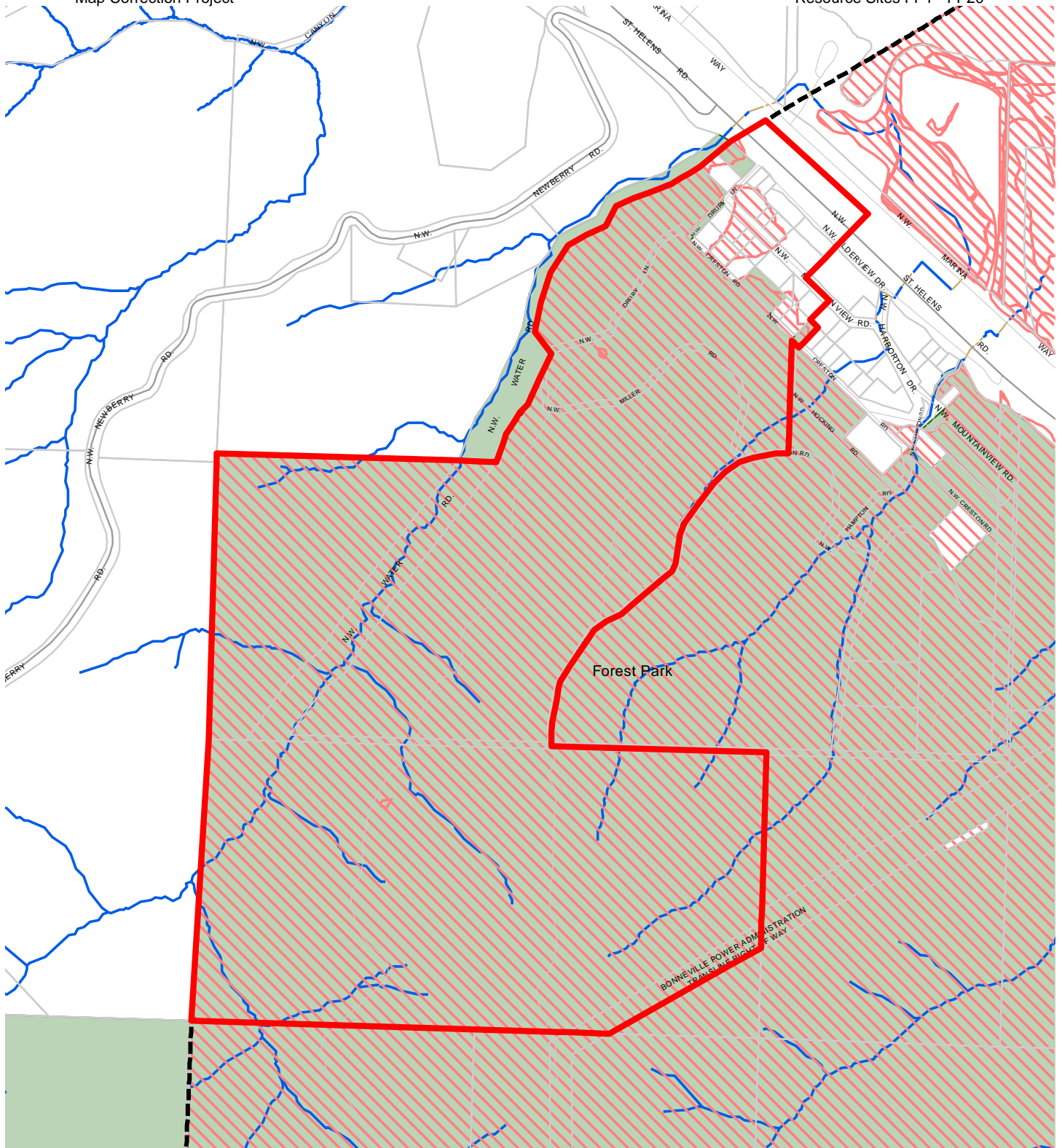
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

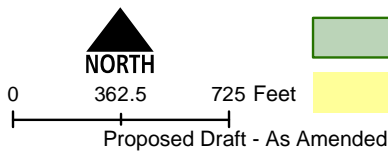


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**Map C: Special
Habitat Areas**
**Resource Site:
FP1**

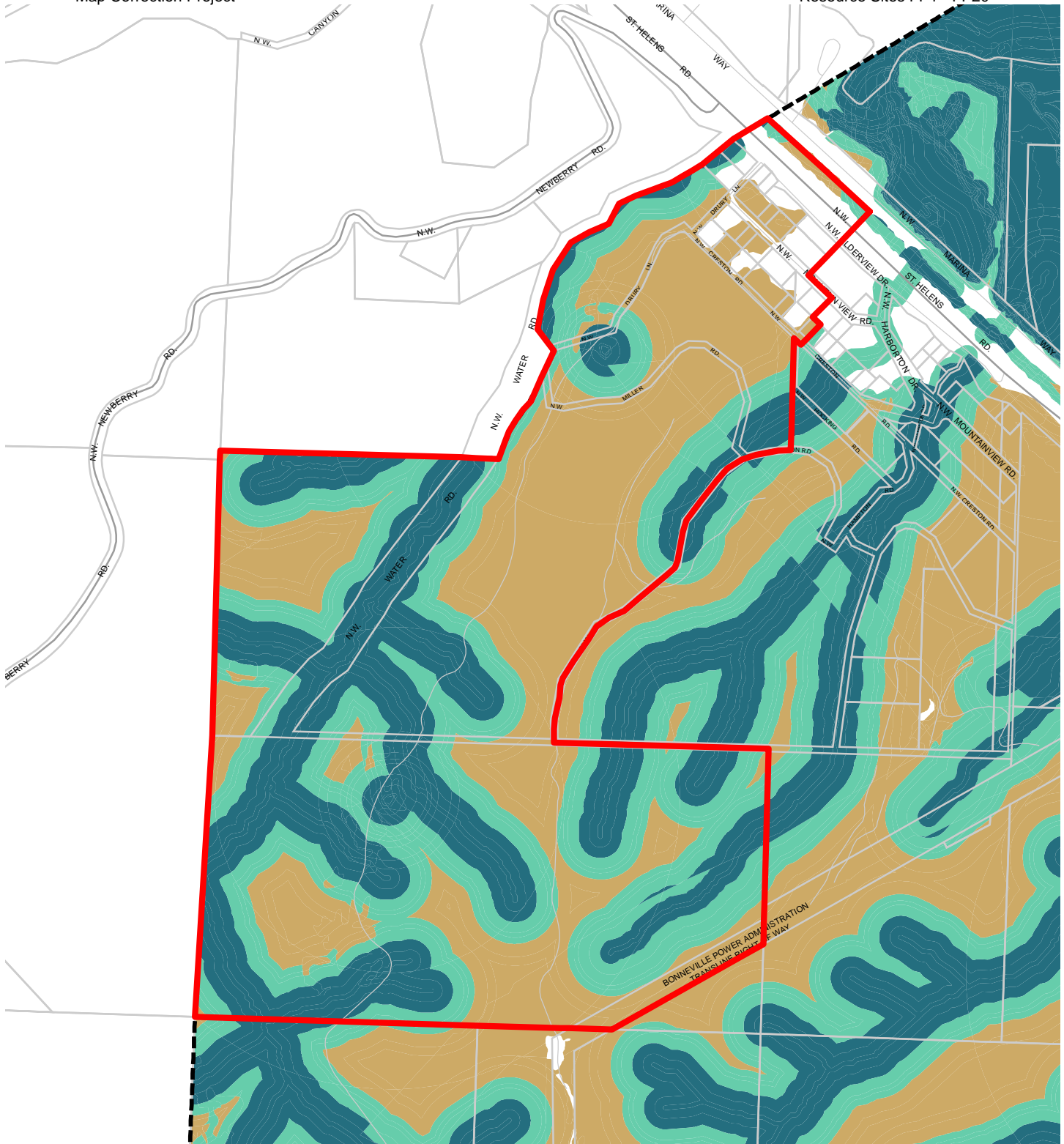
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711. July 2021



**Map D: Riparian
Corridors Habitat
Classification**

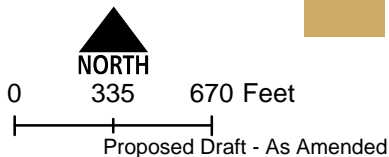
**Resource Site:
FP1**

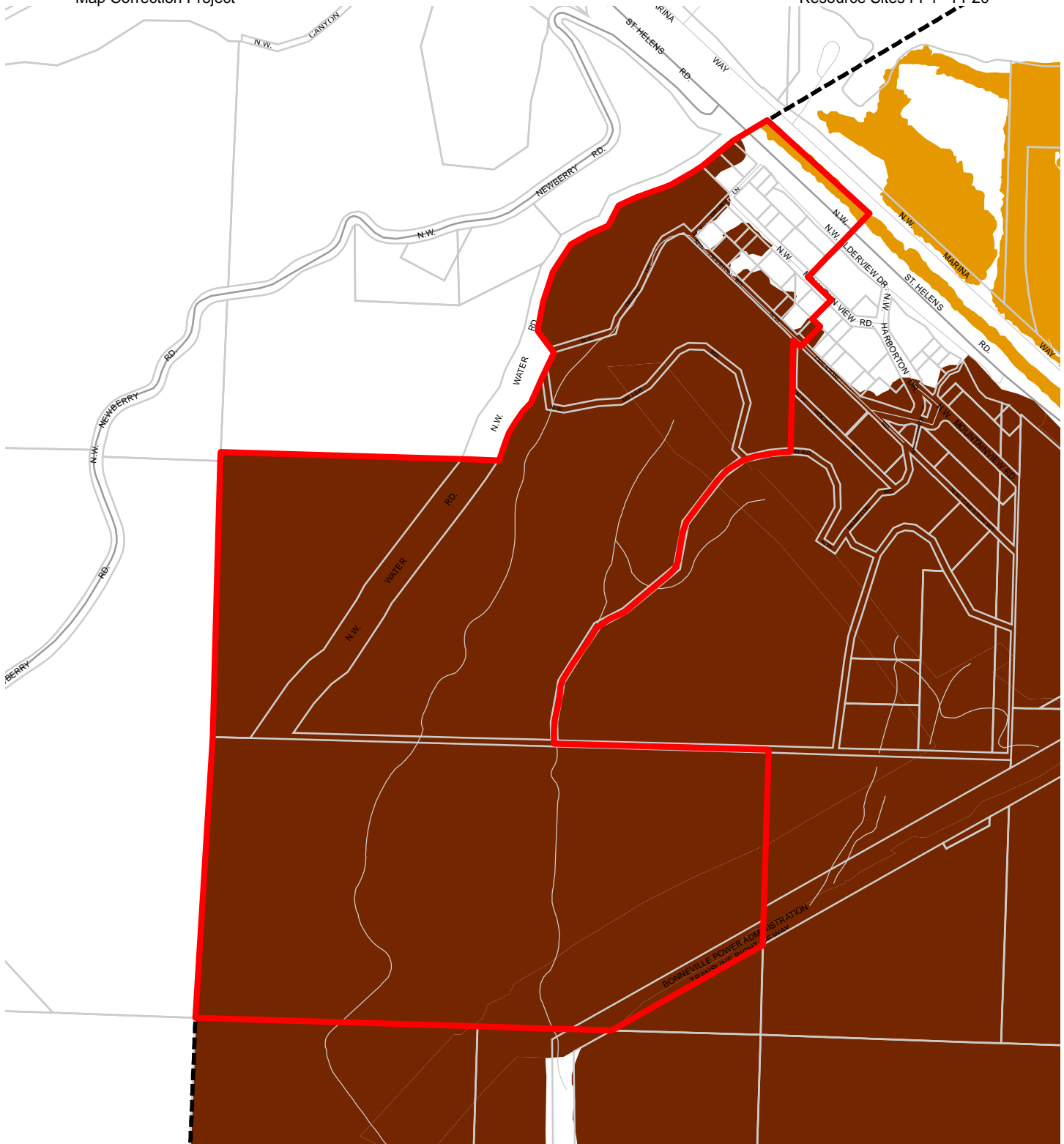
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



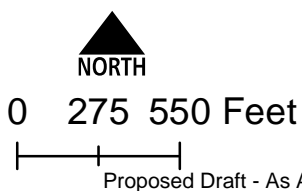
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**Map E: Wildlife
Habitat Classification
Resource Site:
FP1**

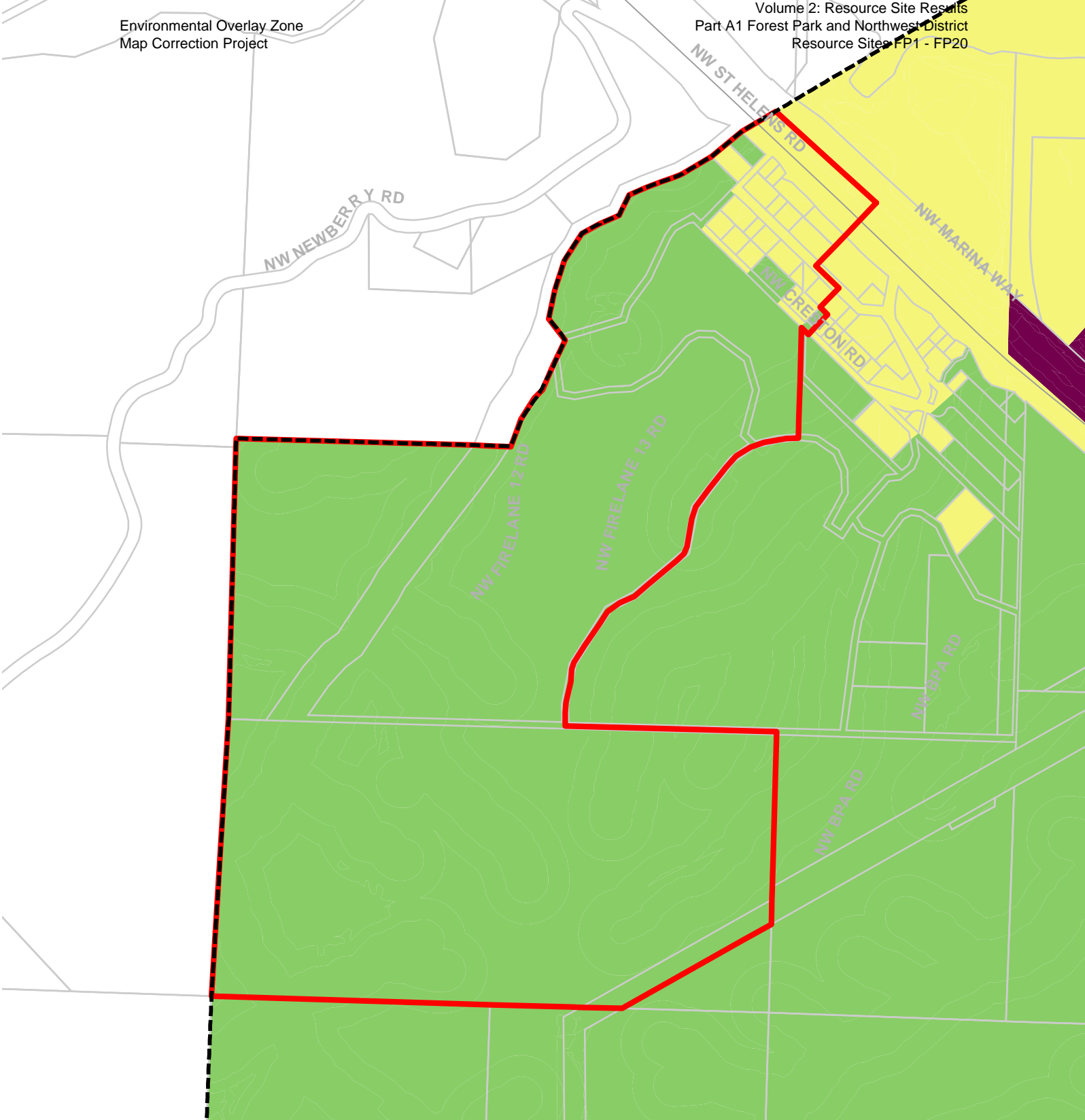
Updated: July 2021



-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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July 2021

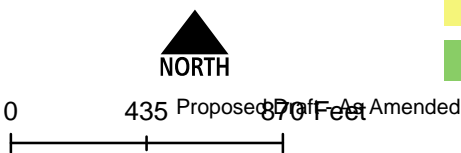


**Map F: Urban Development Value (Title 13)
Resource Site: FP1**

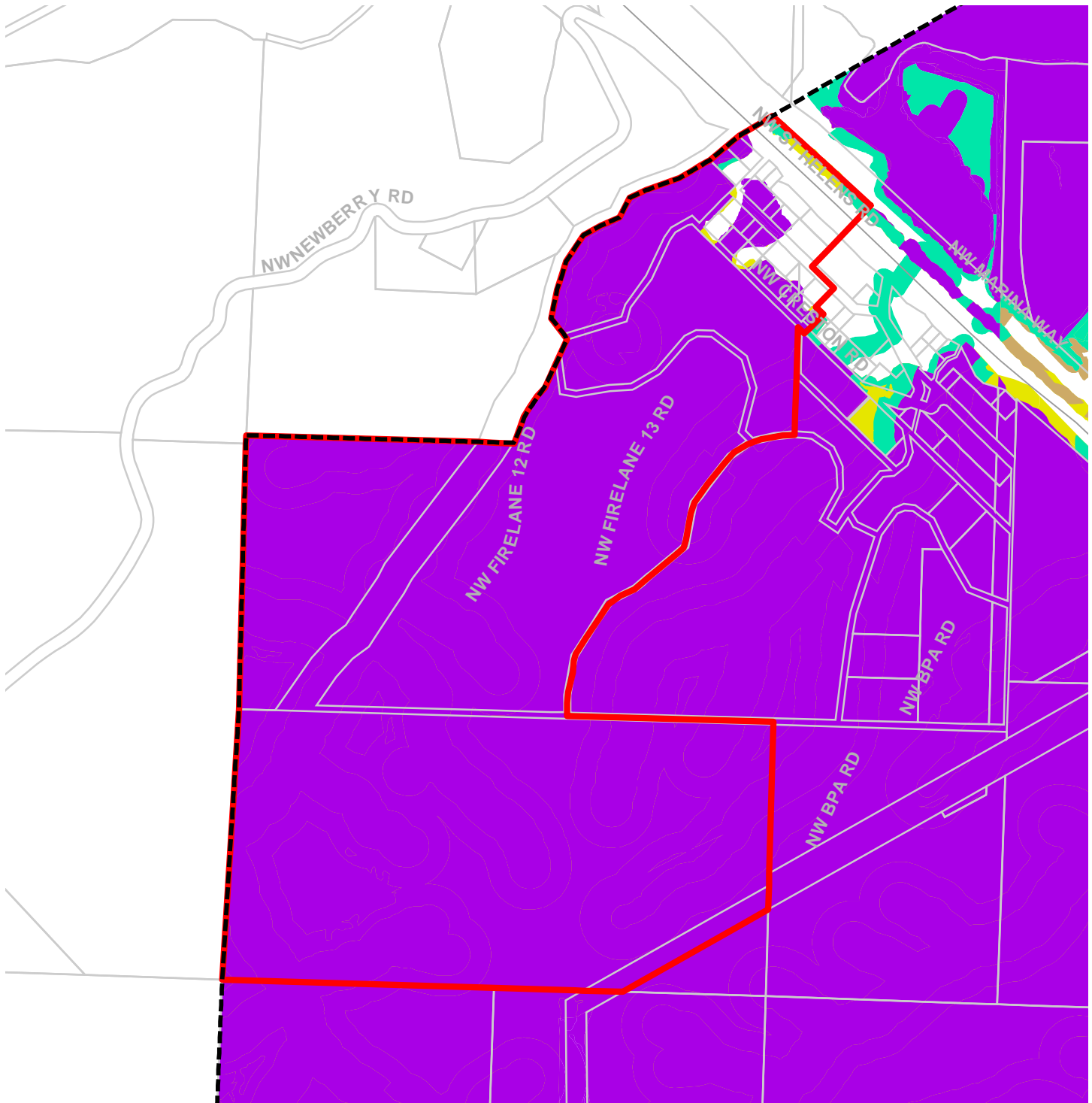
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



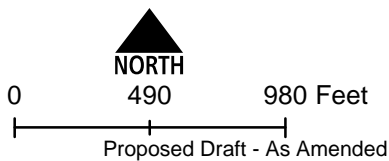
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP1

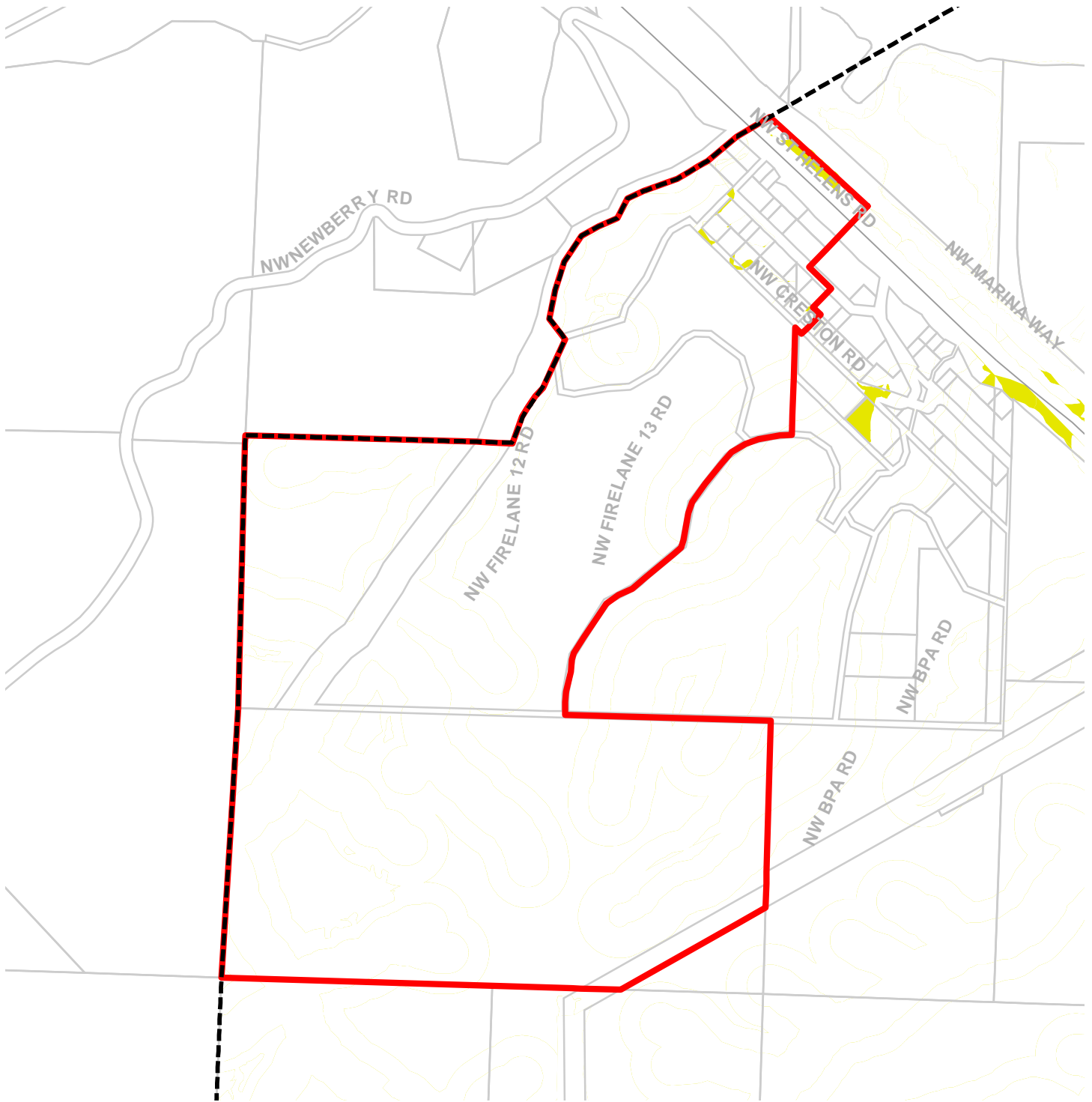
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



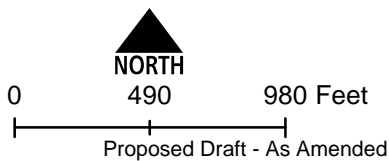
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Map H: Goal 5 Resources

Resource Site: FP1

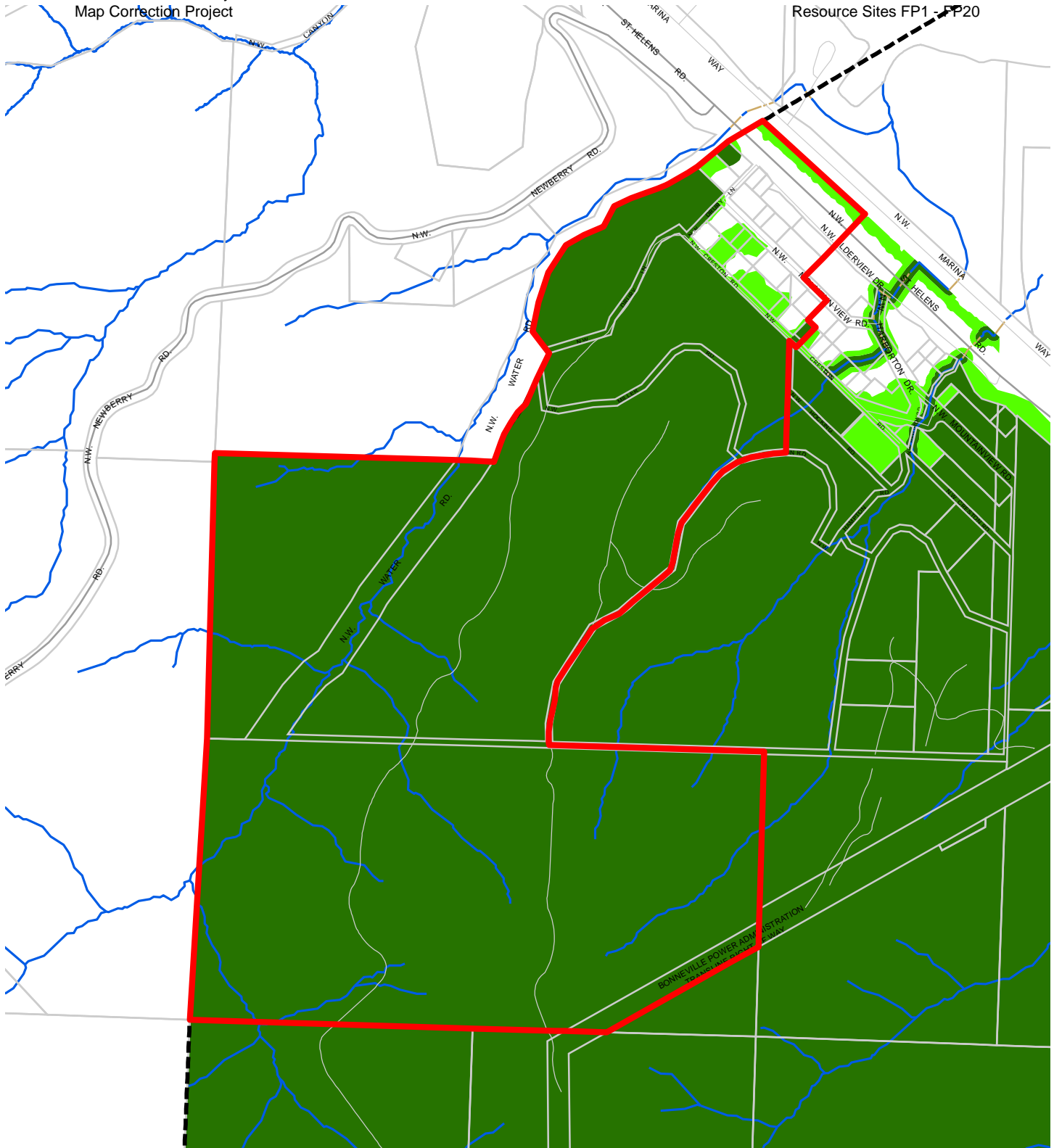
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



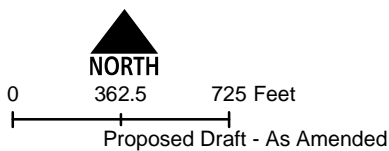
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Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP1**

Updated: July 2021



- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021

Natural Resource Description

Within resource site FP1 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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		FP1
		Study Area
Stream (Miles)		2.1
Wetlands (acres)		0.1
Vegetated Areas >= 1/2 acre (acres)		
	Forest (acres)	150.7
	Woodland (acres)	14.4
	Shrubland (acres)	0.0
	Herbaceous (acres)	0.0
Flood Area*		
	Vegetated (acres)	0.0
	Non-vegetated (acres)	0.0
Steep Slopes (acres)**		164.7
* 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 site's vegetative cover is predominantly second growth forest with representative stands of each seral stage of the western hemlock upland forest community. A small stand of *old growth* Douglas fir is also present in the lower Miller Creek canyon. Climax forest species such as western hemlock, western red cedar and pacific yew are also well established at the site. Forest cover provides open space, scenic and recreational resources; serves as habitat for resident and migratory wildlife; and helps to balance the local water regimen. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. Western wahoo is a prominent component of the riparian plant community.

The site's year-round creek provides habitat for a range of sensitive fauna species including coho salmon, cutthroat trout, steelhead trout, Coastal giant salamanders and red-legged frogs.

The creek also supports a healthy population of macroinvertebrates. Mammalian species known to use the area include black bear, bobcat, beaver, coyote and deer. Bird species include pileated woodpecker, red-tailed hawk, great horned owl, great blue heron, band-tailed pigeon, bluebird and a variety of other songbirds. Interspersion with surrounding habitat allows for free migration of wildlife; game trails were identified running parallel and perpendicular to Miller Creek. This site may provide an important travel corridor for mammals to and from habitats north of the city. Red-legged frog travel across Highway 30 from Forest Park to wetland in the Willamette River lowlands. Traffic along Newberry Road and state Highway 30 pose a threat to migrating wildlife.

Rare plants documents in the resource site include *Anemone lyalli*/Western wood anemone, *Anemone oregana var. oregana*/Blue windflower, *Cirsium brevistylum*/Indian thistle, *Cirsium edule*/Edible thistle, *Clarkia amoena*/Farewell-to-spring (PP&R City Nature staff observations, using "Urbanizing Flora of Portland, Oregon 1806-2008")

Table B: Quality of Natural Resource Functions in Resource Site FP1				
Resource Site (acres) = 171				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	48.4	50.7	66.0	165.1
percent total inventory site area	28.3%	29.6%	38.6%	96.5%
Wildlife Habitat*				
acres	163.4	0.7	0.0	164.1
percent total inventory site area	95.4%	0.4%	0.0%	95.9%
Special Habitat Areas**				
acres	163.8			
percent total inventory site area	95.7%			
Combined Total⁺				
acres	163.4	0.7	1.0	165.1
percent total inventory site area	95.5%	0.4%	0.6%	96.5%
* 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 site FP1, 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 FP1 (within city limits)			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
172.5	0.9	0.6	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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP1. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP1 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP1, 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*.

Natural Resource Protection 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 FP1, 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 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of streams top-of-bank or wetlands.
3. Within public parks, apply a conservation overlay zone ('c' zone) to areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
4. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands; and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP2 **Resource Site Name:** Upper Harborton
Previous Plan: Northwest Hills Natural Areas Protection Plan
Previous Resource Site No.: 104

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:

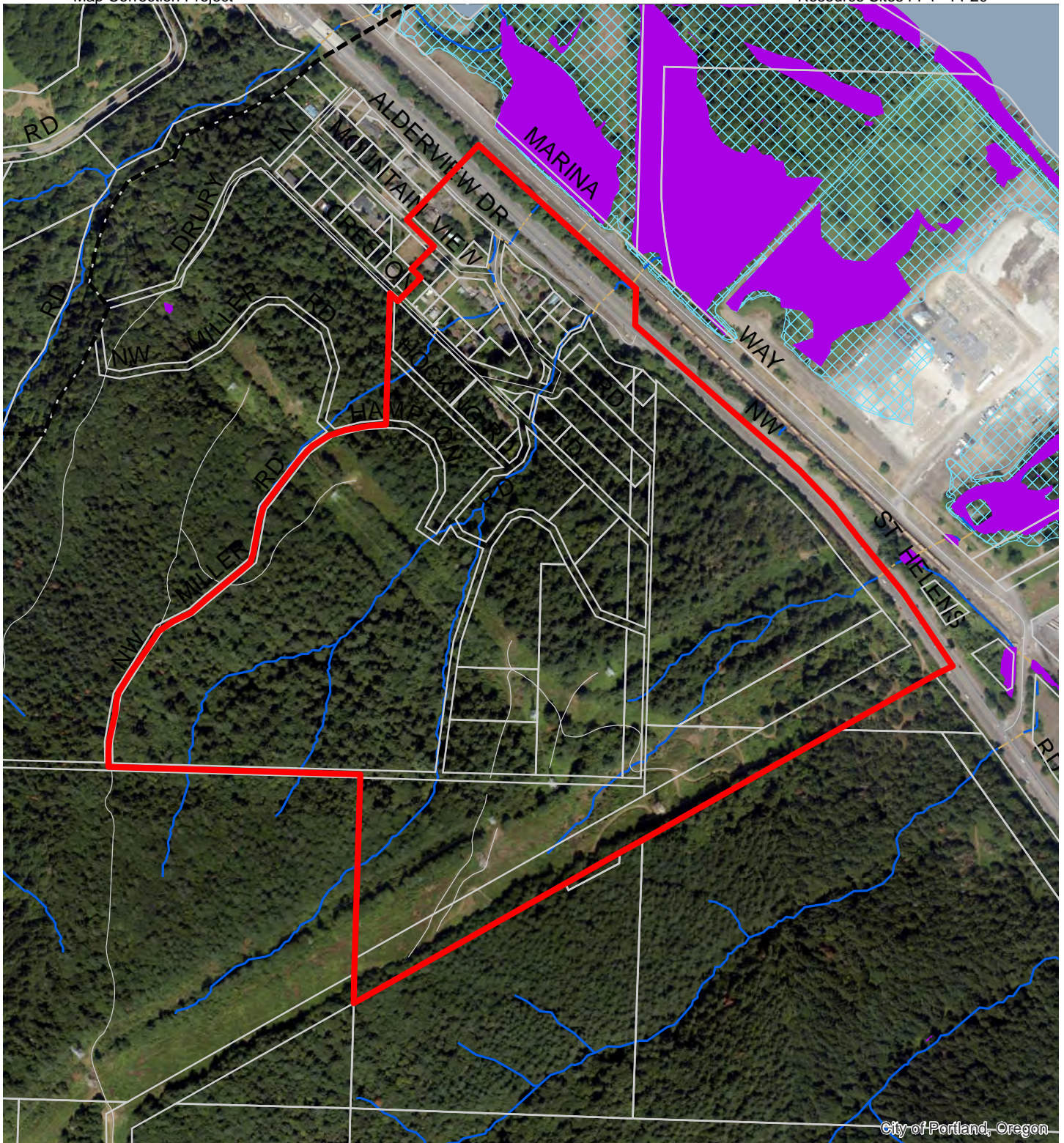
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP2 includes the following:

Site (acres)	118.7
Base zones (acres)	
OS	103.6
R10	14.1
RF	1.0



Map A: Water Features
Resource Site: FP2

Updated: July 2021



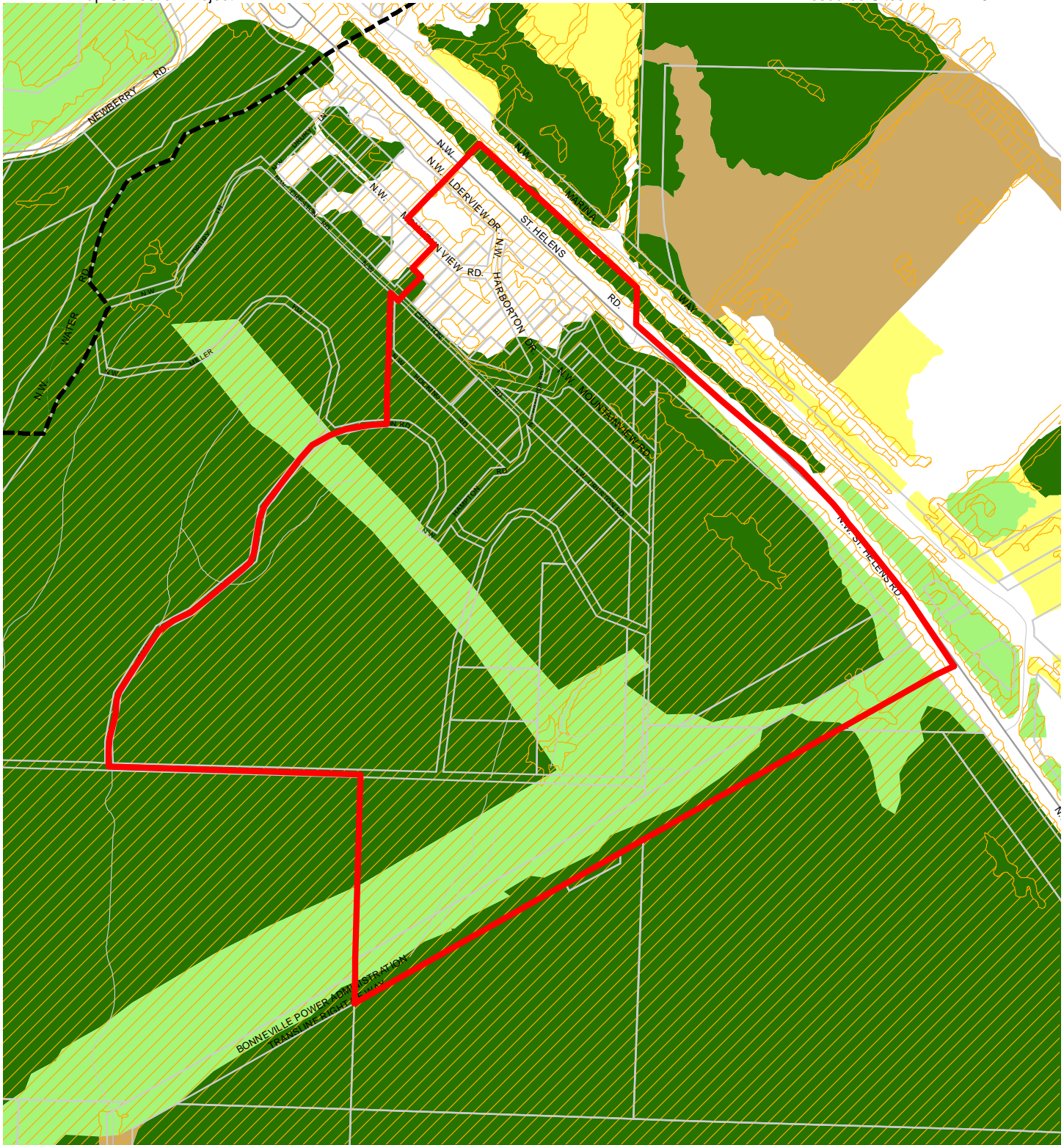
0 287.5 575 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



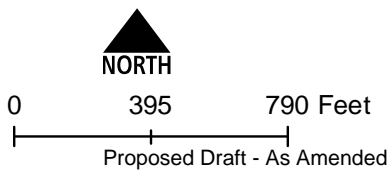
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July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP2

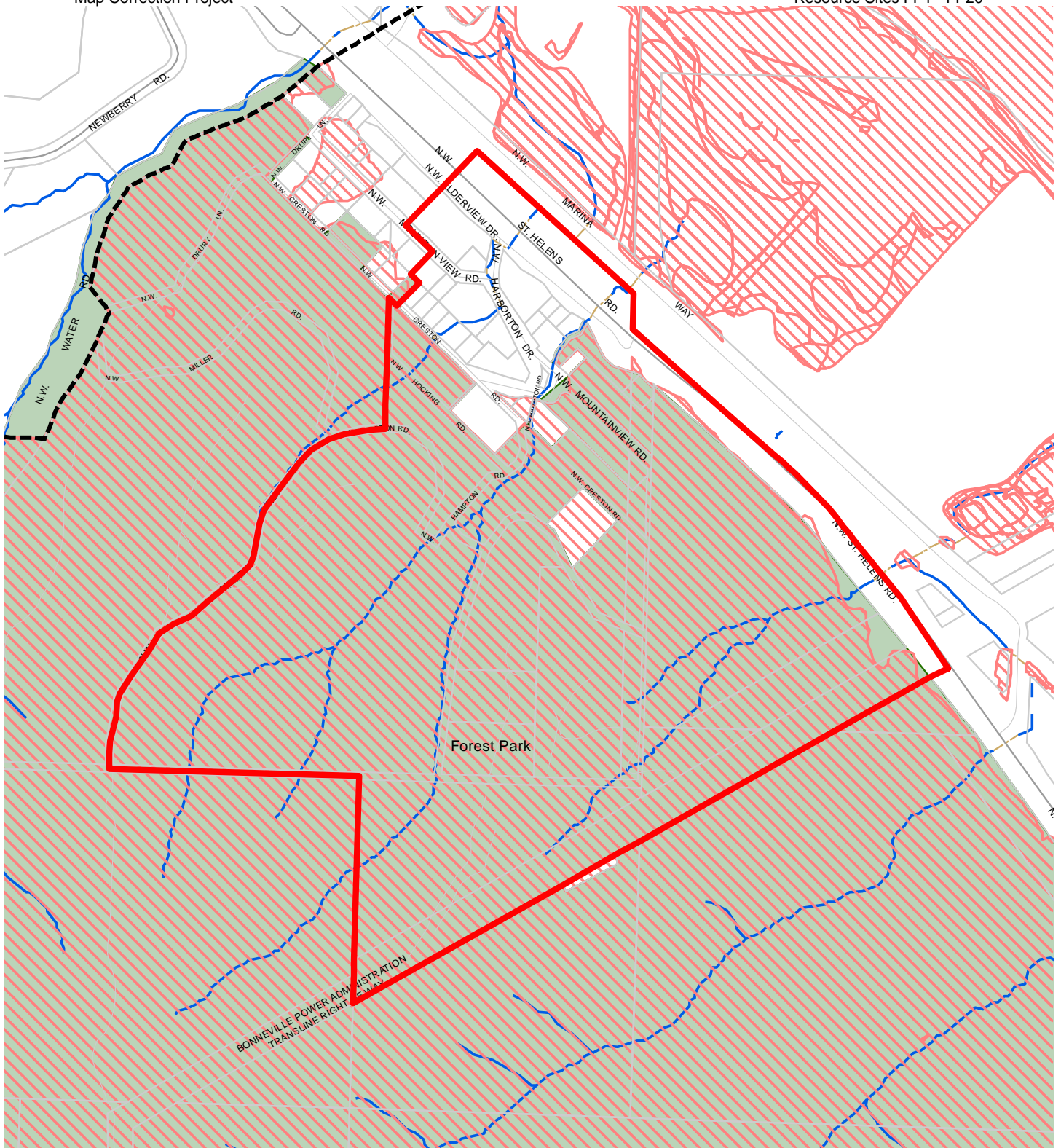
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous



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July 2021



**Map C: Special
Habitat Areas**

**Resource Site:
FP2**

Updated: June 2021

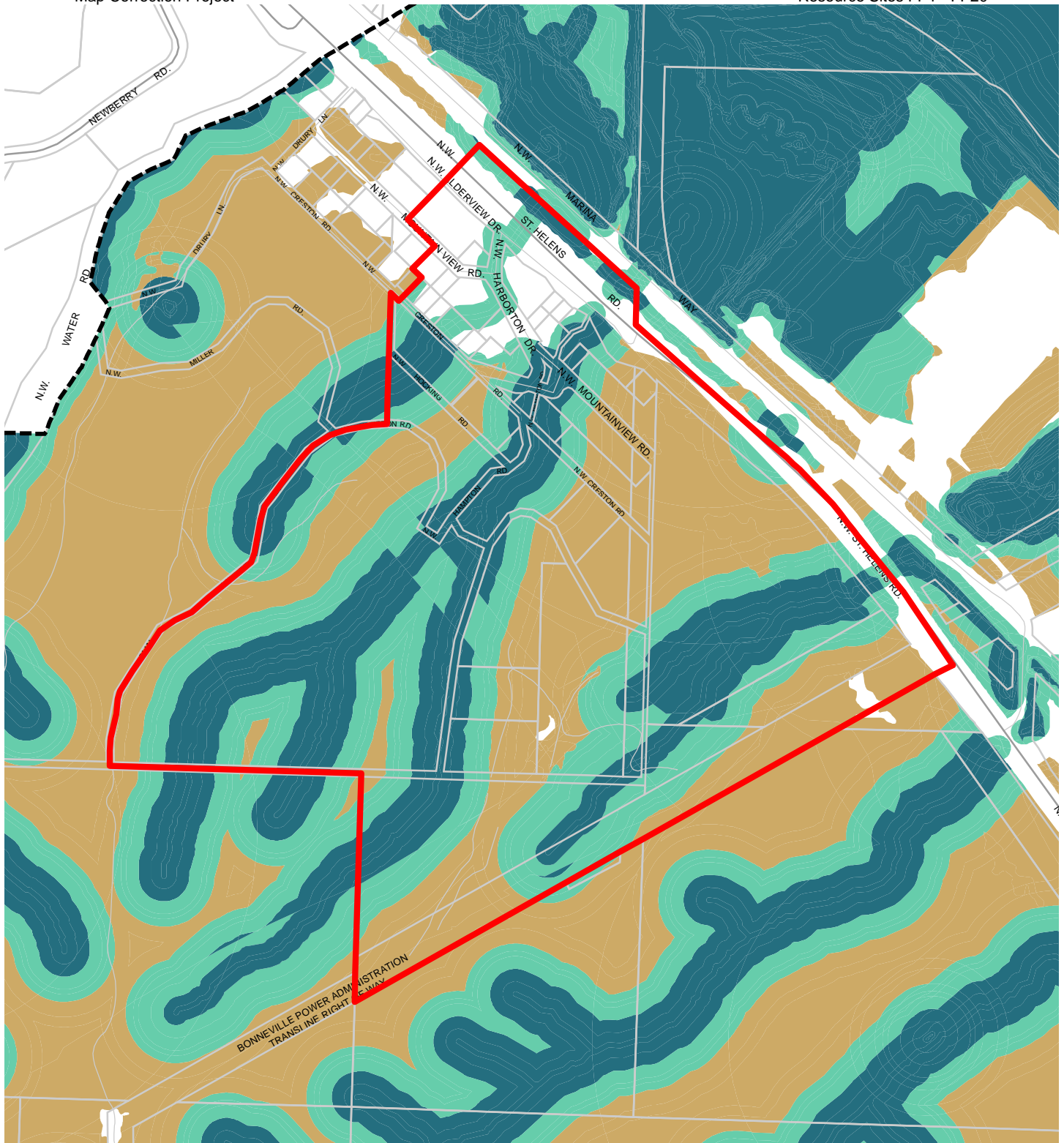


Proposed Draft - As Amended

- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



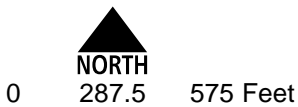
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**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP2**

Updated: July 2021



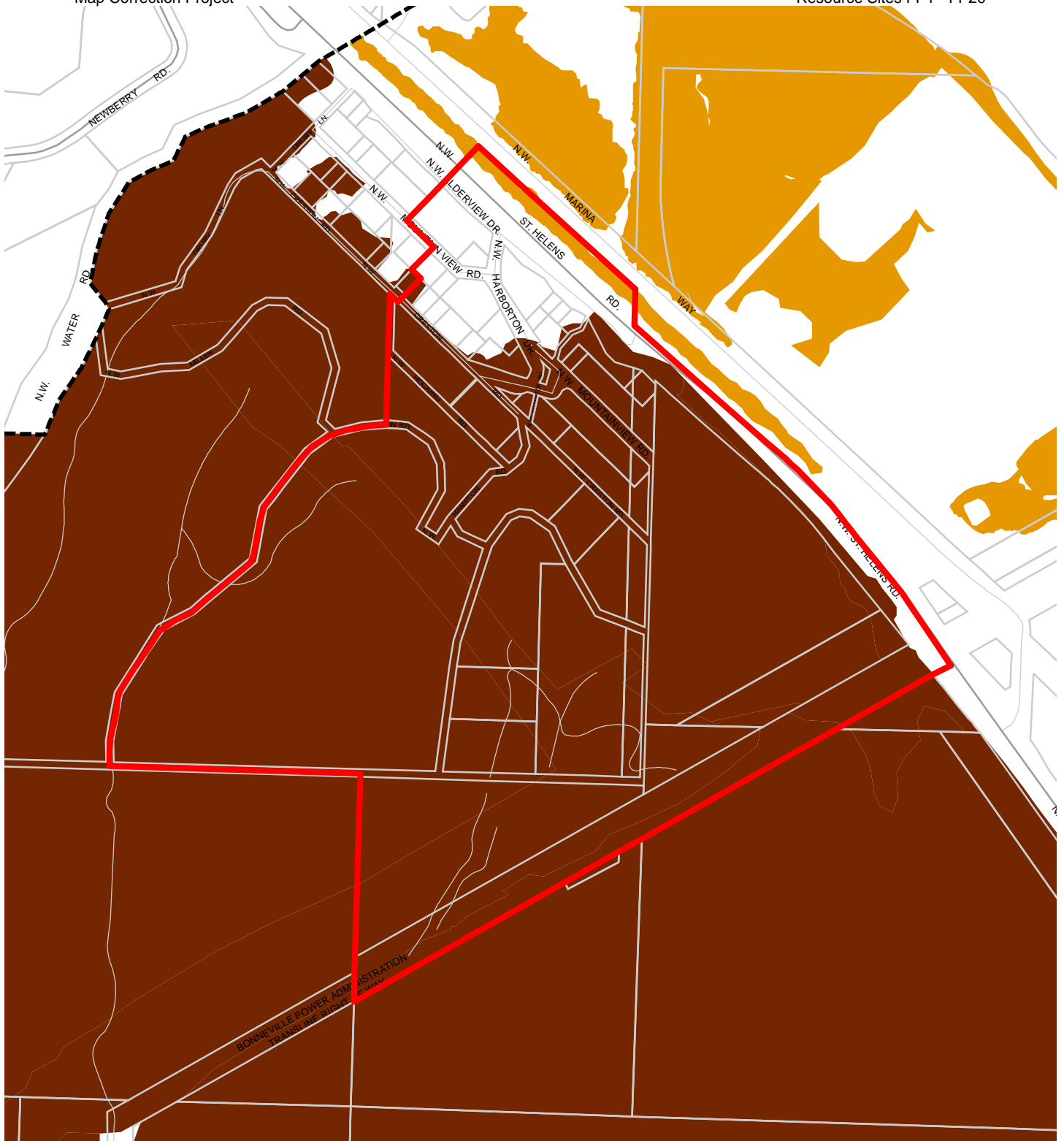
Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Class II (medium rank)
- Class III (low rank)
- Taxlots



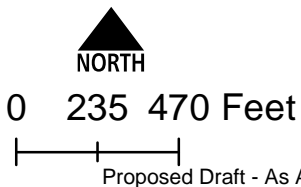
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July 2021









**Map E: Wildlife
Habitat Classification
Resource Site:
FP2**

Updated: July 2021



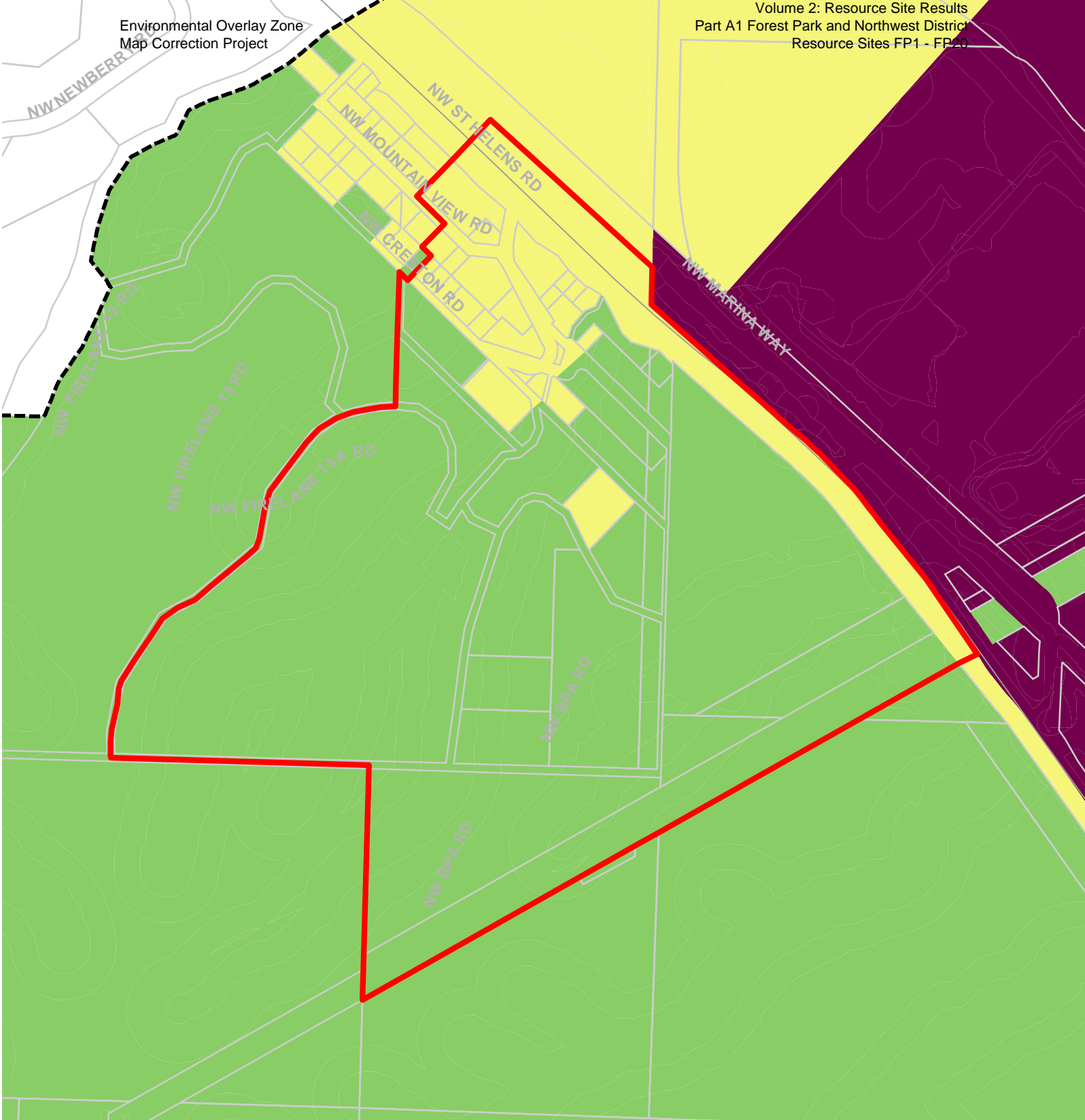
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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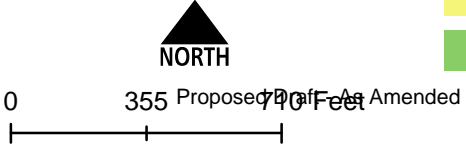
July 2021



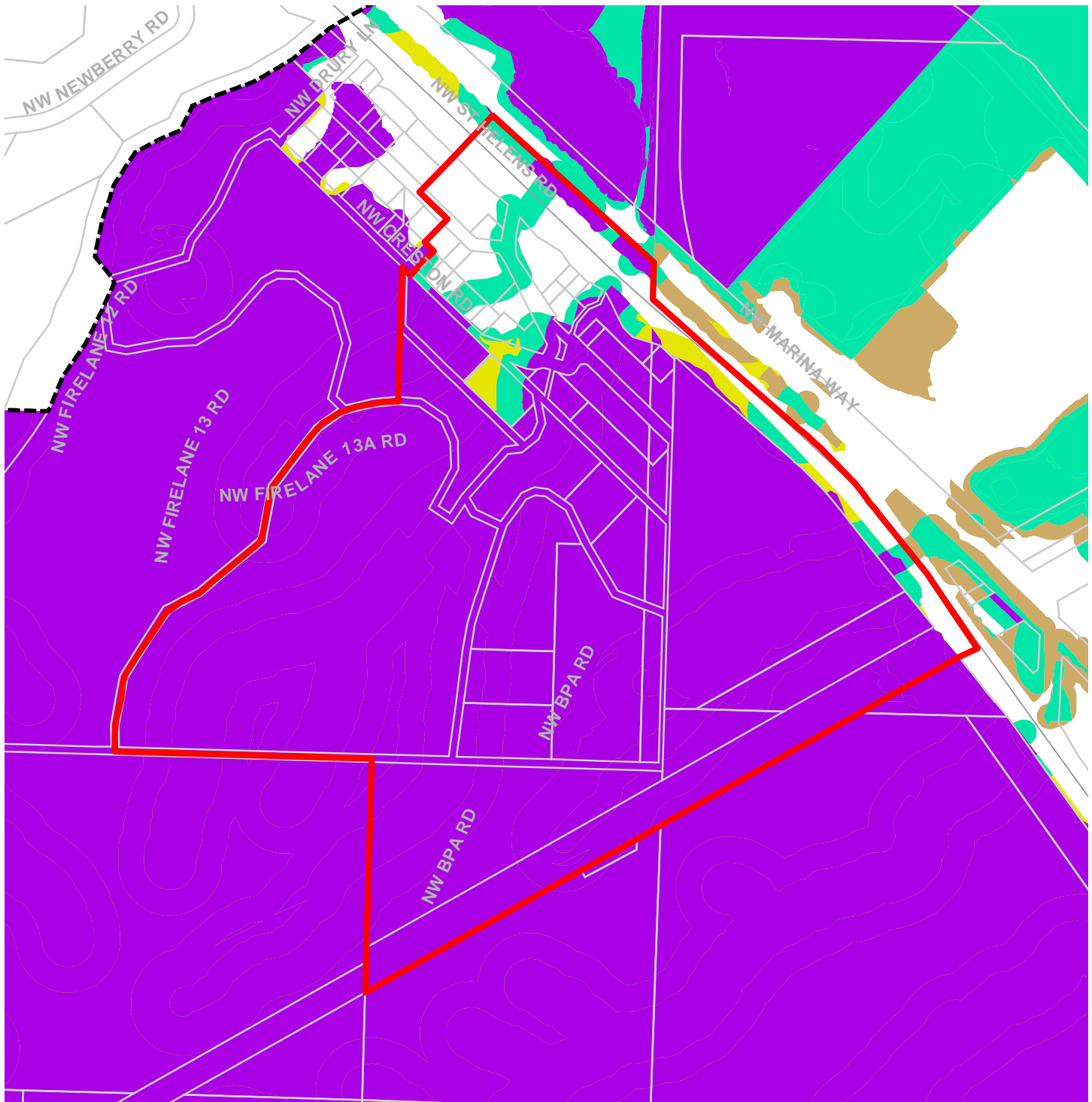
Map F: Urban Development Value (Title 13)
Resource Site: FP2

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

Updated: July 2021



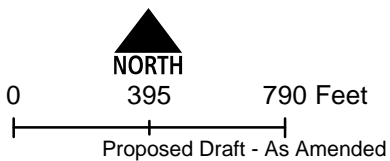
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP2

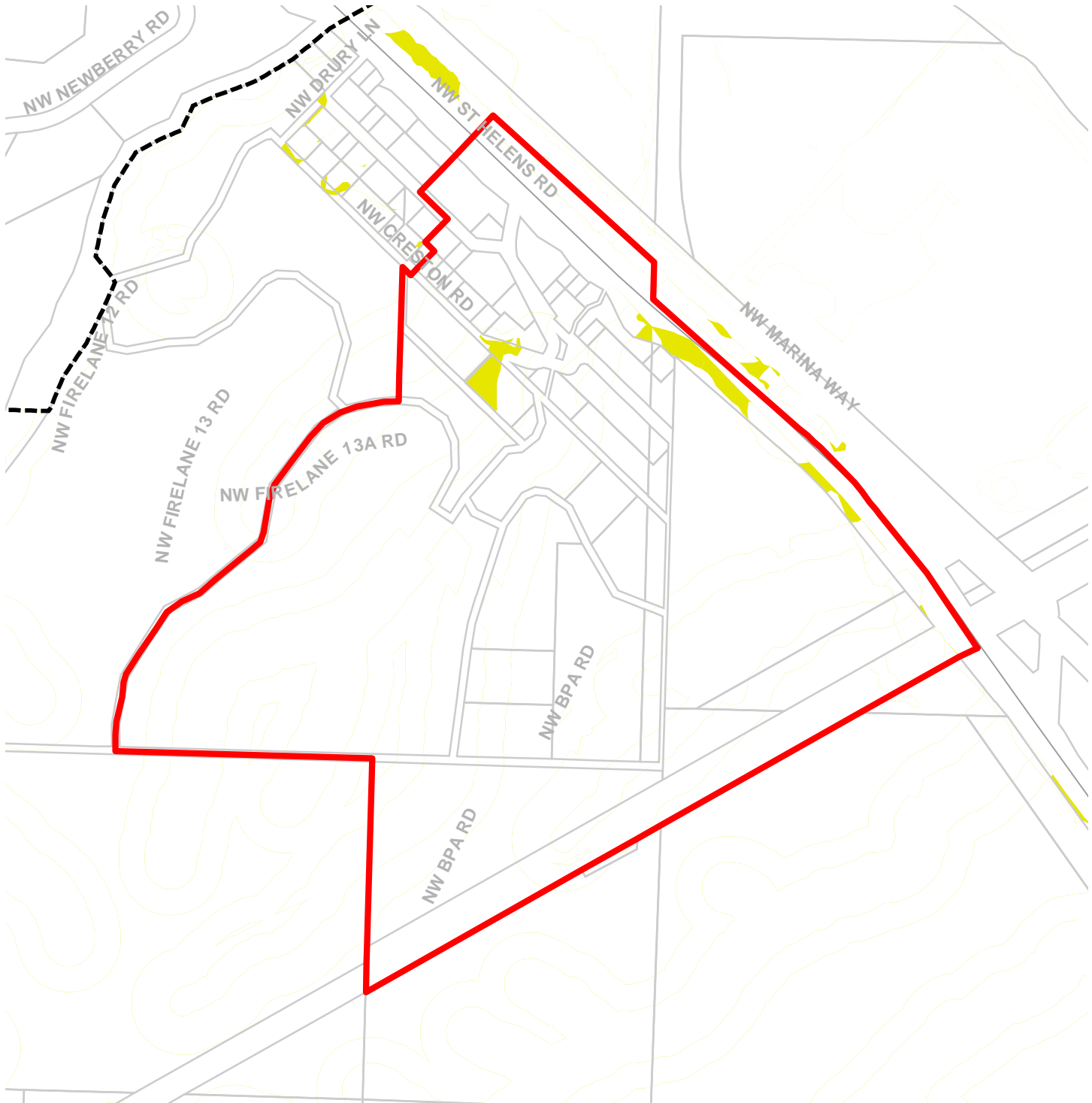
Updated: July 2021



- Urban Service Boundary
- Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



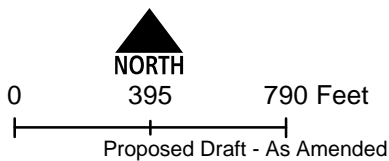
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Map H: Goal 5 Resources

Resource Site: FP2

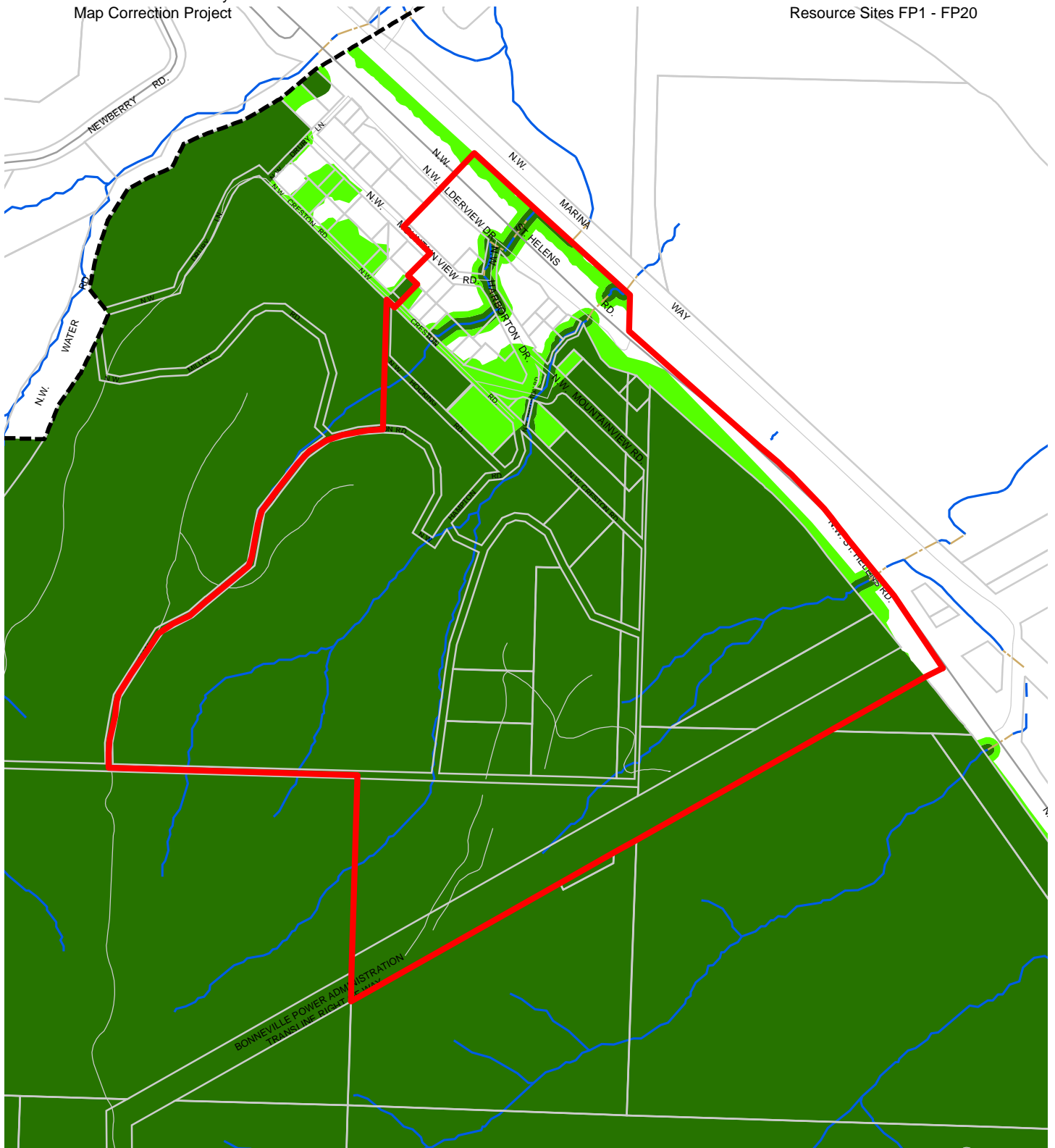
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



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Map I: DRAFT Proposed Environmental Overlay Zones

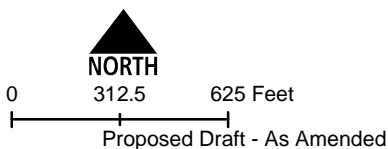
**Resource Site:
FP2**

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021



Natural Resource Description

Within resource site FP2 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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		FP2
		Study Area
Stream (Miles)		1.6
Wetlands (acres)		0.0
Vegetated Areas >= 1/2 acre (acres)		
	Forest (acres)	82.2
	Woodland (acres)	24.9
	Shrubland (acres)	0.0
	Herbaceous (acres)	0.0
Flood Area*		
	Vegetated (acres)	0.0
	Non-vegetated (acres)	0.0
Steep Slopes (acres)**		111.5
* 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%.		

The vegetative community is predominantly second growth forest with representative stands of each seral stage of the western hemlock upland forest community. Structural diversity of the forest is generally high, though certain areas along the power line right-of-way and Newton Road lack development of multi-layered canopies. The *conifer-topping hardwood* and *mid-aged conifer* stages of forest succession are widespread; climax species such as western hemlock, western red cedar and pacific yew are well established. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. English ivy has spread into the maples and firs near Highway 30.

This resource site includes some Oregon white oak woodland/mixed forest, which is an infrequent habitat type in the city. It includes species such as *Viburnum ellipticum* and *Toxicodendron diversilobum* as dominant shrub layer components, as well as numerous less common herbaceous species. Other rare plant species found within the site include *Cirsium brevistylum*/Indian thistle, *Cirsium edule*/Edible thistle, *Clarkia amoena*/Farewell-to-spring (PP&R City Nature staff observations, using "Urbanizing Flora of Portland, Oregon 1806-2008".)

This site provides food, water and cover habitat for a broad range of birds including Oregon junco, rufous hummingbird, bushtit, Steller's jay and American robin. The site provides feeding and breeding habitat for red-tailed hawk. Osprey nest nearby and use tall trees in the resource area for perching. Interspersion with surrounding habitat allows for free migration of wildlife to and from the site and increases the site's value as habitat.

The site includes free-flowing seasonal creeks that feed wetland areas northeast of Highway 30.

Table B: Quality of Natural Resource Functions in Resource Site FP2				
Resource Site (acres) = 119				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	30.9	36.8	41.5	109.1
percent total inventory site area	26.0%	31.0%	34.9%	91.9%
Wildlife Habitat*				
acres	106.0	1.1	0.0	107.1
percent total inventory site area	89.3%	0.9%	0.0%	90.2%
Special Habitat Areas**				
acres	100.0			
percent total inventory site area	84.3%			
Combined Total⁺				
acres	106.8	2.6	0.0	109.4
percent total inventory site area	89.9%	2.2%	0.0%	92.1%
* 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 site FP2, 2.4% 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 FP2			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
129.9	4.9	3.1	2.4%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP2. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP2 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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. Industrial uses are allowed in the IH 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP2, 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*.

Natural Resources Protection 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 FP2, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Apply a protection overlay zone ('p' zone) to areas of forest or woodland vegetation in the parcel zoned RF that is completely surrounded by Forest Park.
4. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

There is one parcel zoned RF that has the same significant riparian corridor features and functions as the features and functions in Forest Park and is part of the Forest Park Special Habitat Area. The parcel is surrounded on all sides by the park and shares contiguous forest canopy. Additional impacts to the forest canopy should be avoided. This parcel is substantively different than the other parcels zoned RF in the resource site; the other RF parcels are located along the perimeter of Forest Park and are not surrounded on all sides by contiguous tree canopy.

Resource Site No.: FP3 **Resource Site Name:** Miller Creek West
Previous Plan: Northwest Hills Natural Areas Protection Plan
Previous Resource Site No.: 109

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:

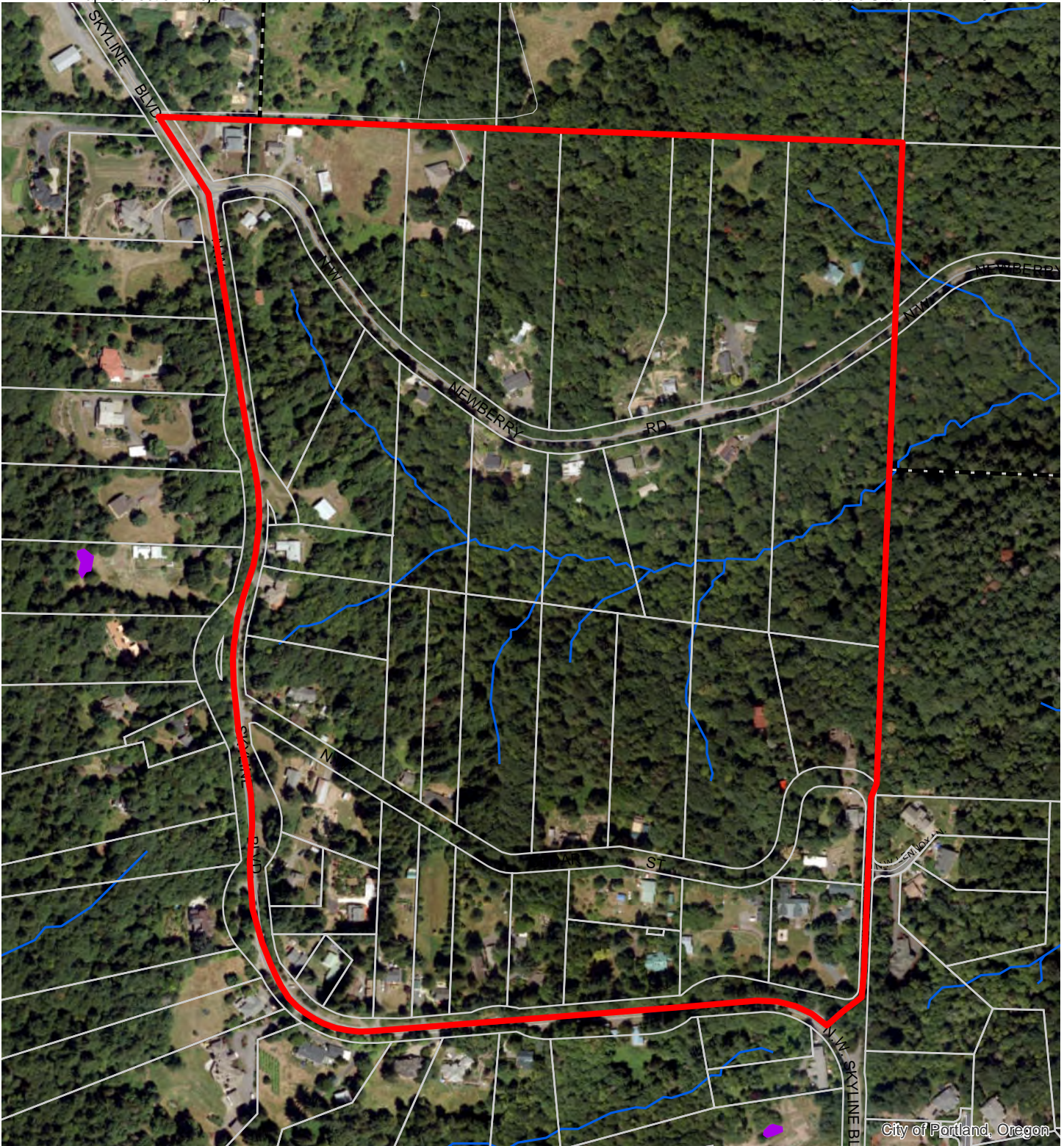
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP3 includes the following:

Site (acres)	90.8
Base zones (acres)	
OS	5.1
RF	85.7



Map A: Water Features
Resource Site: FP3

Updated: July 2021



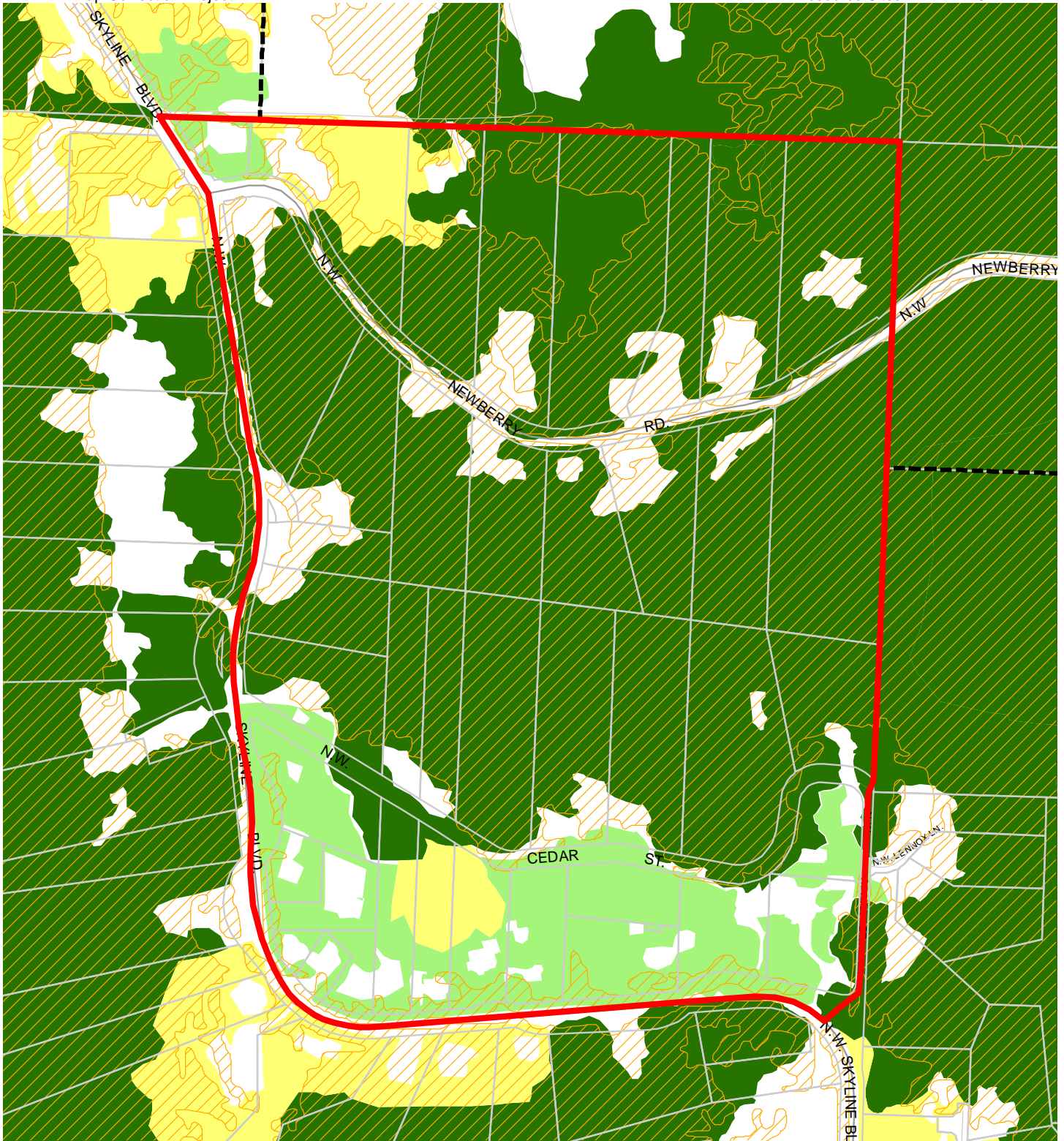
0 190 380 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



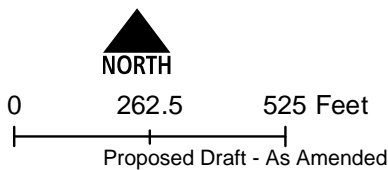
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP3

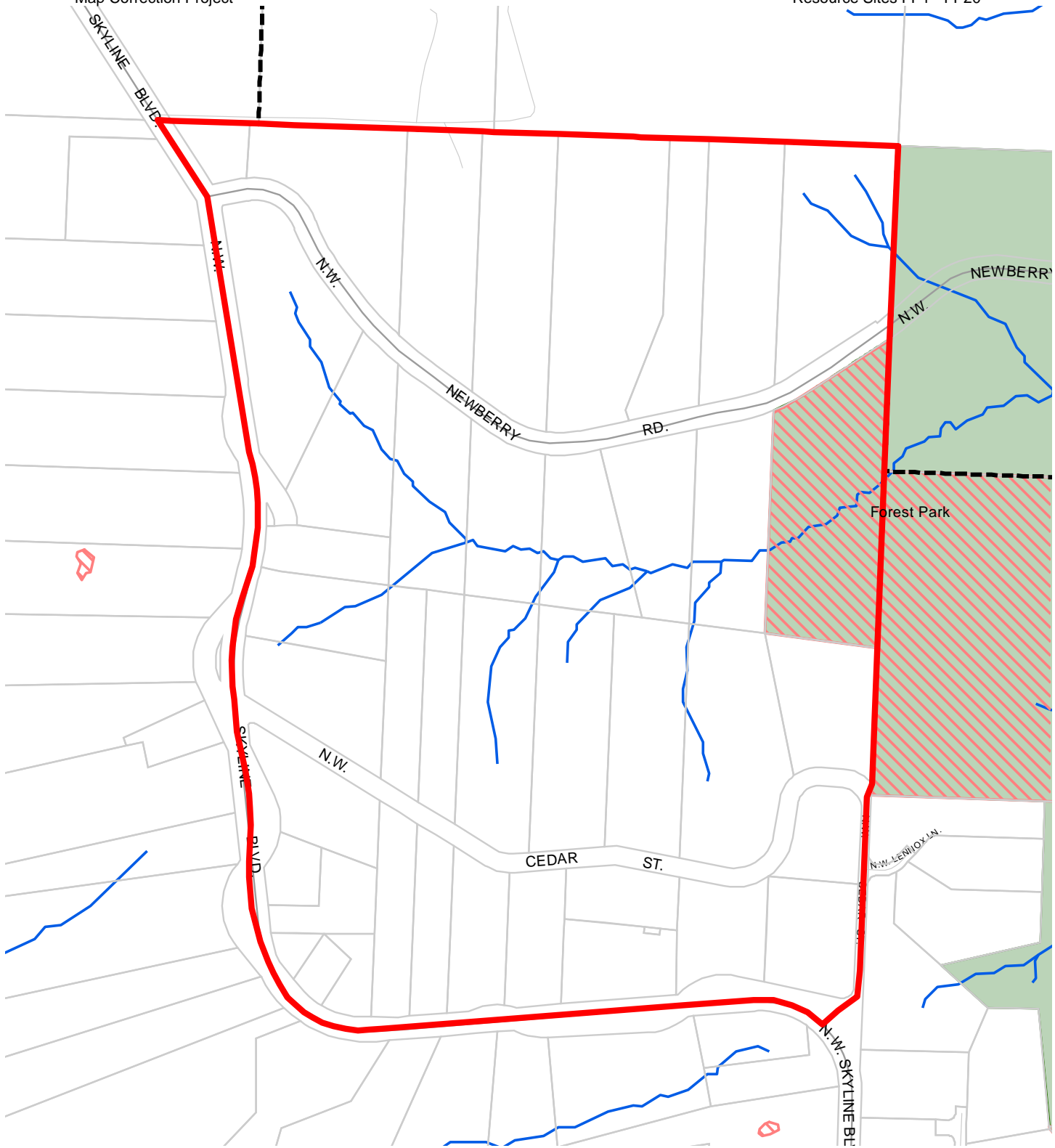
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

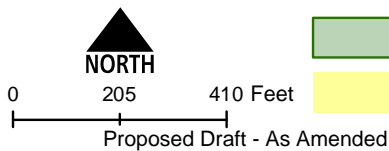


The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP3**

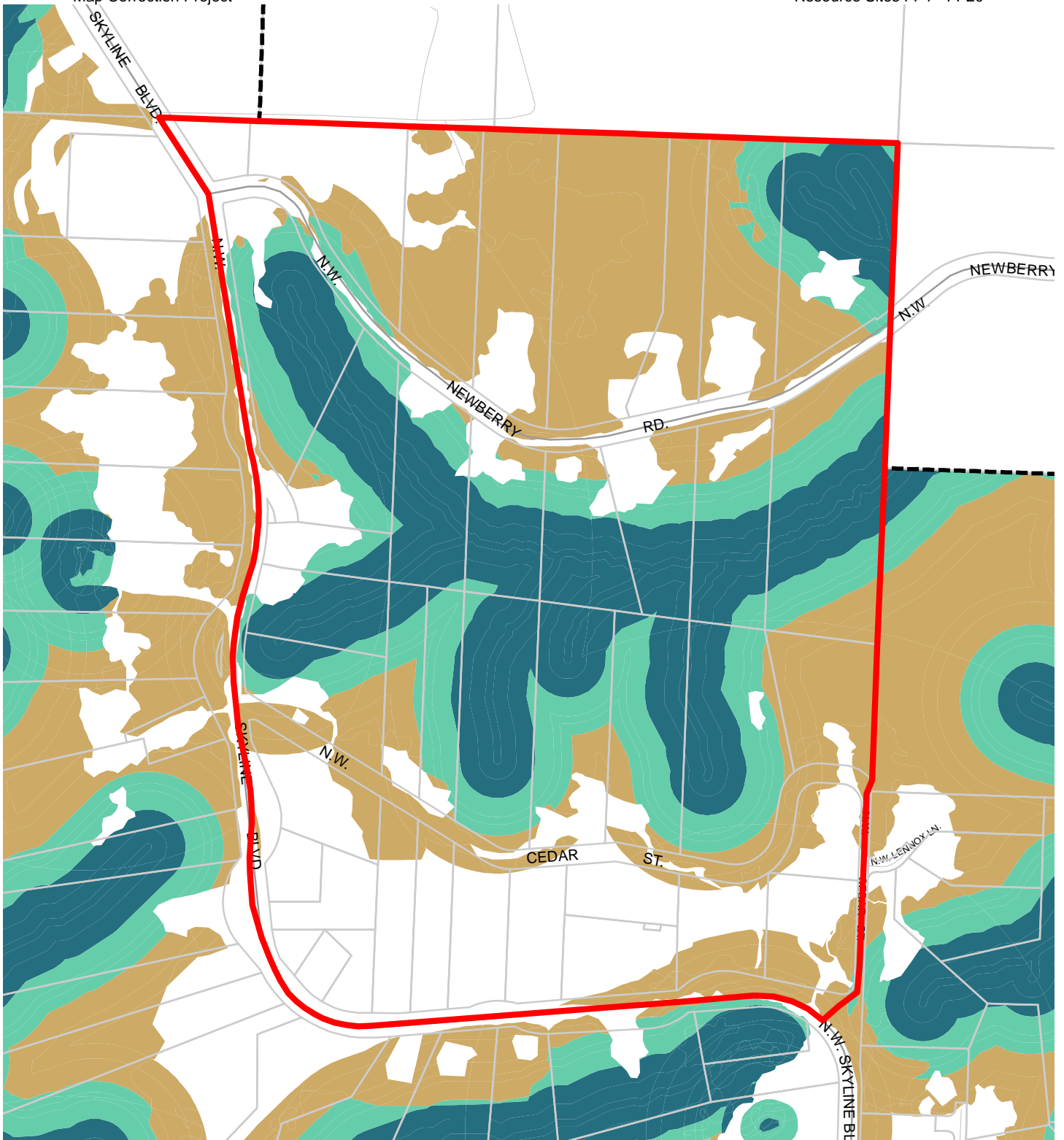
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

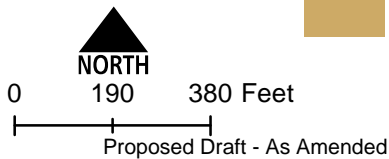
**Resource Site:
FP3**

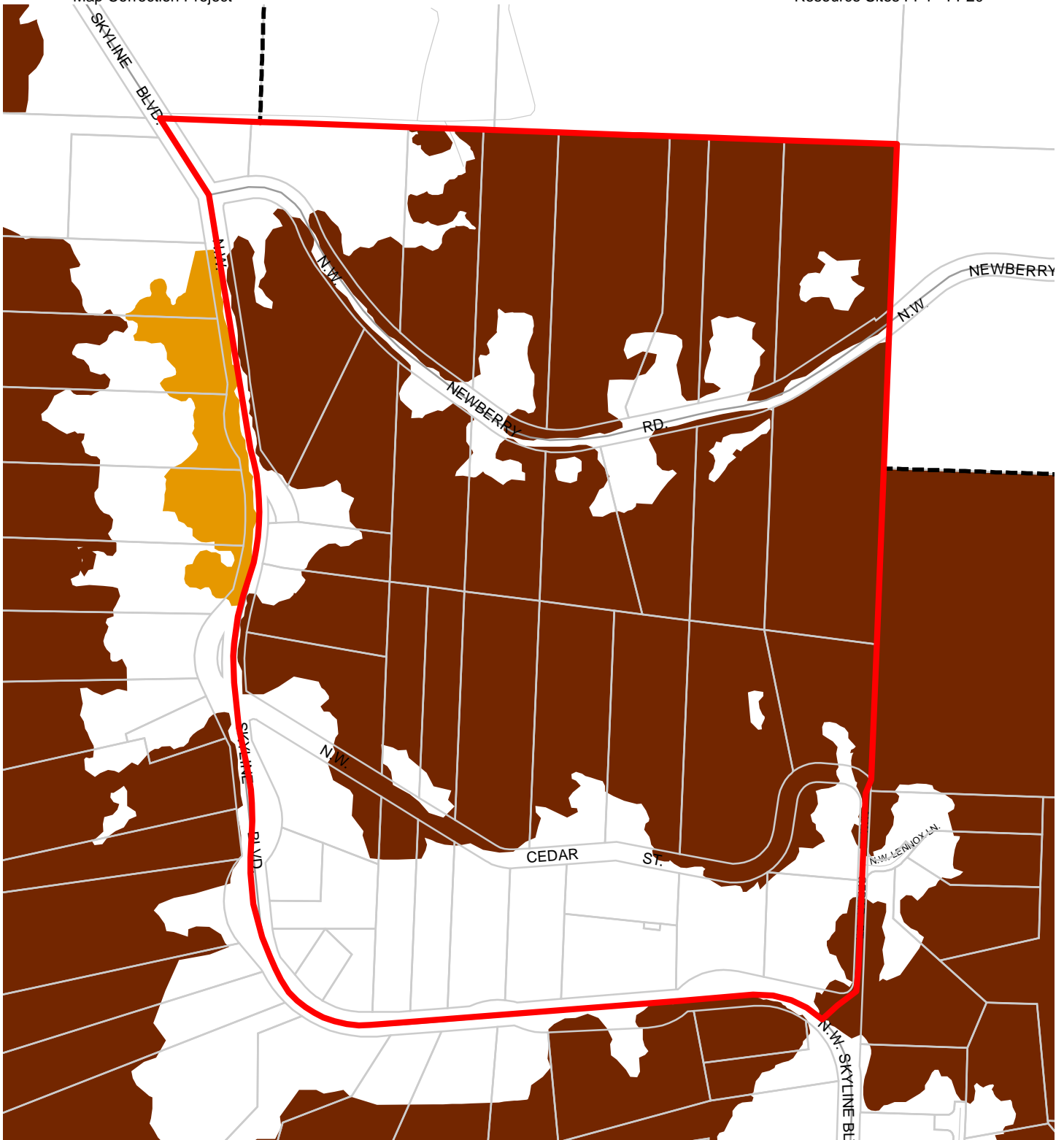
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



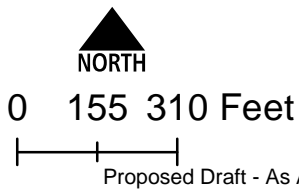
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**Map E: Wildlife
Habitat Classification
Resource Site:
FP3**

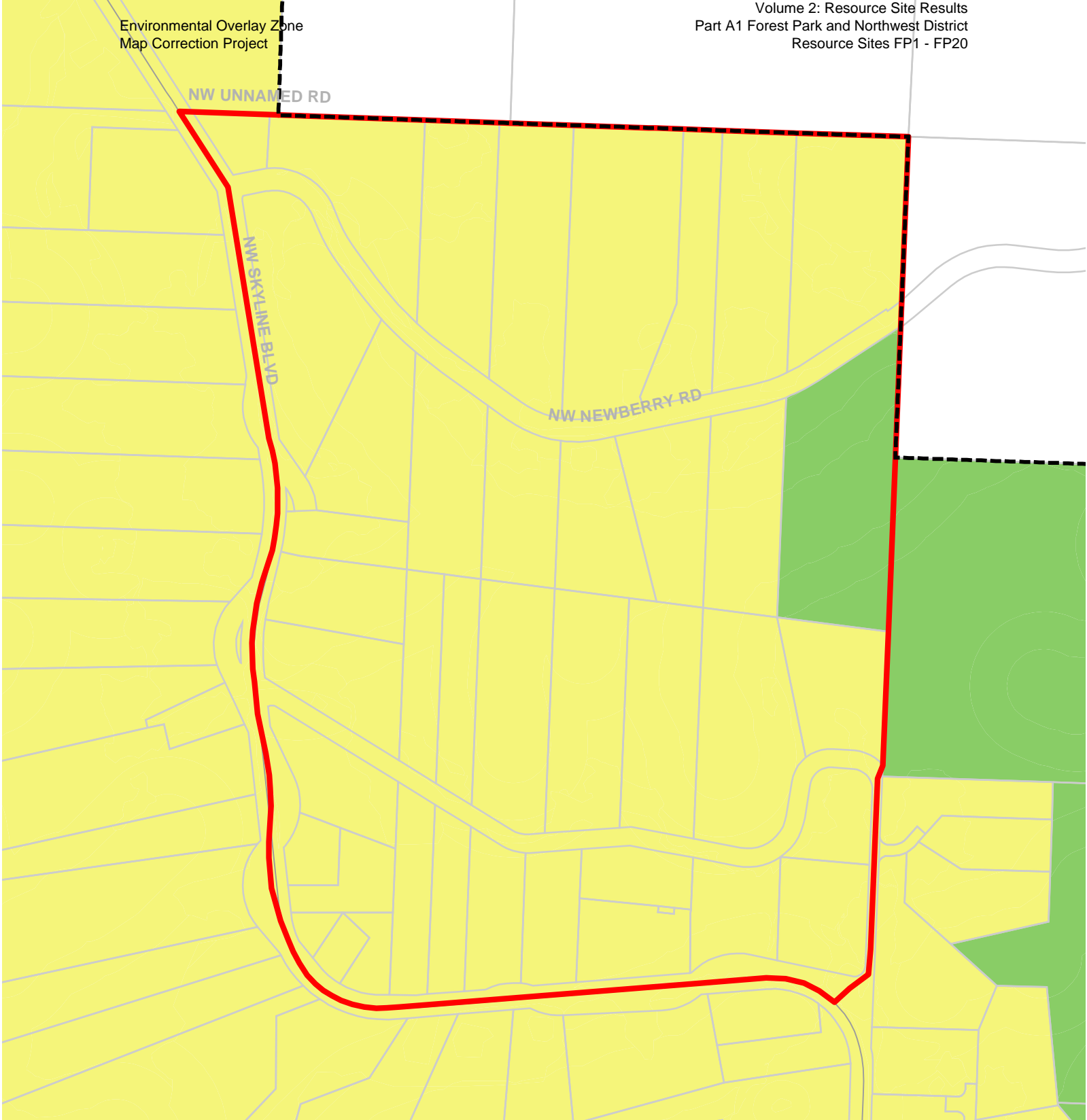
Updated: July 2021



- Resource Sites
- Class A (high rank)
- Class B (medium rank)
- Class C (low rank)
- Urban Service Boundary
- Taxlots



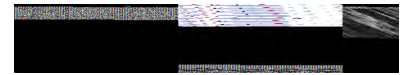
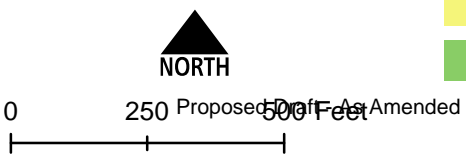
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



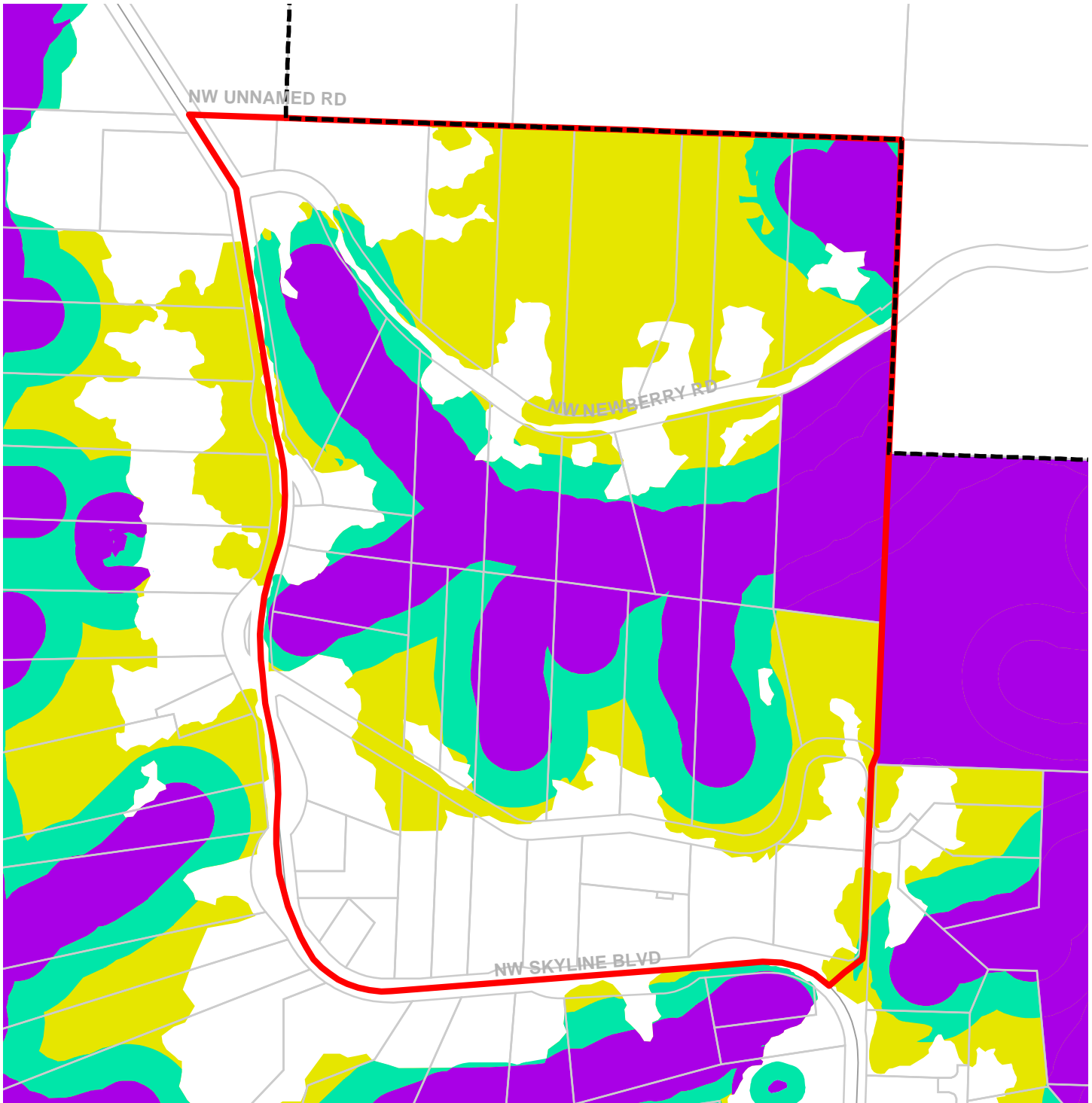
Map F: Urban Development Value (Title 13)
Resource Site: FP3

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

Updated: July 2021



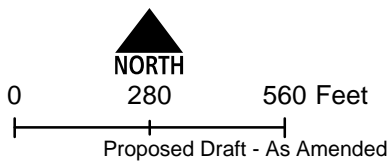
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP3

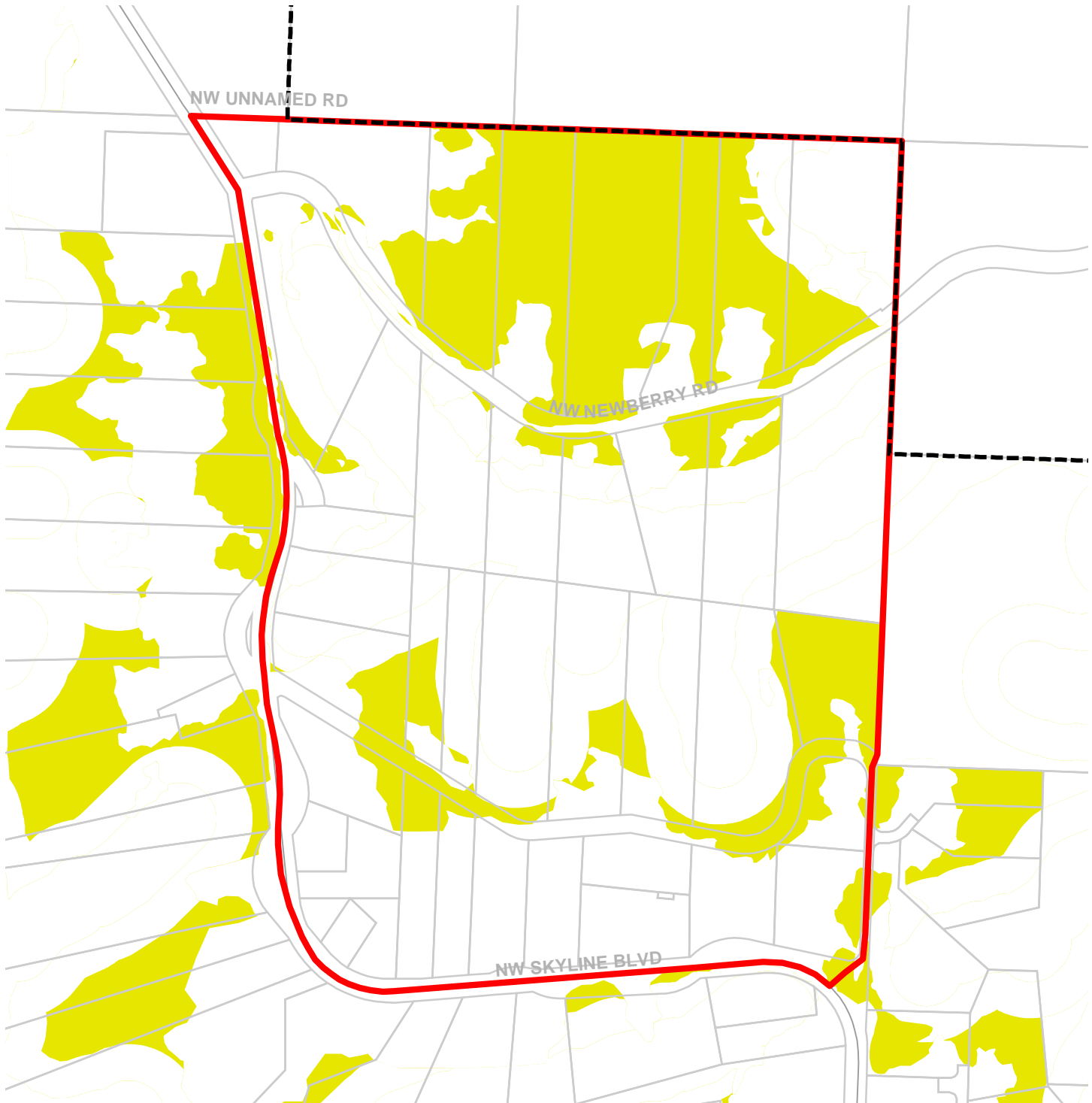
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



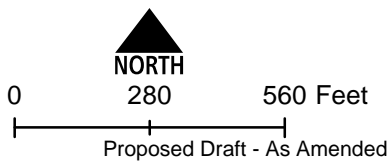
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Map H: Goal 5 Resources

Resource Site: FP3

Updated: July 2021

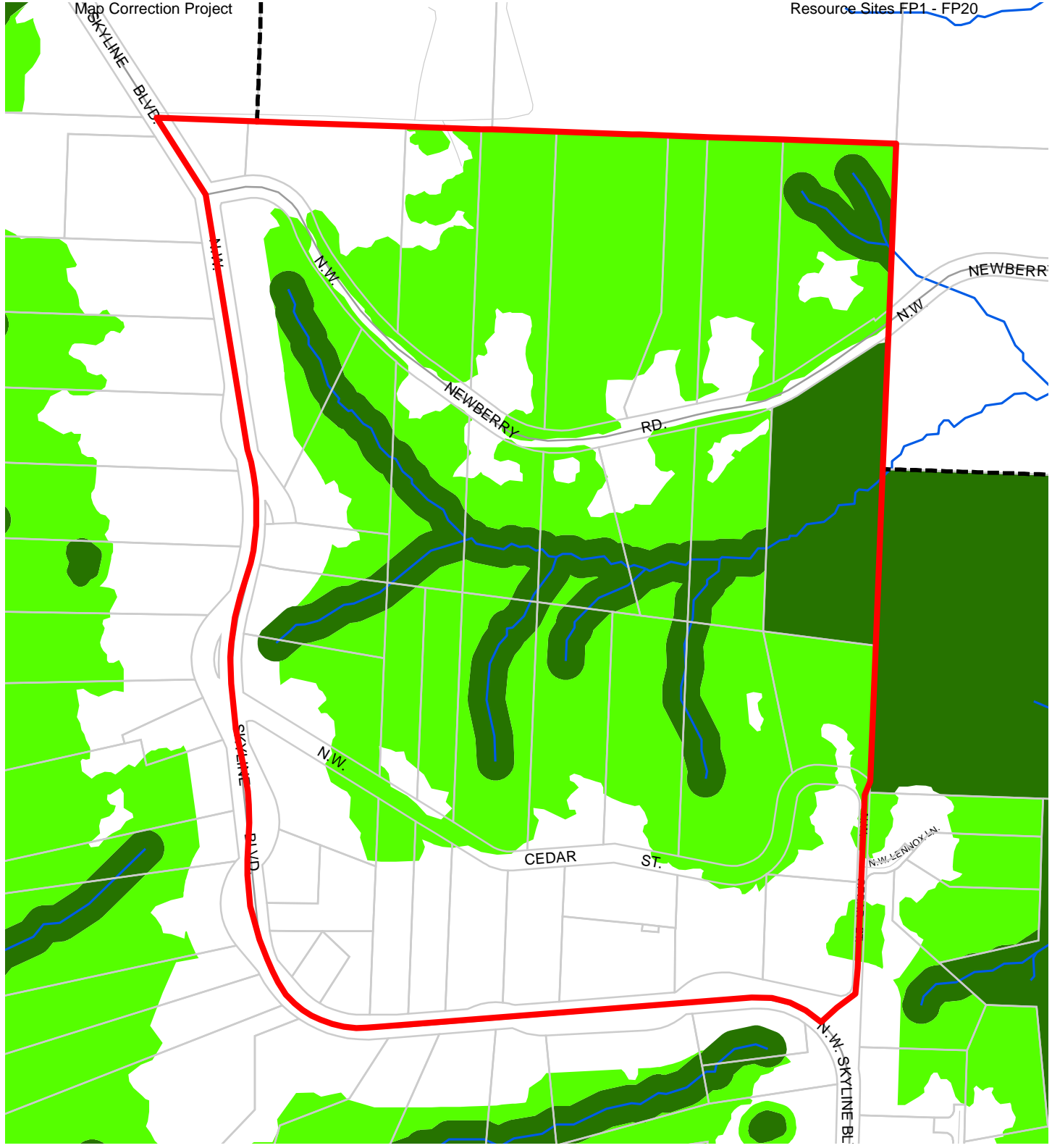


-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

Environmental Overlay Zone
 Map Correction Project

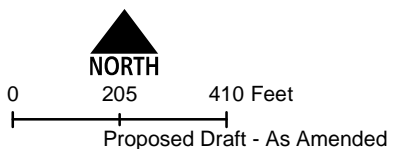


Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP3

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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 July 2021

Natural Resource Description

Within resource site FP3 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: Forest Park (O, B, M, C, S, P, E)

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		FP3
		Study Area
Stream (Miles)		0.9
Wetlands (acres)		0.0
Vegetated Areas >= 1/2 acre (acres)		
	Forest (acres)	60.2
	Woodland (acres)	12.8
	Shrubland (acres)	0.0
	Herbaceous (acres)	3.6
Flood Area*		
	Vegetated (acres)	0.0
	Non-vegetated (acres)	0.0
Steep Slopes (acres)**		63.4
* 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 site is situated in the Miller Creek headwaters area near the intersection of NW Newberry Road and Skyline Boulevard. One first-order branch of the stream system passes through the

center of the site. The site’s forest cover is composed primarily of conifer-topping hardwood. Western hemlock, western red cedar and Douglas fir are well established in the *mid-aged conifer* forest near the center of the site. *Mature hardwood* occurs along the banks of the creek in the eastern portion of the site. The site’s forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. English holly and Himalayan blackberry have infiltrated parts of the forest. Developed residential and agricultural area, including remnants of fruit tree orchards, are located along Skyline and Newberry Roads.

The site provides high quality food and cover for resident and migratory wildlife. The stream’s headwaters provide a seasonal water source for terrestrial vertebrates and serve a critical function in sustaining water quality and flow levels for fish, amphibian and macroinvertebrate species found in the Miller Creek system. Amphibians recorded include Coastal giant salamander and northwestern garter snake. Downstream from this site, sensitive coho salmon, cutthroat trout, steelhead trout and red-legged frog have been identified. Bird species identified at this site include pileated woodpecker, red-tailed hawk, Wilson’s warbler, winter wren, juncos and kinglets. The site’s interspersed with adjacent forest allows migration of wildlife to and from habitats north of the city. Traffic along Skyline and Newberry Roads poses a threat to migrating wildlife.

Table B: Quality of Natural Resource Functions in Resource Site FP3				
Resource Site (acres) = 91				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	20.8	14.7	28.3	63.8
percent total inventory site area	22.9%	16.2%	31.1%	70.2%
Wildlife Habitat*				
acres	60.2	0.0	0.0	60.2
percent total inventory site area	66.3%	0.0%	0.0%	66.3%
Special Habitat Areas**				
acres	4.8			
percent total inventory site area	5.3%			
Combined Total⁺				
acres	60.2	0.0	3.5	63.8
percent total inventory site area	66.3%	0.0%	3.9%	70.2%
* 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 site FP3, 6.6% 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 FP3 (within city limits)			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
90.8	8.6	6.0	6.6%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP3. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP3 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP3, 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*.

Natural Resources Protection 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 FP3, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank.
3. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of streams top-of-bank or wetlands, and to areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
4. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and to areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP4 **Resource Site Name:** Miller Creek South
Previous Plan: Northwest Hills Natural Areas Protection Plan
Previous Resource Site No.: 108

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:

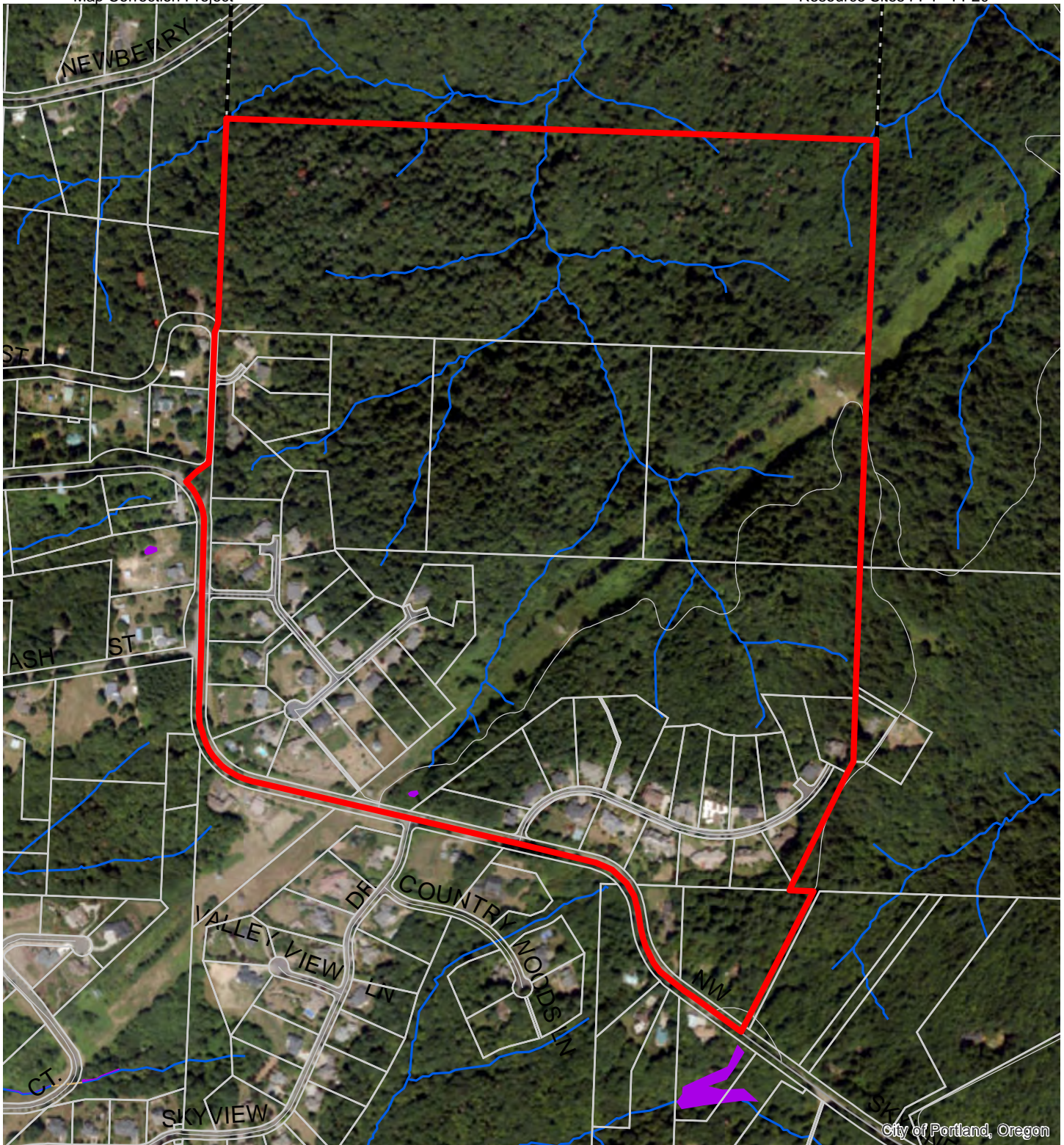
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP4 includes the following:

Site (acres)	178.9
Base zones (acres)	
OS	121.6
RF	57.2



Map A: Water Features
Resource Site: FP4

Updated: July 2021



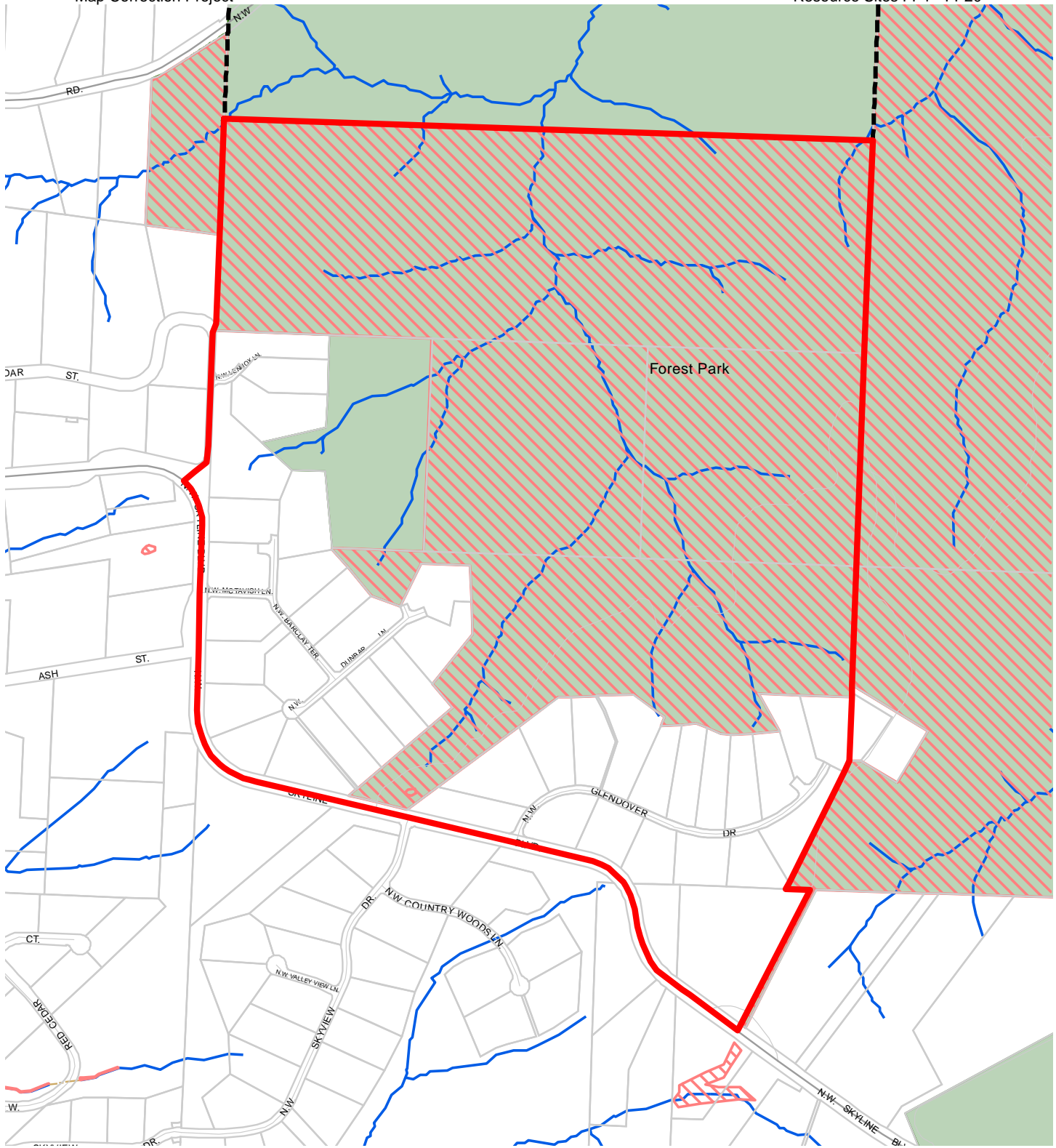
0 295 590 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area

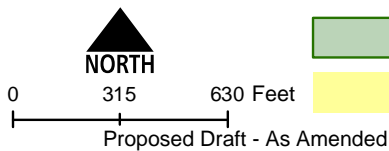


The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP4**

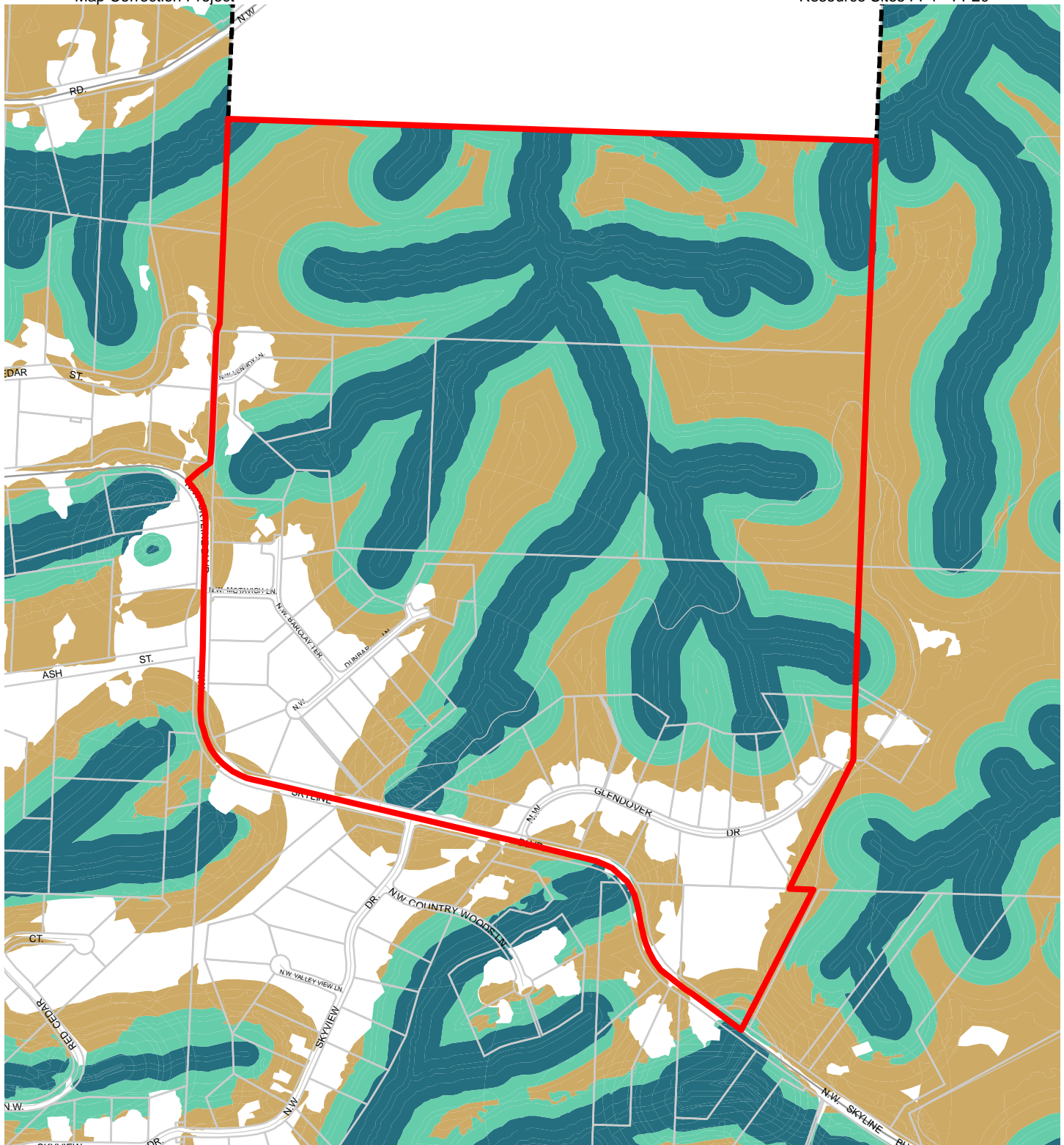
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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July 2021



**Map D: Riparian
Corridors Habitat
Classification**

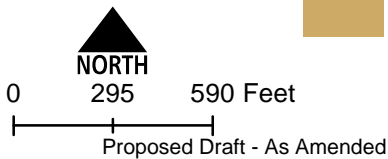
**Resource Site:
FP4**

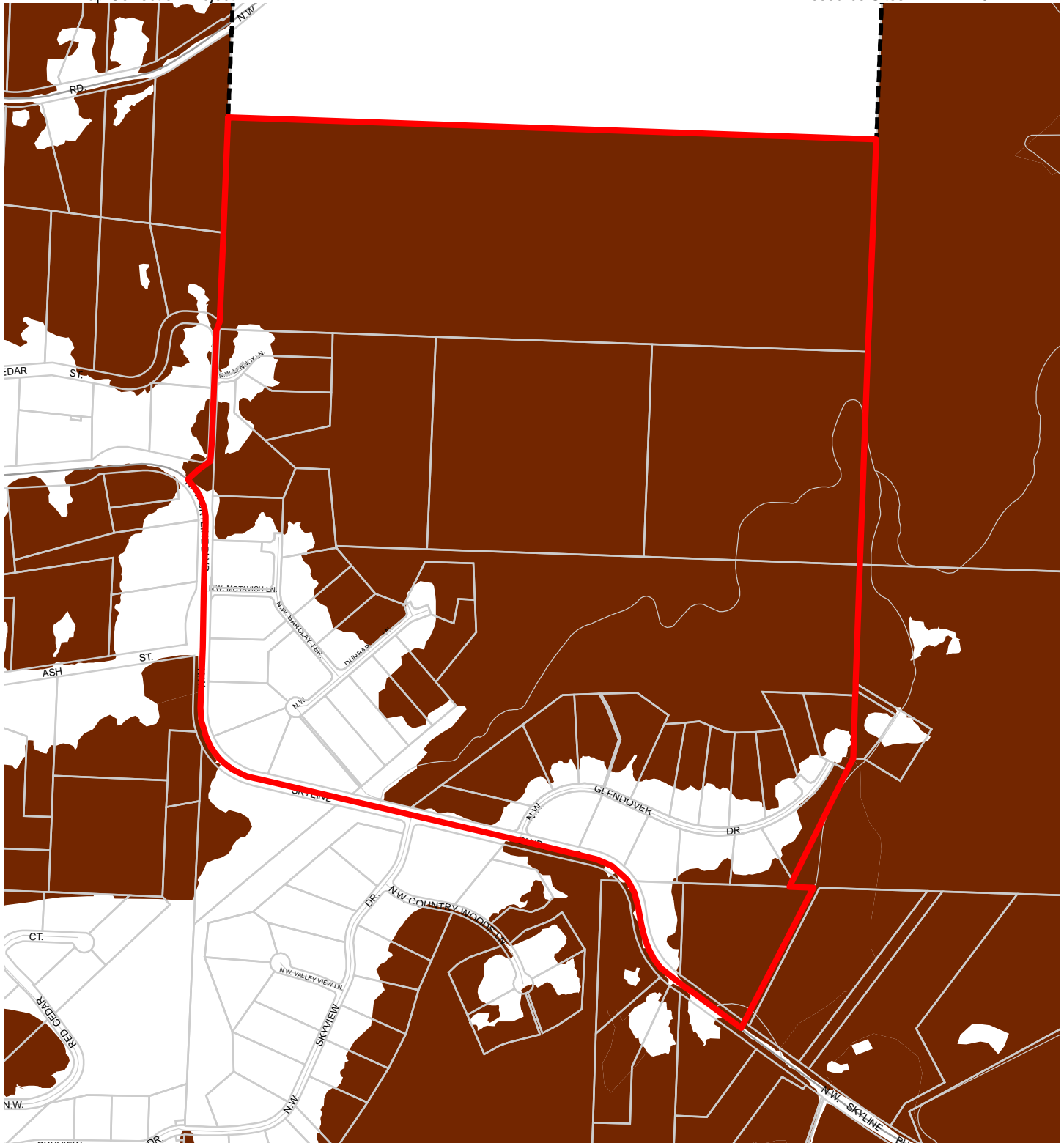
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.











**Map E: Wildlife
Habitat Classification
Resource Site:
FP4**

Updated: July 2021

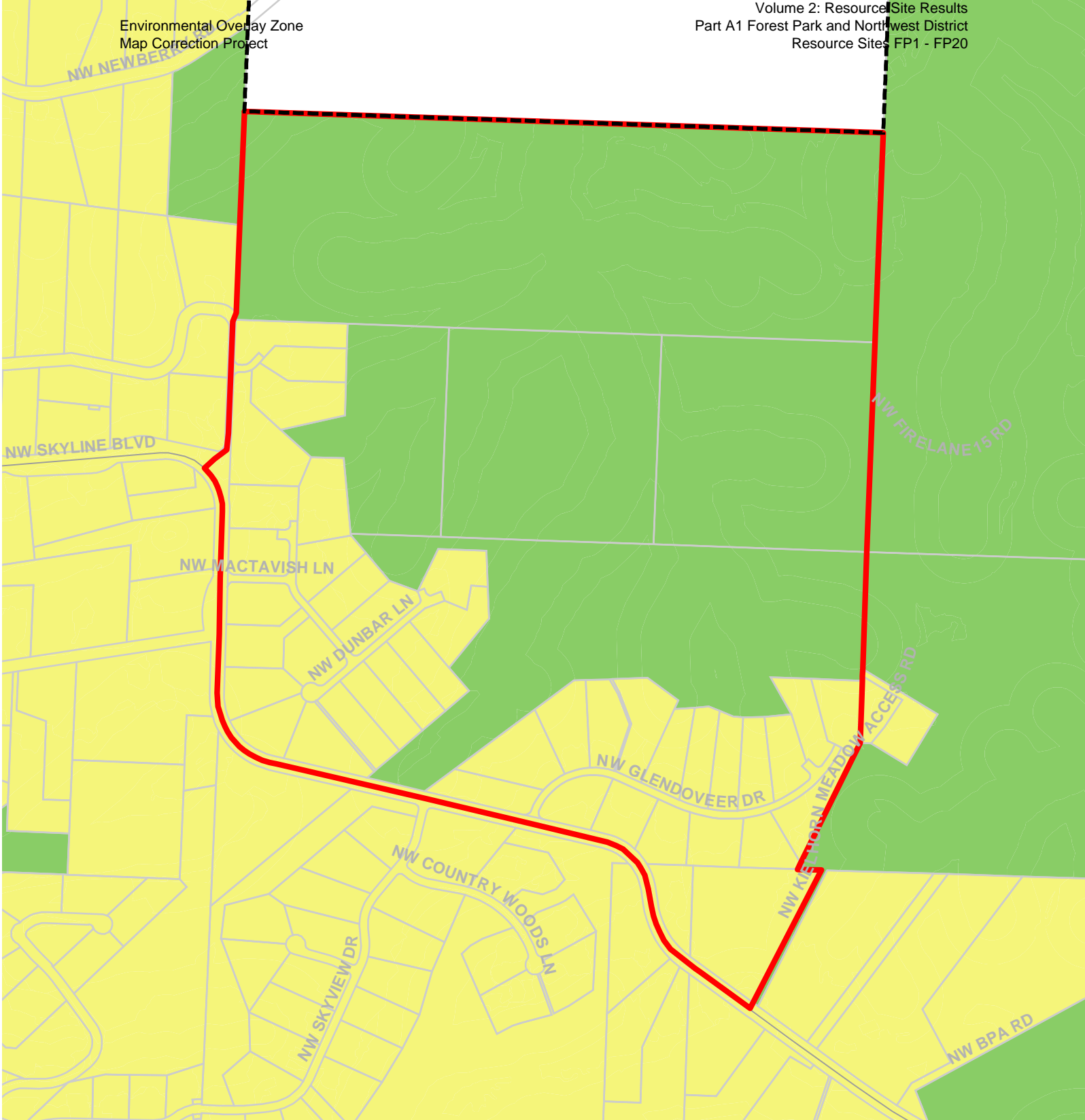


Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



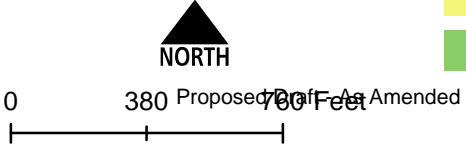
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July 2021



Map F: Urban Development Value (Title 13)
Resource Site: FP4

- Urban Service Boundary
- Resource Sites
- High Development Value
- Medium Development Value
- Low Development Value
- Parks

Updated: July 2021



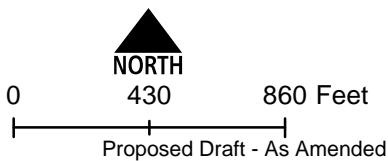
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP4

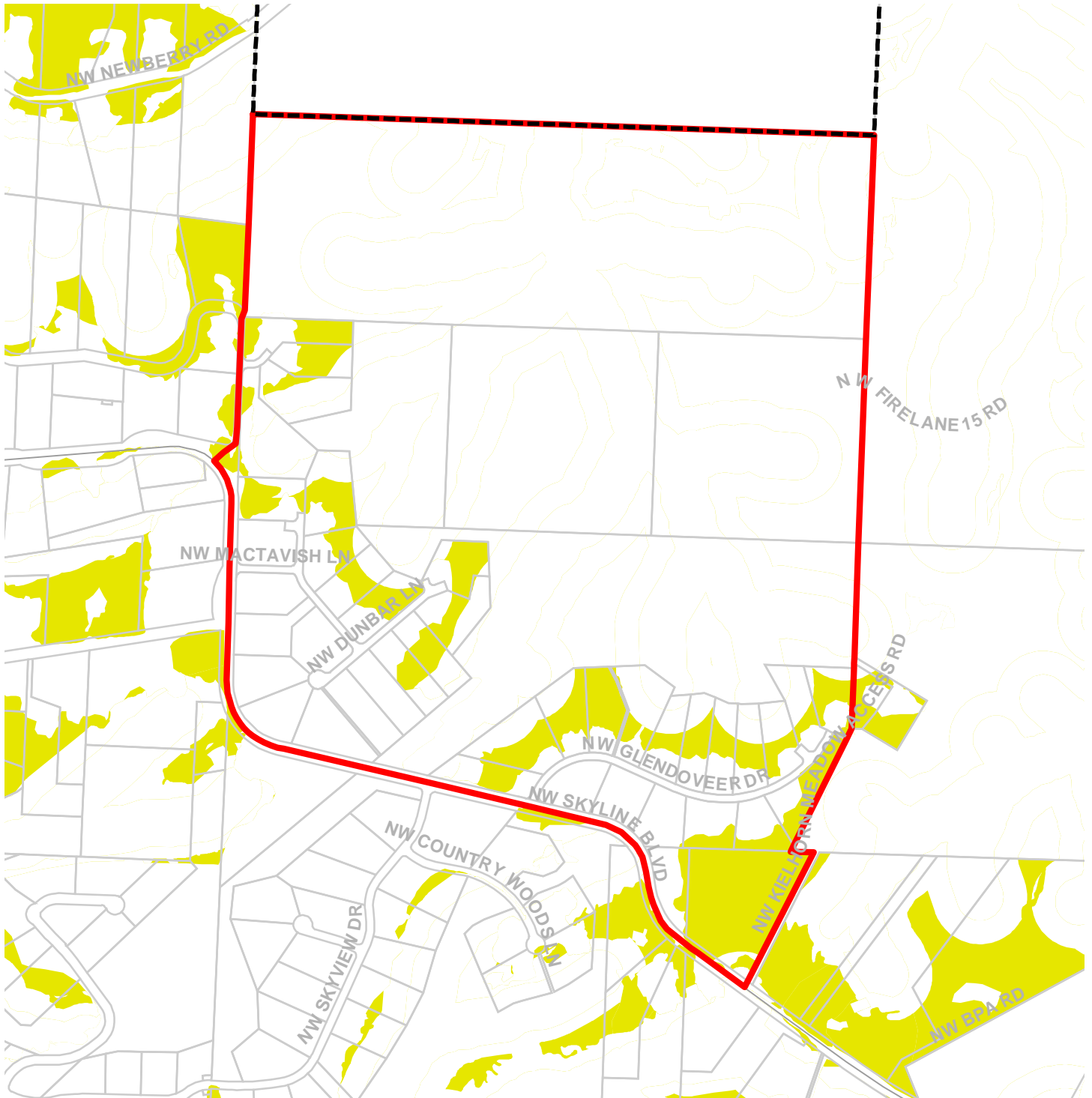
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



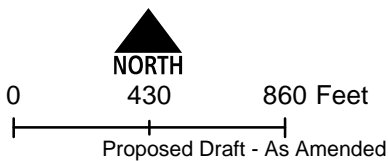
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Map H: Goal 5 Resources

Resource Site: FP4

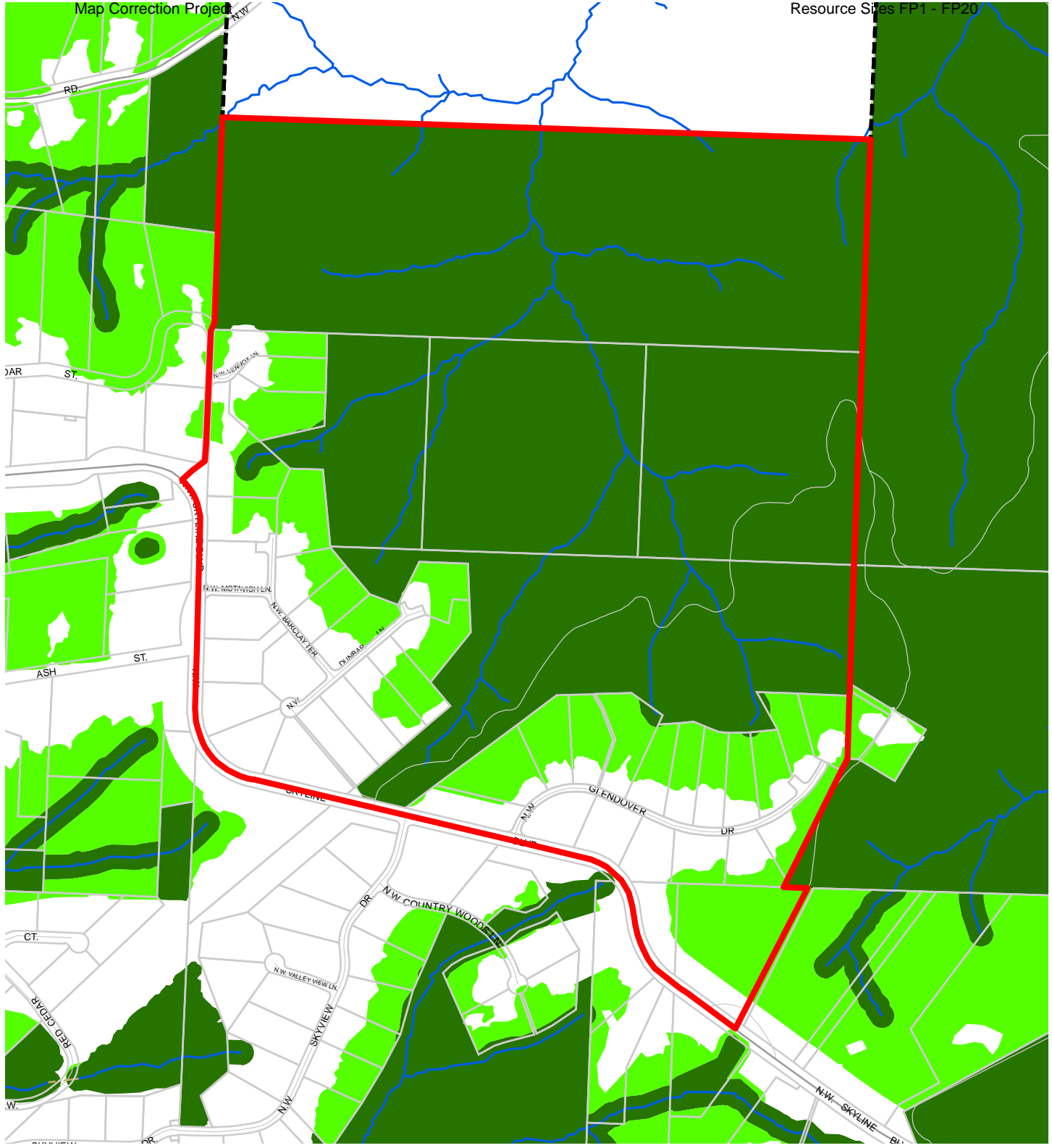
Updated: July 2021



- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources










The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

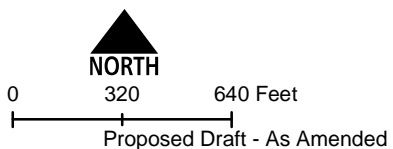


Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP4

Updated: July 2021

-  Resource Sites
-  Open Stream Channel
-  Piped Stream Segment
-  Proposed Conservation Zone
-  Proposed Protection Zone
-  Urban Service Boundary
-  Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
 July 2021

Natural Resource Description

Within resource site FP4 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: Forest Park (O, B, M, C, S, P, E)

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		FP4
		Study Area
Stream (Miles)		2.2
Wetlands (acres)		<0.1
Vegetated Areas >= 1/2 acre (acres)		
	Forest (acres)	142.6
	Woodland (acres)	6.6
	Shrubland (acres)	0.0
	Herbaceous (acres)	15.0
Flood Area*		
	Vegetated (acres)	0.0
	Non-vegetated (acres)	0.0
Steep Slopes (acres)**		144.5
* 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 site is situated at the southern headwaters of Miller Creek. The site’s forest cover is composed of a mix of vegetation types including *mid-aged conifer*, *conifer-topping hardwood*, and *hardwood with young conifer*. *Mature hardwood* occurs along the banks of the creek at lower elevations. Climax tree species are well established within the *mid-aged conifer* stand; at higher elevations, mid-story vegetation is underrepresented. The site’s forest cover provides open space, scenic and recreational resources, serves as habitat for wildlife, and helps to balance the local water regimen. Invasive English holly and Himalayan blackberry plants have infiltrated parts of the forest, especially along the powerline corridor.

The site provides high quality food and cover for resident and migratory wildlife. The streams provide a seasonal water source for terrestrial vertebrates and serve a critical function in maintaining water quality, temperature and flows for fish, amphibian and macroinvertebrate species found in the Miller Creek system. Bird species identified at this site include Cooper’s and sharp-shinned hawks, pileated woodpecker (nests), red tailed hawk, band-tailed pigeon and a variety of songbirds. Downstream from this site, sensitive coho salmon, cutthroat trout, steelhead trout, Coastal giant salamander and red-legged frog were identified. Game trails used by black-tailed deer, coyote and other mammals are found in this resource area. This site is one of two principle deer crossing locations along NW Skyline Blvd. identified in the study area. This site may provide an important travel corridor for mammals to and from habitats north of the city.

Table B: Quality of Natural Resource Functions in Resource Site FP4				
Resource Site (acres) = 179				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	52.8	48.3	50.4	151.5
percent total inventory site area	29.5%	27.0%	28.2%	84.7%
Wildlife Habitat*				
acres	149.1	0.0	0.0	149.1
percent total inventory site area	83.3%	0.0%	0.0%	83.3%
Special Habitat Areas**				
acres	112.8			
percent total inventory site area	63.0%			
Combined Total⁺				
acres	149.1	0.7	5.4	155.1
percent total inventory site area	83.3%	0.4%	3.0%	86.7%
* 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 site FP4, 2.6% 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 FP4			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
178.9	7.5	4.7	2.6%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP4. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP4 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 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. The regional powerline corridor is managed to maintain lower structure vegetation, which creates edge impacts including areas for invasive plant species to thrive.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP4, 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*.

Natural Resources Protection 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 FP4, 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, and land within 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP5 **Resource Site Name:** Miller Creek East

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 107

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:

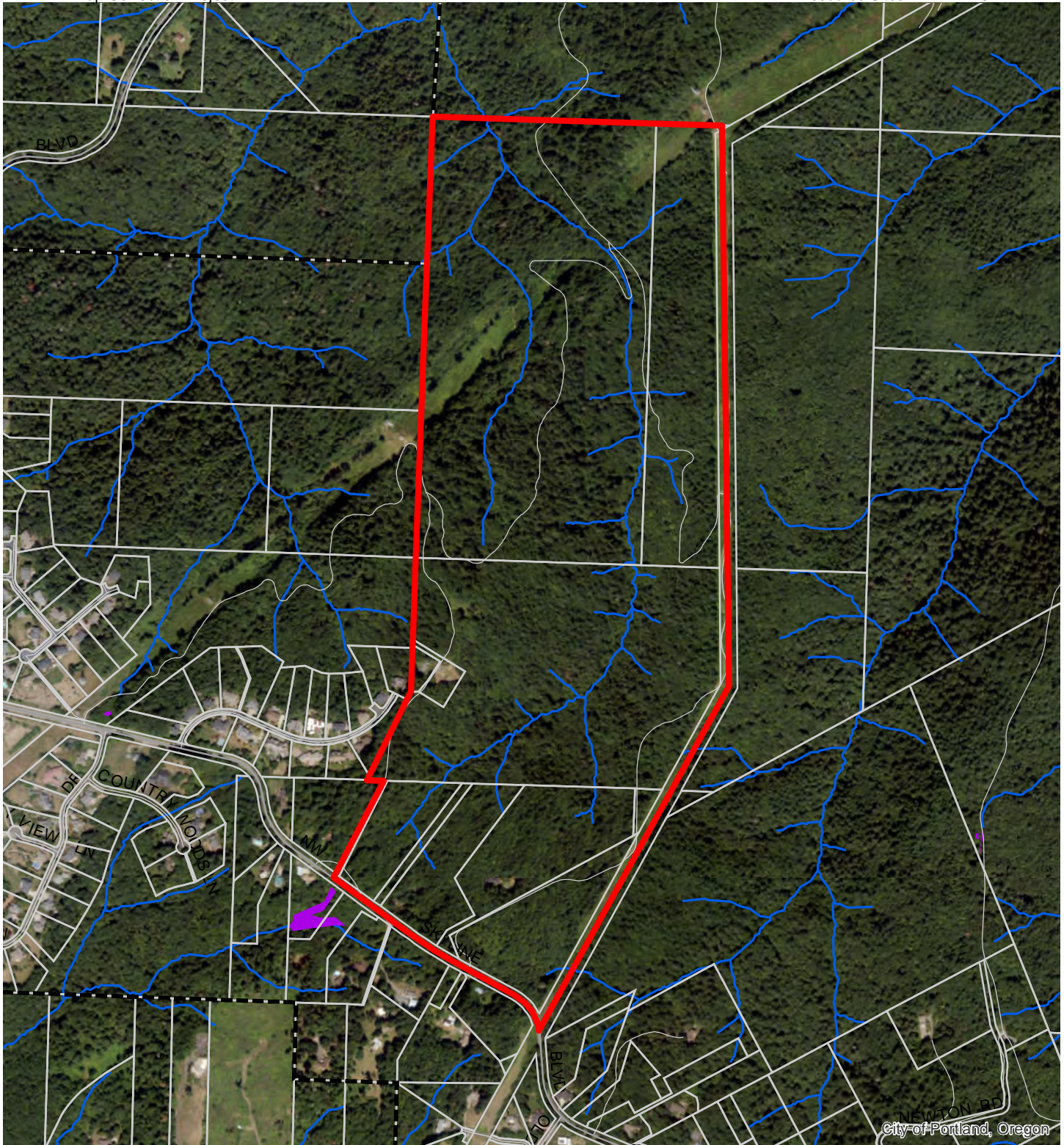
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP5 includes the following:

Site (acres)	197.1
Base zones (acres)	
OS	170.5
RF	26.7



Map A: Water Features

Resource Site: FP5

Updated: July 2021



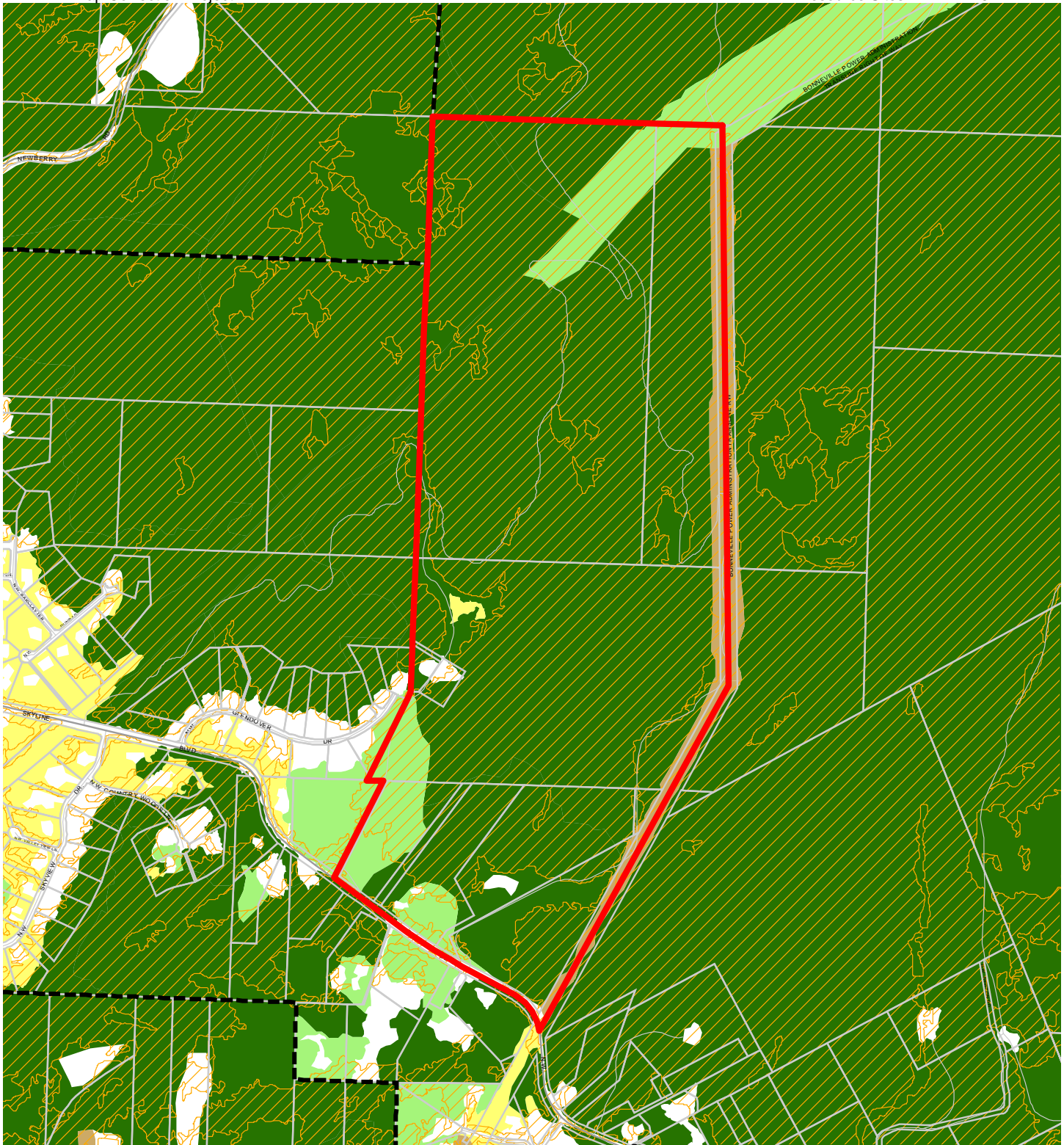
0 425 850 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



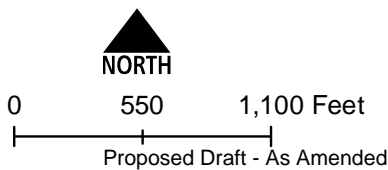
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July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP5

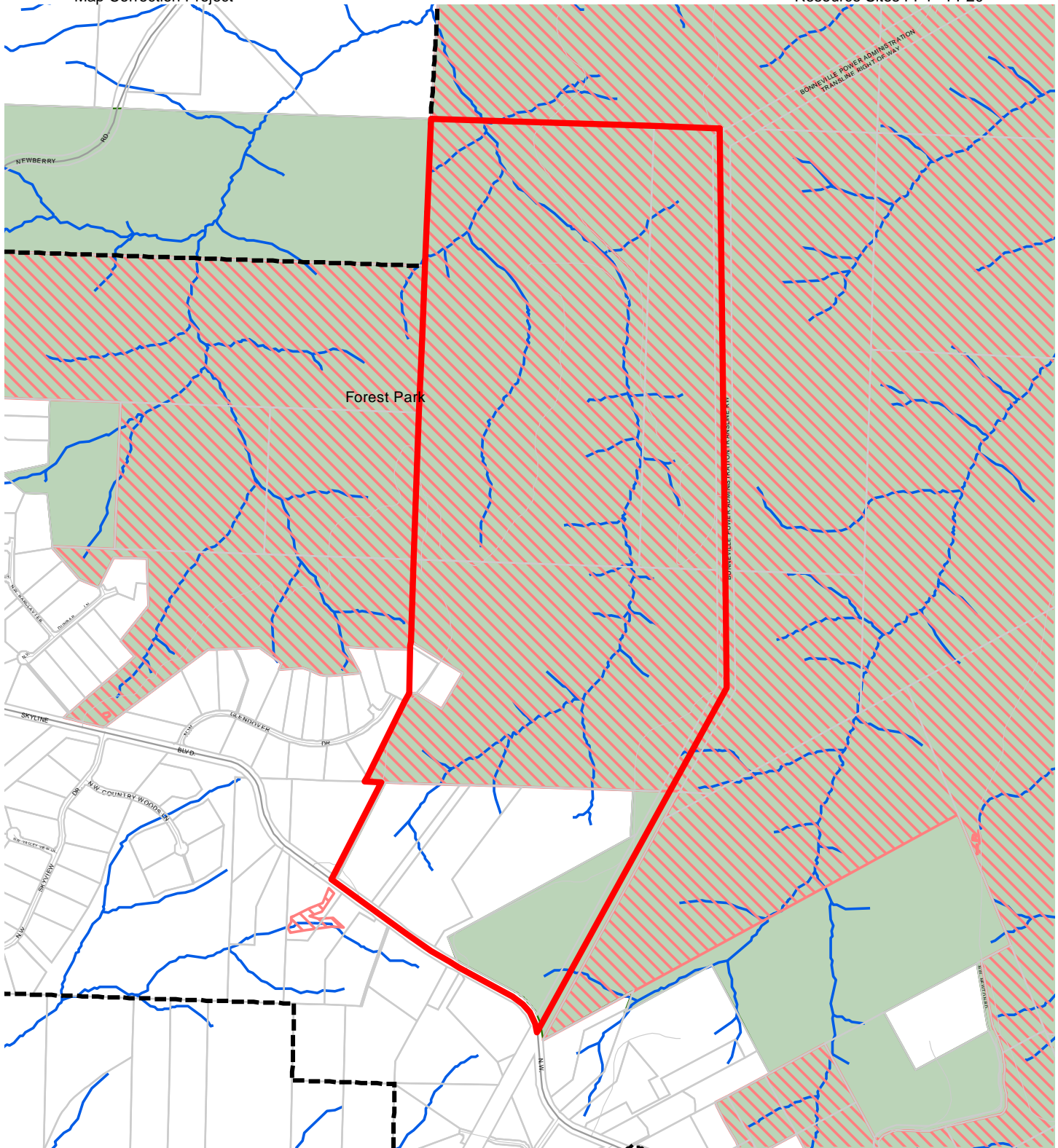
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

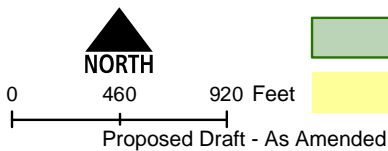


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July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP5**

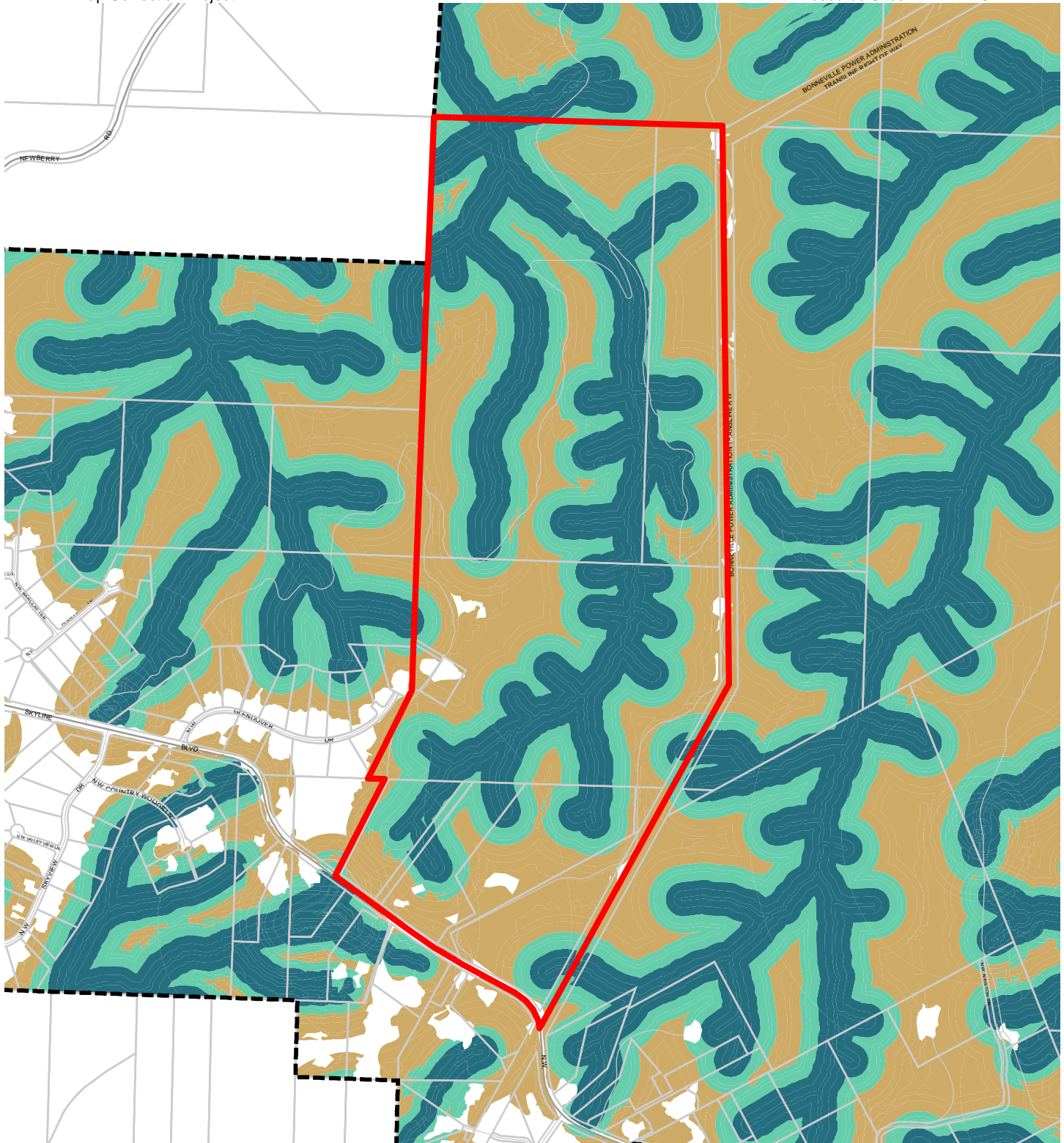
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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July 2021

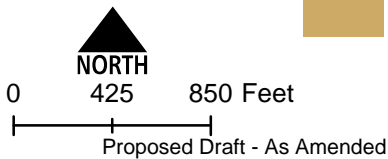


**Map D: Riparian
Corridors Habitat
Classification**

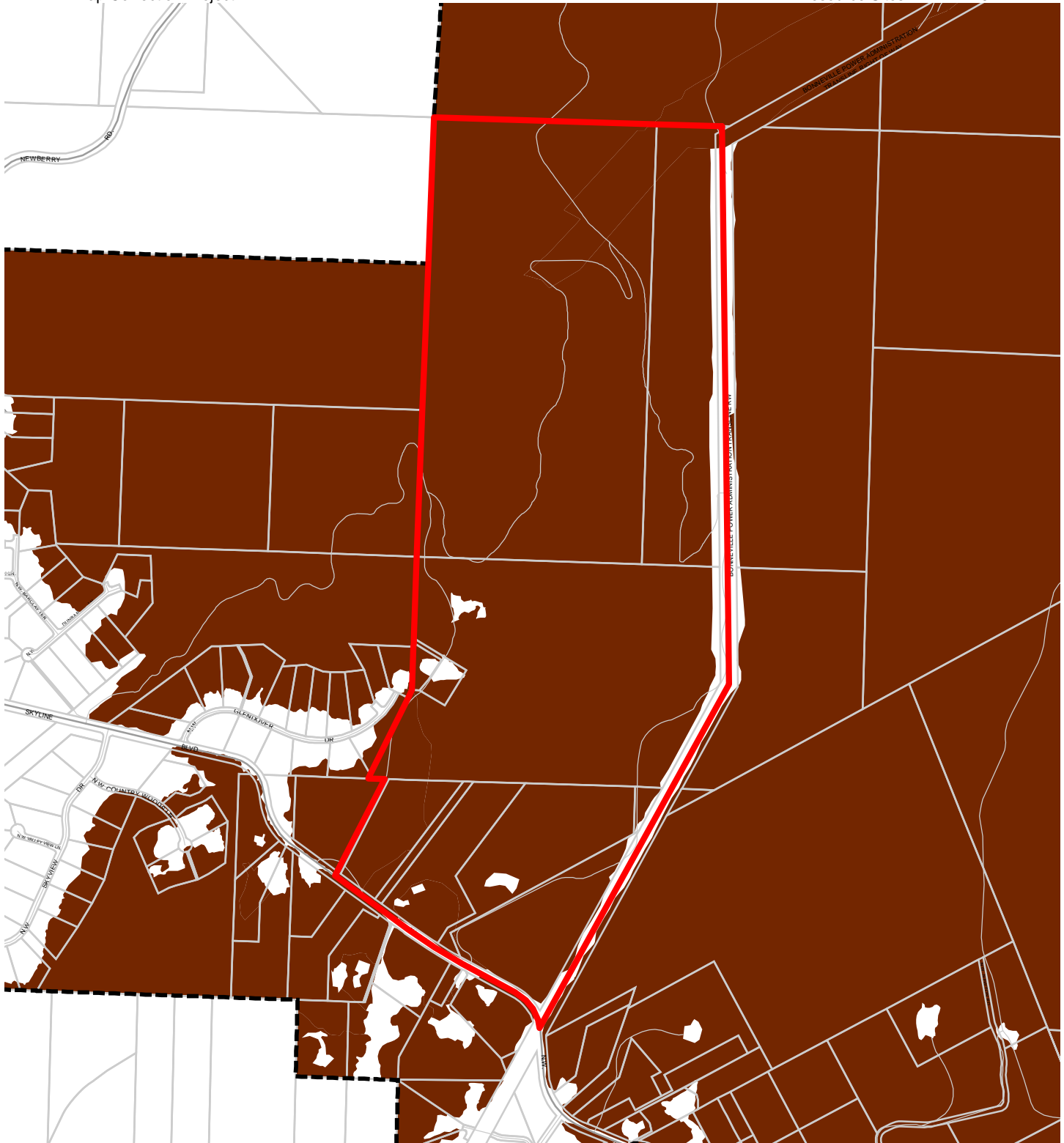
**Resource Site:
FP5**

Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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



**Map E: Wildlife
Habitat Classification
Resource Site:
FP5**

Updated: July 2021

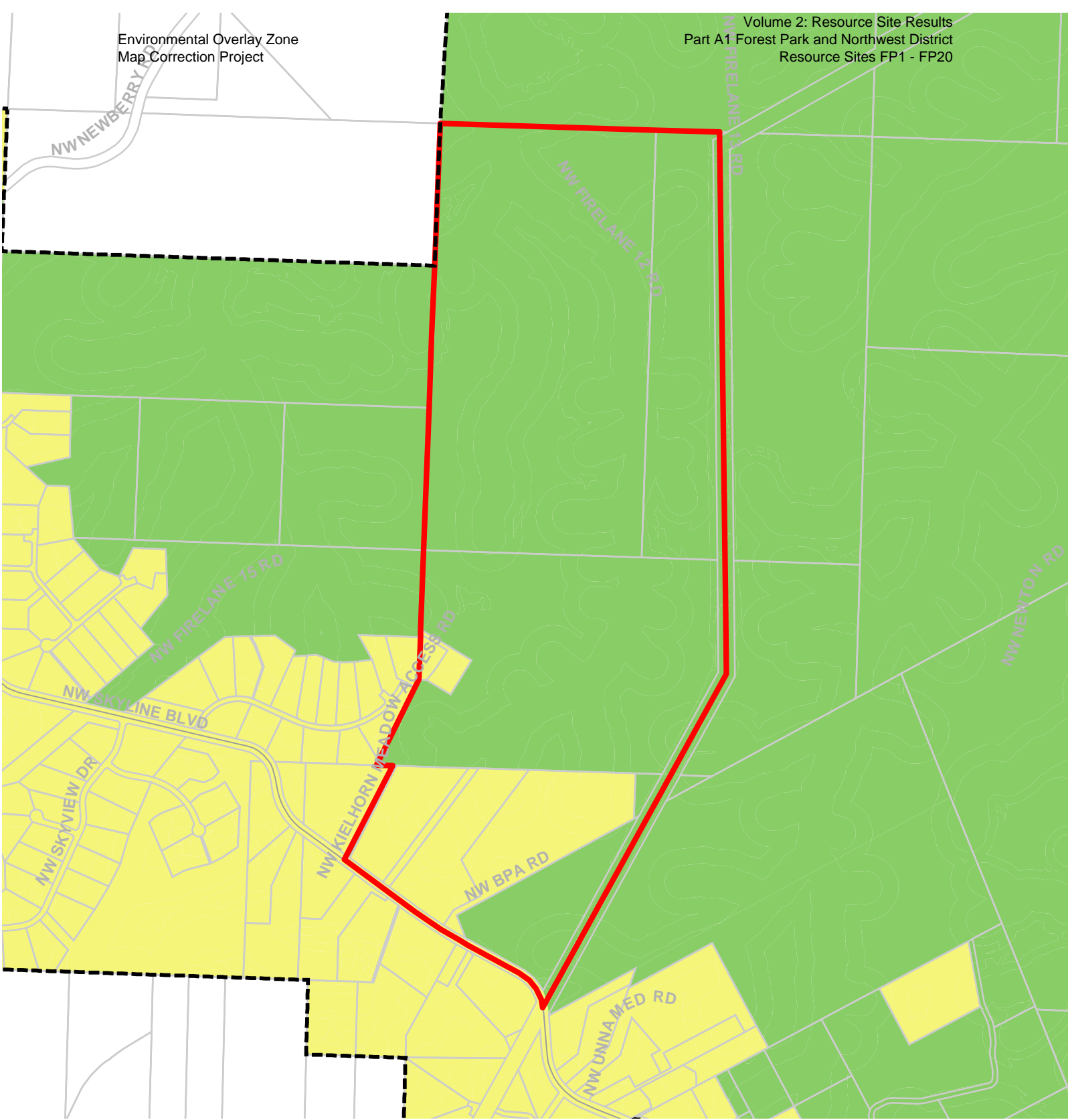


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-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



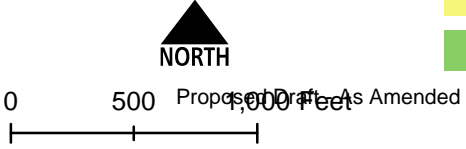
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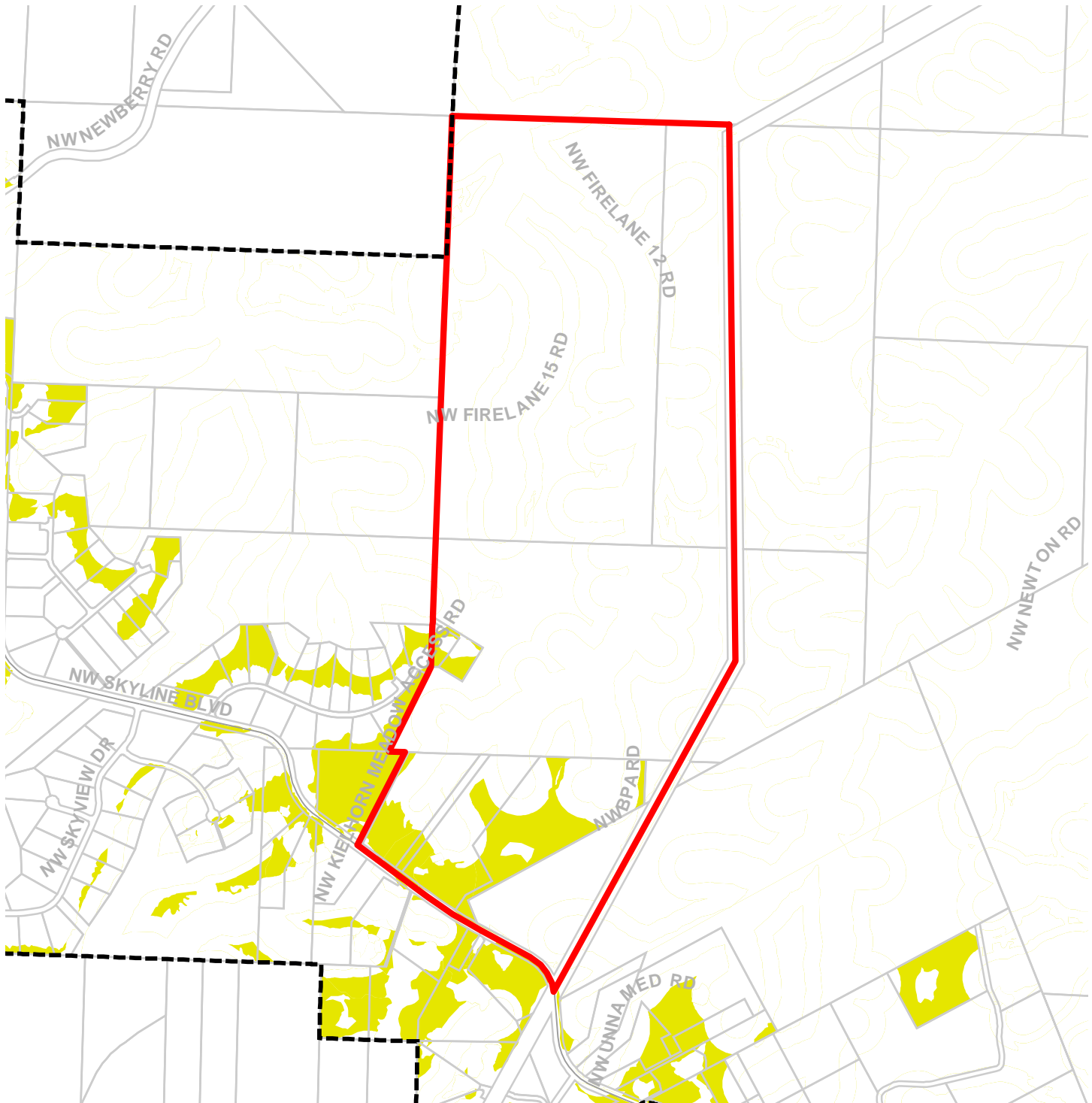
Map F: Urban Development Value (Title 13)
Resource Site: FP5

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

Updated: July 2021



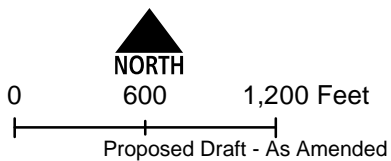
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Map H: Goal 5 Resources

Resource Site: FP5

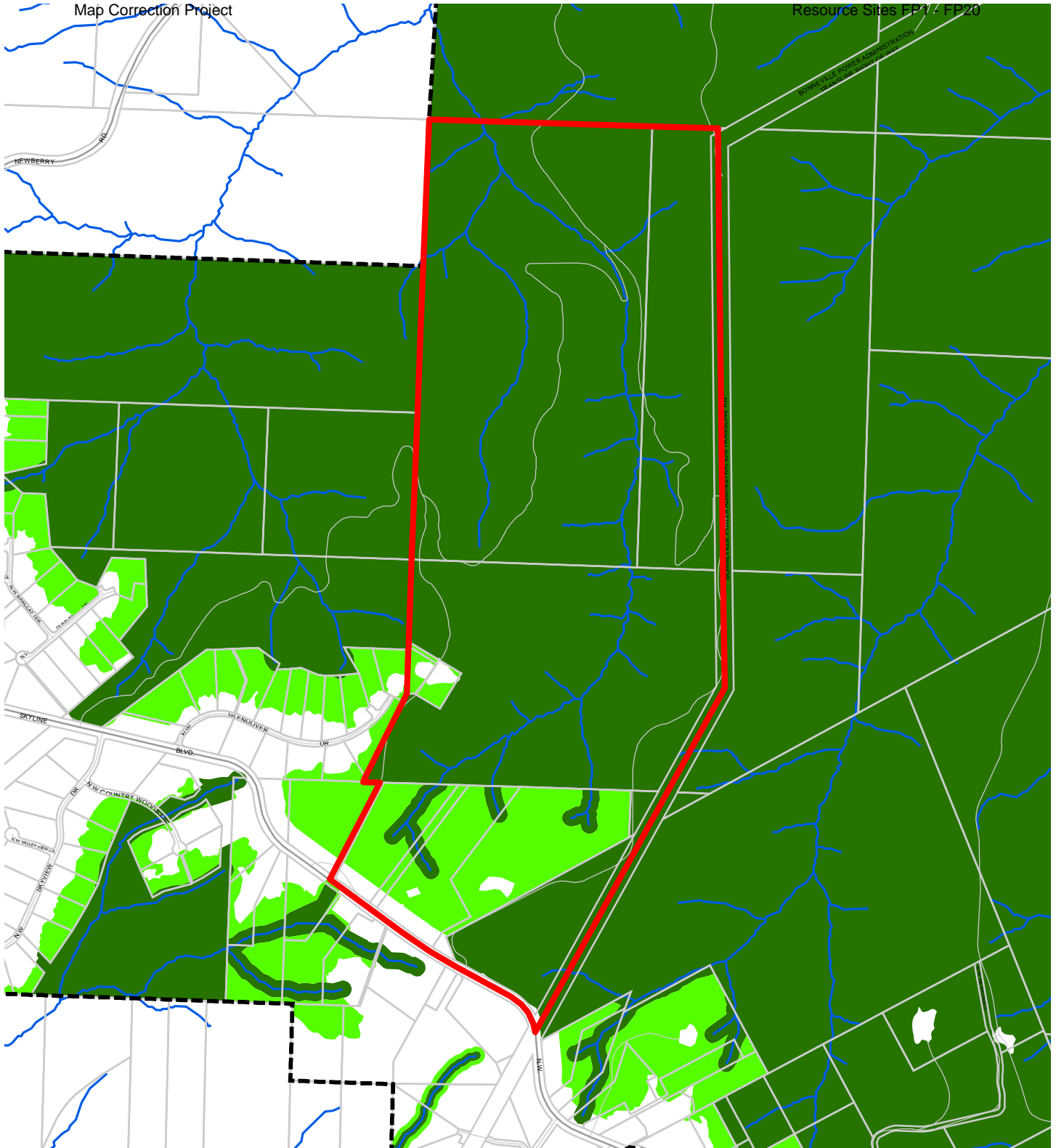
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- Urban Service Boundary
- ▭ Resource Sites
- Goal 5 Significant Natural Resources



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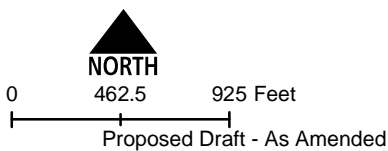


Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP5**

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resource Description

Within resource site FP5 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: Forest Park (O, B, M, C, S, P, E)

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		FP5
		Study Area
Stream (Miles)		2.9
Wetlands (acres)		0.0
Vegetated Areas >= 1/2 acre (acres)		
	Forest (acres)	169.1
	Woodland (acres)	16.8
	Shrubland (acres)	9.0
	Herbaceous (acres)	0.4
Flood Area*		
	Vegetated (acres)	0.0
	Non-vegetated (acres)	0.0
Steep Slopes (acres)**		175.1
* 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 site forms the eastern headwaters of Miller Creek which supports runs of native Coho salmon, cutthroat trout and steelhead trout. Coho salmon were listed for federal protection under the Endangered Species Act in 2005, and Miller Creek is designated as habitat critical to their recovery.

The site's vegetative cover is composed of three principle stages of second growth western hemlock forest: mid-aged conifer, conifer-topping hardwood and hardwood with young conifer. Climax species such as western hemlock, western red cedar and pacific yew are well established in certain areas, particularly to the east. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. A healthy stand of Pacific dogwood is also present at the site. Non-native plants are present in the cleared areas along the power line right-of-way.

Rare plant species found within the site include *Cimifuga elata*/Tall bugbane, *Corallorhiza maculata* /Spotted coralroot, *Cirsium brevistylum*/Indian thistle, *Cirsium edule*/Edible thistle, *Lomatium nudicaule*/Barestem biscuitroot, *Ribes bracteosum*/Stink currant (PP&R City Nature staff observations, using "Urbanizing Flora of Portland, Oregon 1806-2008").

The site provides high quality food and cover for resident and migratory wildlife. The forested creek headwaters provide a seasonal water source for terrestrial vertebrates and serve a critical function in sustaining healthy water quality and flows level for fish, amphibian and macroinvertebrate species in the Miller Creek system. Bird species identified at the site include pileated woodpecker, sharp-shinned and red-tailed hawks, and a variety of songbirds. Animals sited in the area include bobcat, beaver and Townsend's chipmunk. The site's interspersion with surrounding forest allows for free migration of wildlife and increases its value as habitat.

Table B: Quality of Natural Resource Functions in Resource Site FP5				
Resource Site (acres) = 197				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	63.4	58.6	72.2	194.2
percent total inventory site area	32.2%	29.7%	36.6%	98.5%
Wildlife Habitat*				
acres	185.9	0.0	0.0	185.9
percent total inventory site area	94.3%	0.0%	0.0%	94.3%
Special Habitat Areas**				
acres	158.1			
percent total inventory site area	80.2%			
Combined Total⁺				
acres	186.2	1.4	6.9	194.5
percent total inventory site area	94.4%	0.7%	3.5%	98.6%
<p>* 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.</p>				

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 site FP5, 0.5% 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 FP5			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
197.1	1.5	0.9	0.5%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP5. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP5 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP5, 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*.

Natural Resources Protection 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 FP5, 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 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP6 **Resource Site Name:** Lower Newton Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 103

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:

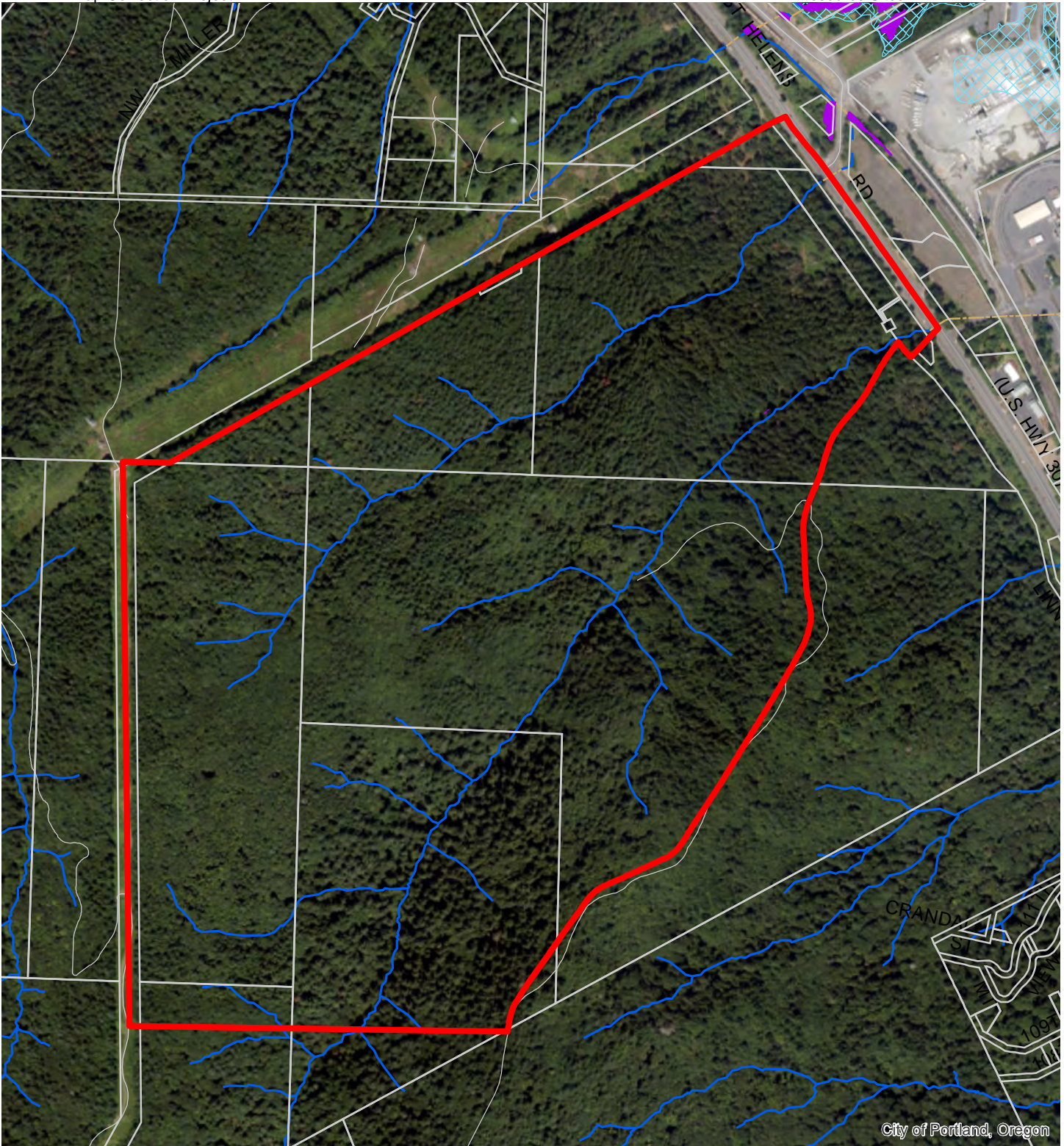
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP6 includes the following:

Site (acres)	264.7
Base zones (acres)	
OS	264.6
R10	0.1



Map A: Water Features

Resource Site: FP6

Updated: July 2021

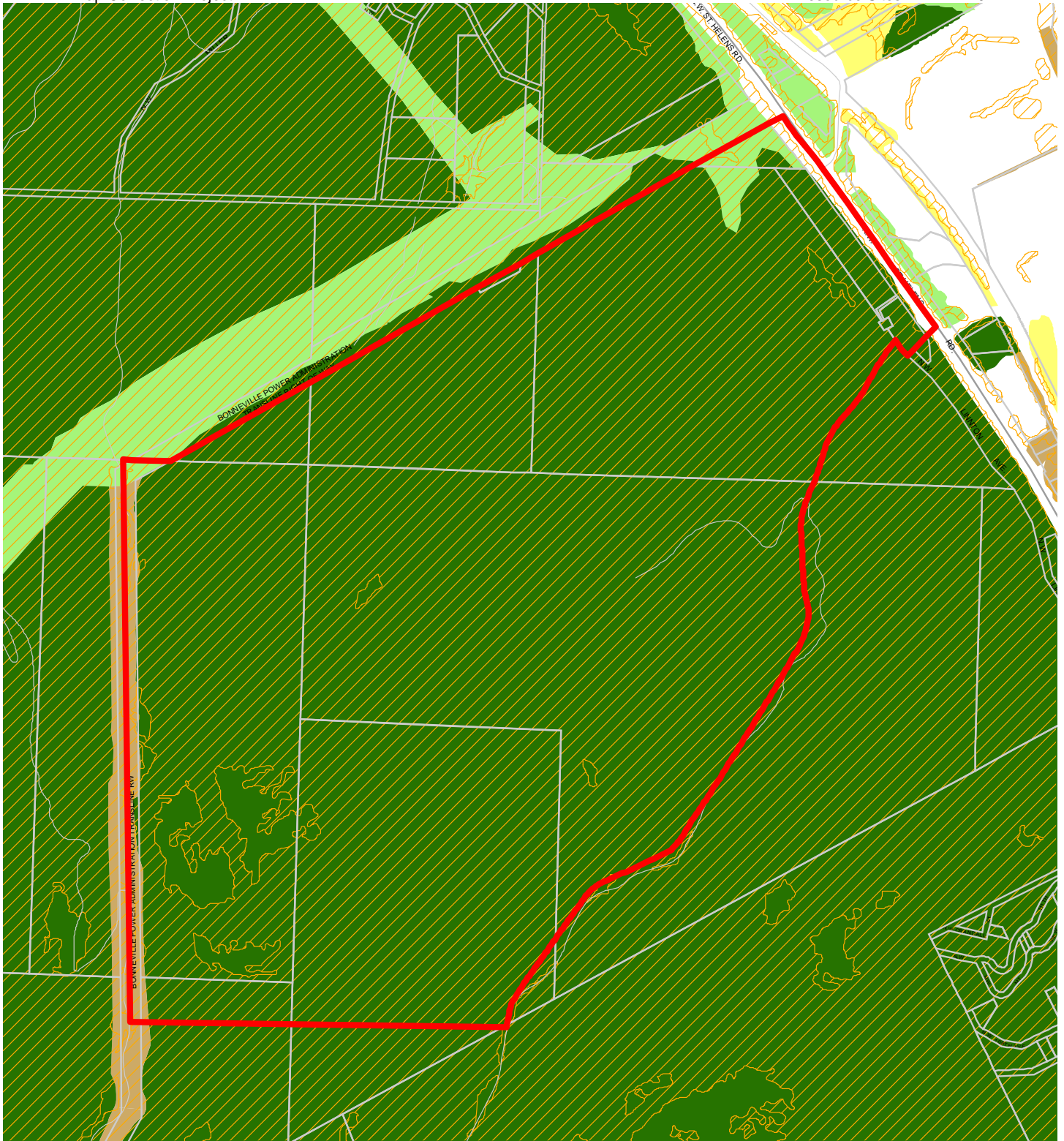


0 362.5 725 Feet
Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



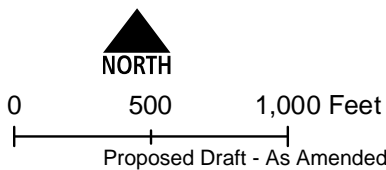
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Map B: Vegetation and Steep Slopes

Resource Site: FP6

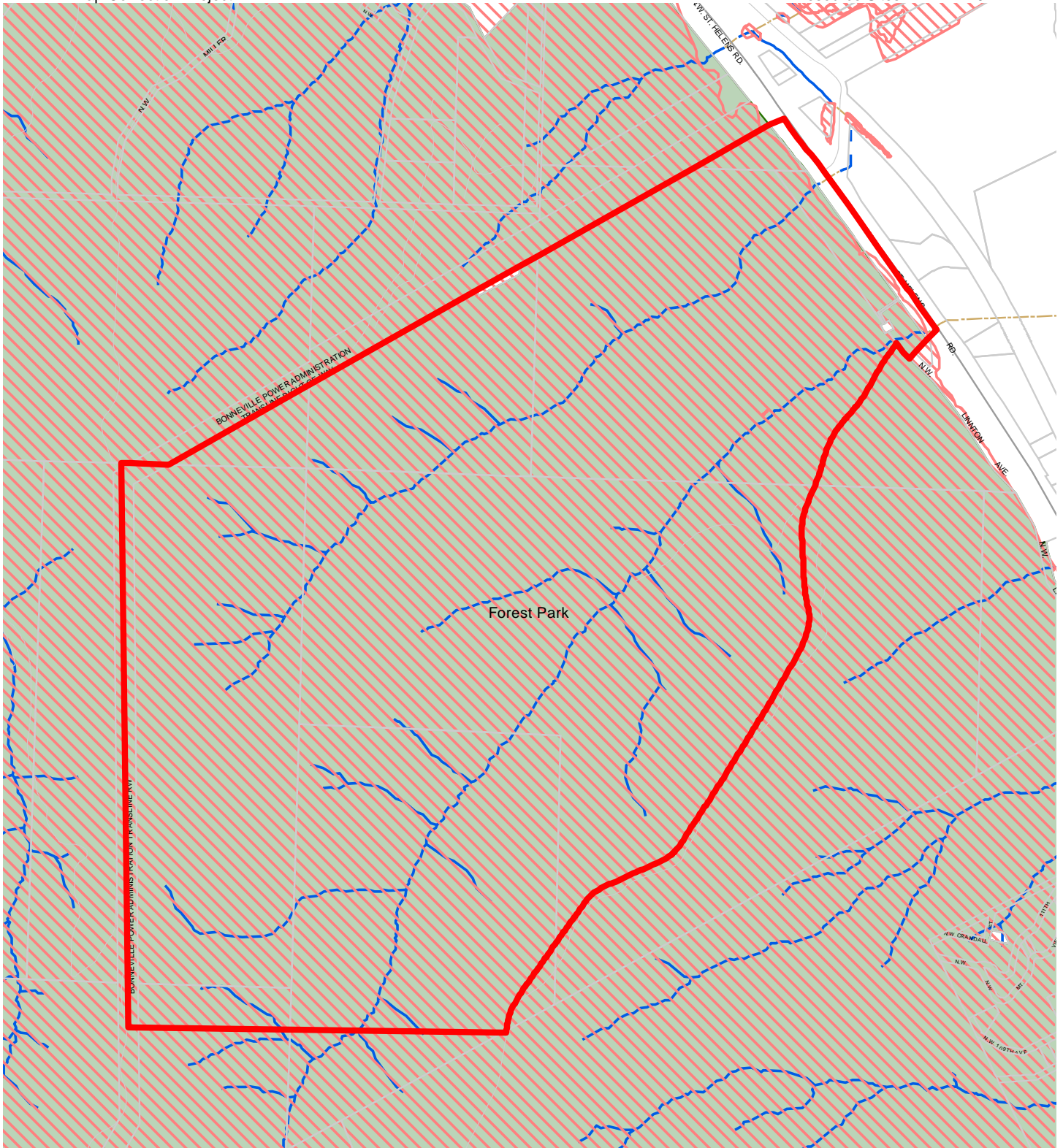
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

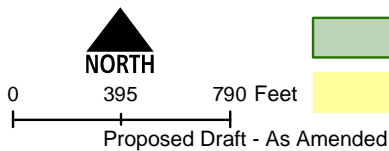










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**Map C: Special
Habitat Areas**
**Resource Site:
FP6**

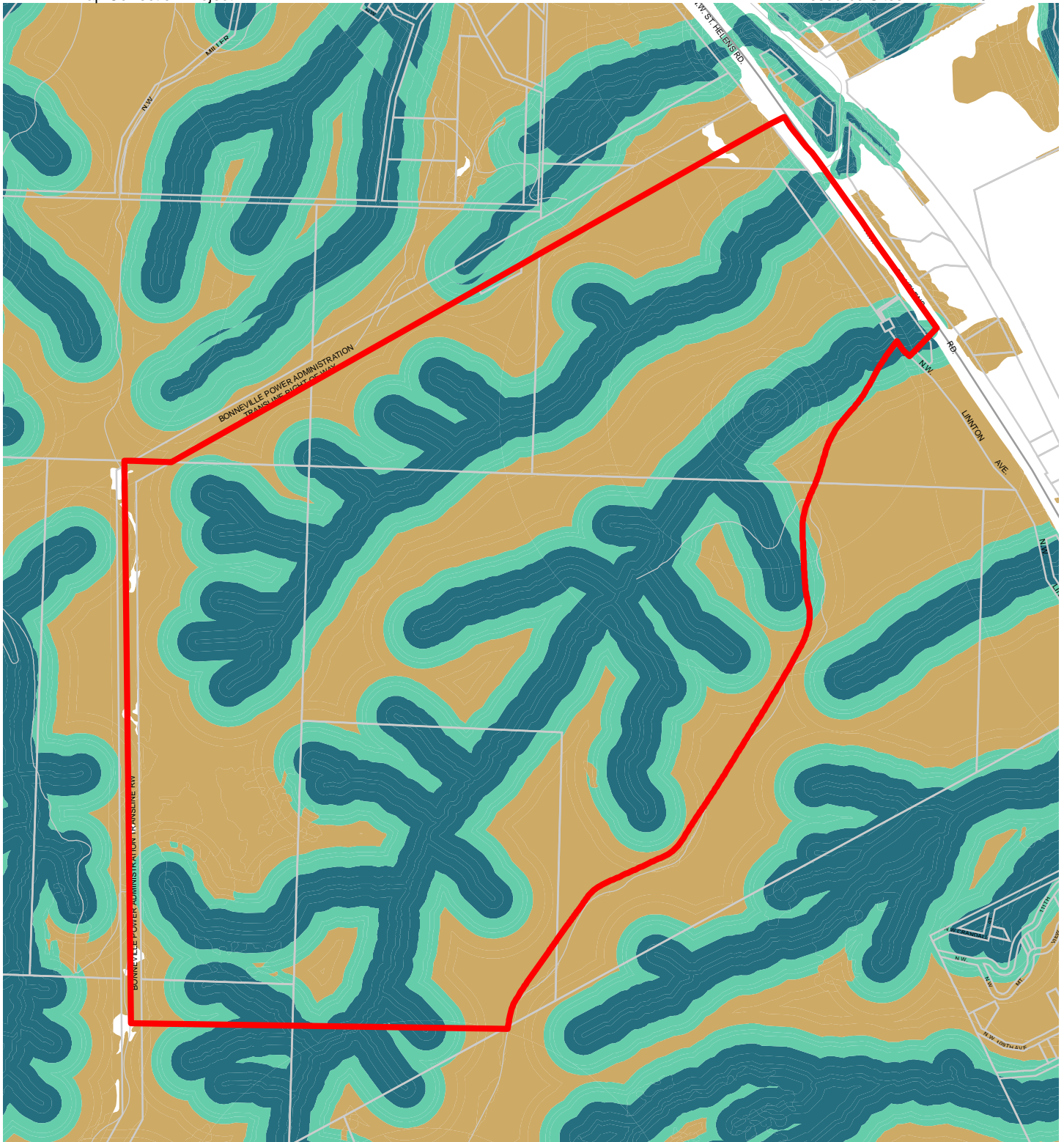
Updated: June 2021



-  Resource Sites
-  Special Habitat Areas (SHAs)
-  Open Stream Channel
-  Piped Stream Segment
-  Parks
-  Schools
-  Urban Service Boundary
-  Taxlots



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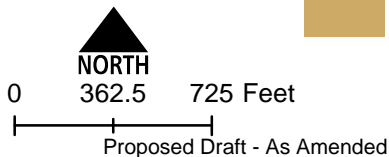


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP6**

Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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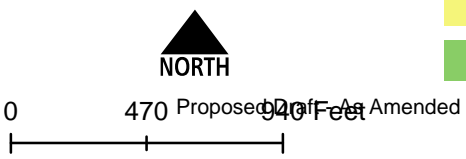


Map F: Urban Development Value (Title 13)
Resource Site: FP6

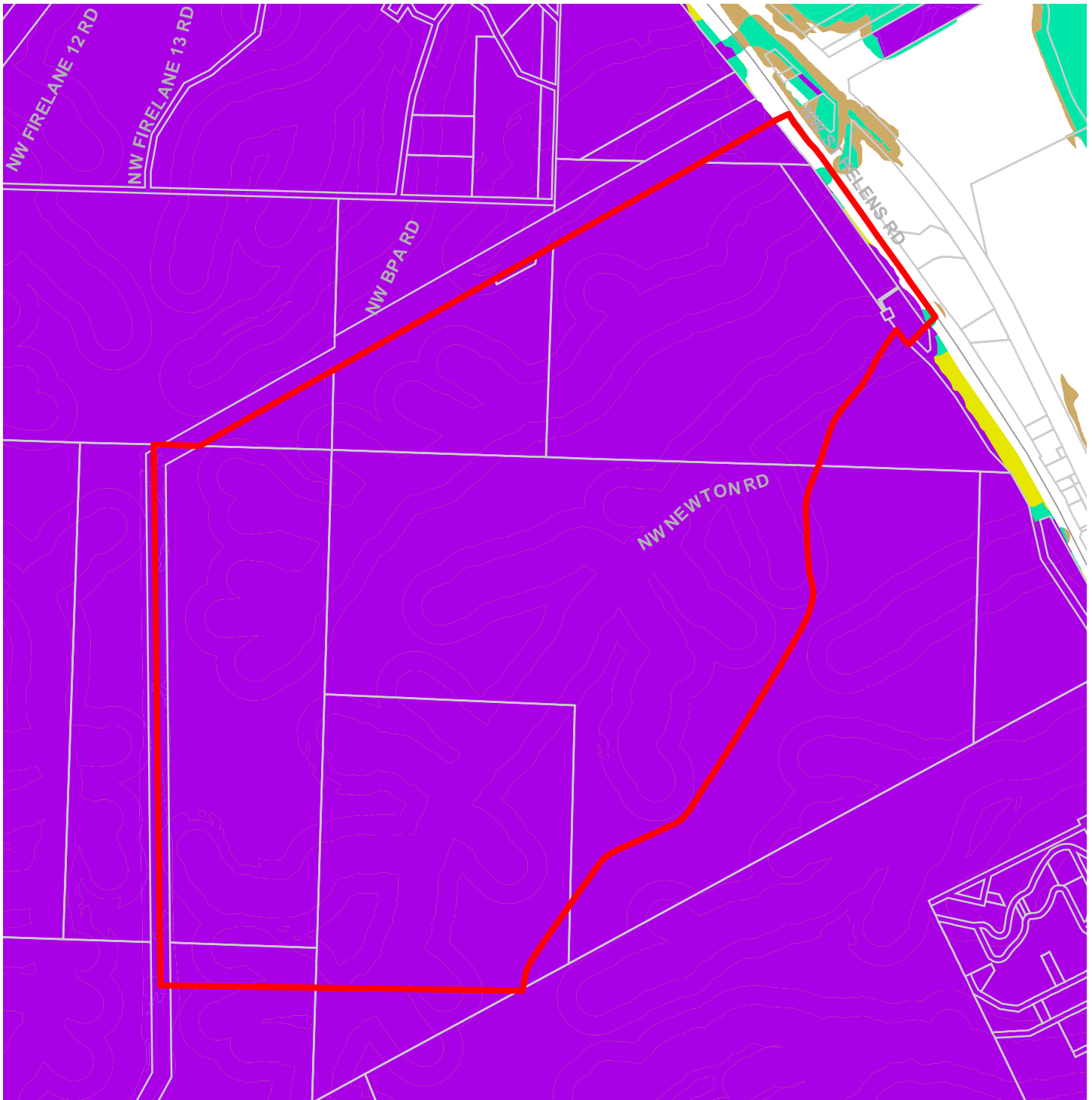
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



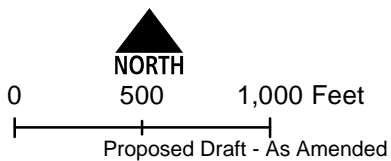
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP6

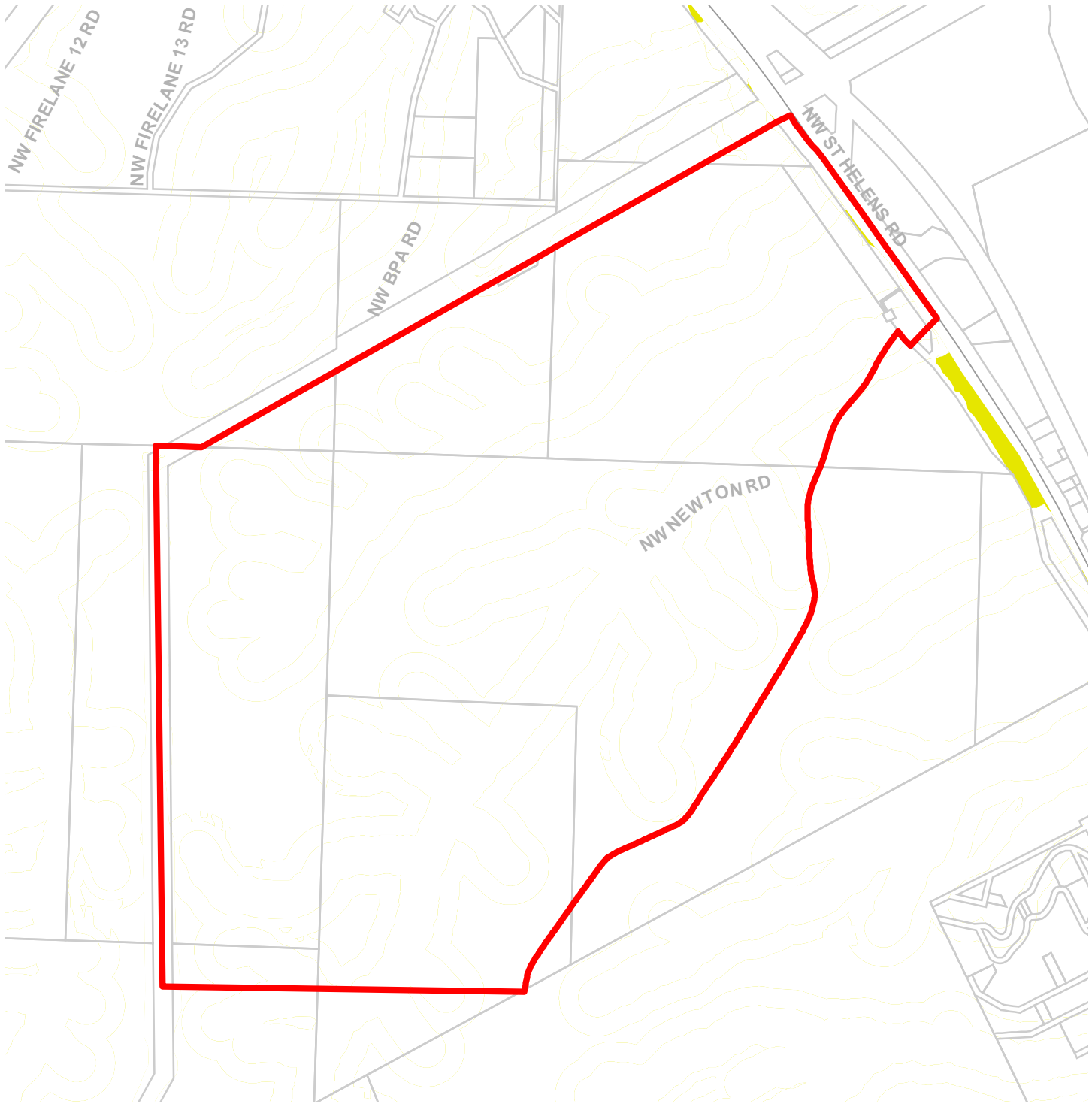
Updated: July 2021



- Urban Service Boundary
- ▭ Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



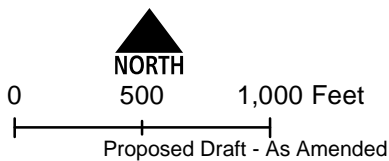
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Map H: Goal 5 Resources

Resource Site: FP6

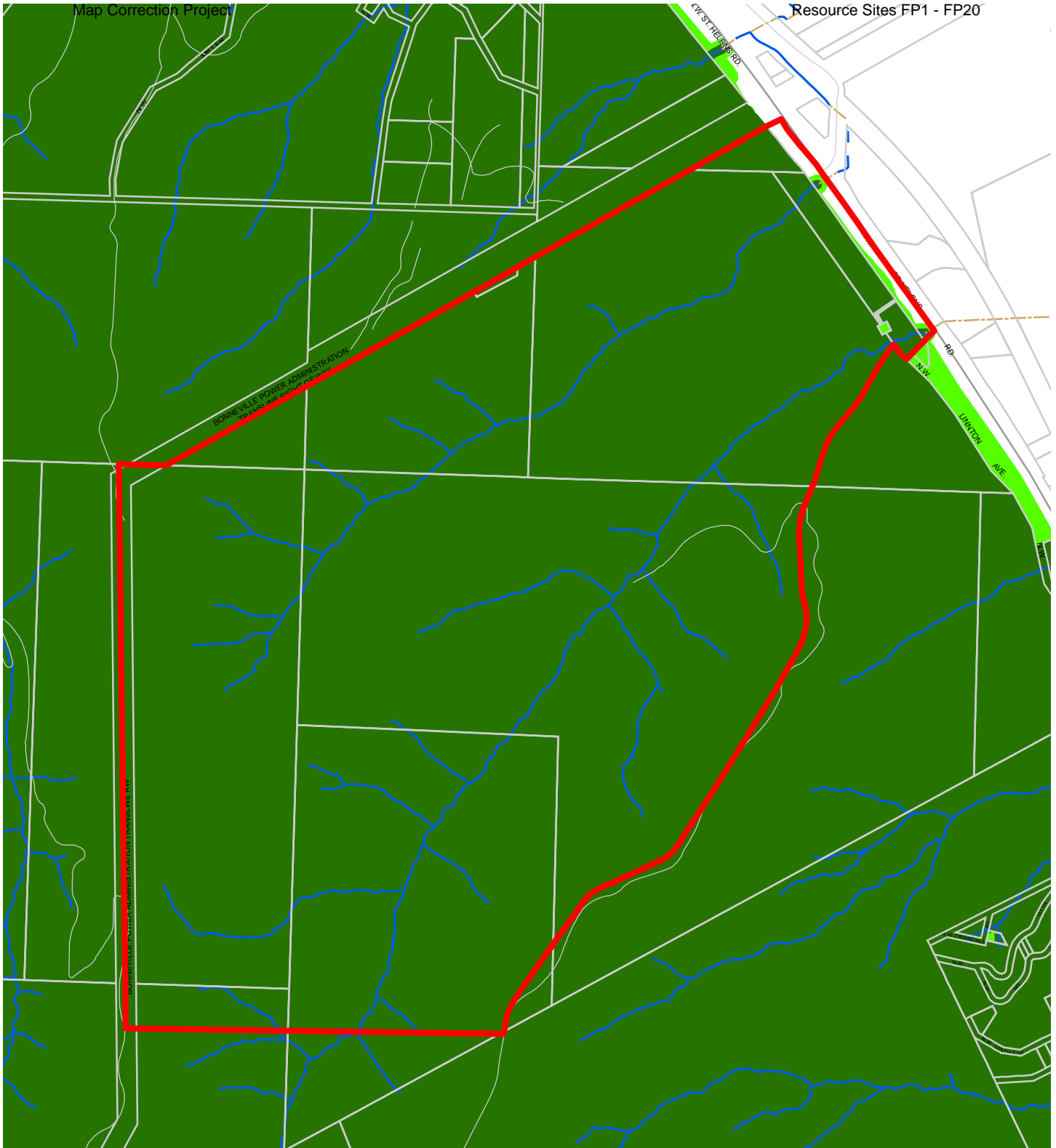
Updated: July 2021



- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources



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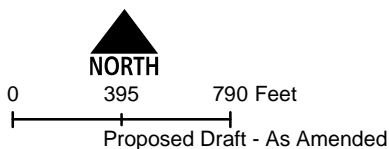


Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP6**

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resource Description

Within resource site FP6 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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 FP6	
	Study Area
Stream (Miles)	3.8
Wetlands (acres)	<0.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	256.7
Woodland (acres)	2.6
Shrubland (acres)	3.7
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	254.4
* 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 site contains the largest known stand of old growth Douglas fir within the City of Portland. One of the only native ponderosa pines (*Pinus ponderosa*) in the city also is present at this site. Other site vegetation includes a mixture of forest types, the most prominent of which are mid-aged conifer and conifer-topping hardwood. At the western edge of the site is a large stand of mature hardwood trees bordered by hardwood with young conifer. Douglas fir, western hemlock and western red cedar are well established within the mid-aged conifer and old growth forest areas. The site’s forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. This resource area includes some Oregon white oak woodland/mixed forest, which is an infrequent habitat type in the city. It includes species such as *Viburnum ellipticum* and *Toxicodendron diversilobum* as dominant shrub layer components, as well as numerous less common herbaceous species. Non-native plants (holly and ivy) and disturbances along the powerline corridors and Highway 30 have degraded the quality of the native plant community locally.

This site provides high quality habitat for wildlife in the area, including five sensitive bird species: pileated woodpecker, screech owl, saw-whet owl, sharp shinned hawk and osprey. Interspersion with surrounding forest enhances the site’s value as wildlife habitat; however, Highway 30 impedes migration to the east.

Table B: Quality of Natural Resource Functions in Resource Site FP6				
Resource Site (acres) = 265				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	89.3	76.2	97.2	262.7
percent total inventory site area	33.7%	28.8%	36.7%	99.3%
Wildlife Habitat*				
acres	259.3	0.0	0.0	259.3
percent total inventory site area	98.0%	0.0%	0.0%	98.0%
Special Habitat Areas**				
acres	262.5			
percent total inventory site area	99.2%			
Combined Total⁺				
acres	259.3	0.5	3.1	262.8
percent total inventory site area	98.0%	0.2%	1.2%	99.3%
* 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 site FP6, 0.5% 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 FP6			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
273.7	2.2	1.3	0.5%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP6. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

All of the significant natural resources within resource site FP6 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required.

Natural Resources Protection 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 FP6, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of streams top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP7 **Resource Site Name:** Newton Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 102

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:

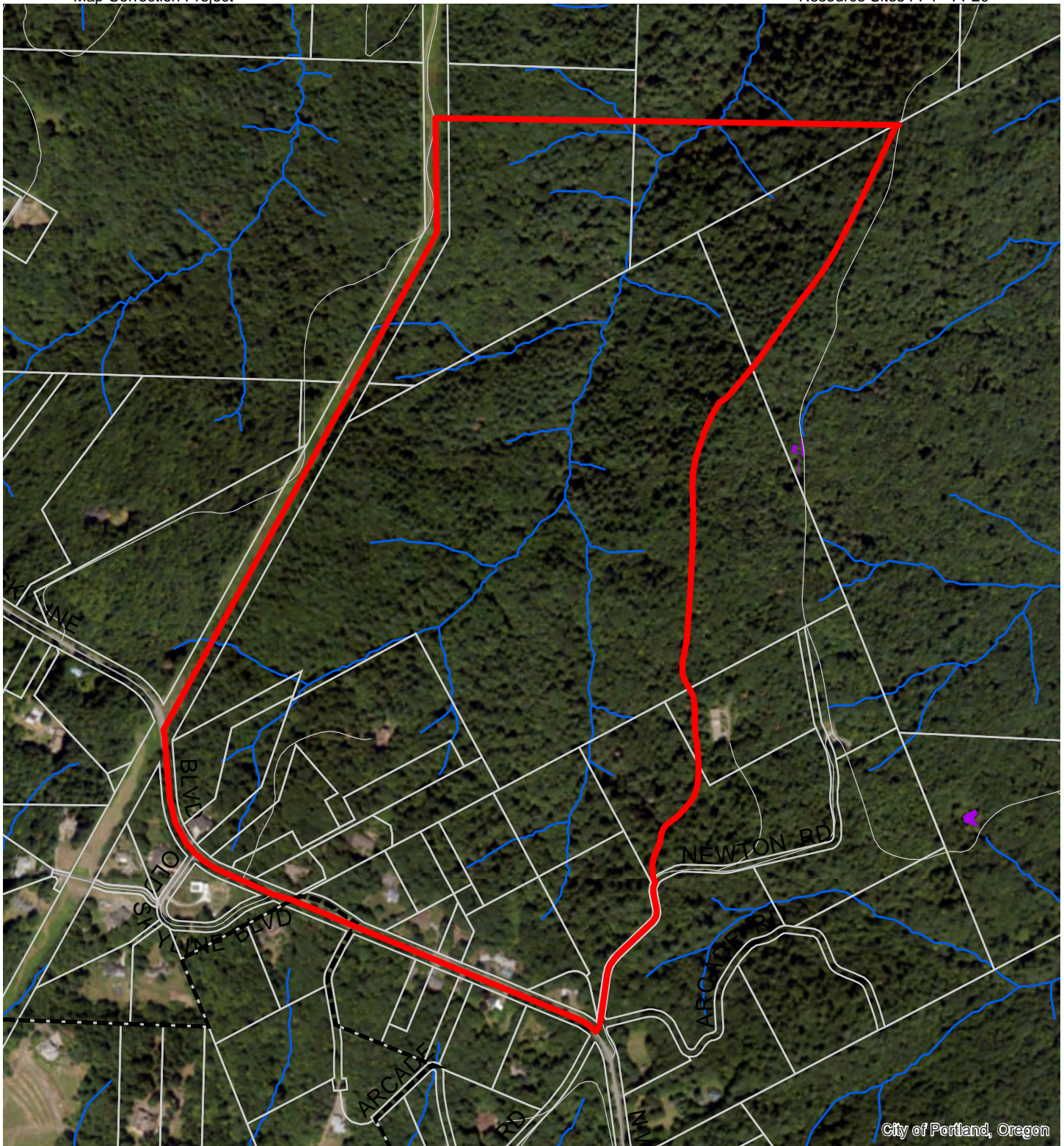
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP7 includes the following:

Site (acres)	138.3
Base zones (acres)	
OS	105.0
R10	0.0
R20	12.1
RF	21.1



City of Portland, Oregon

Map A: Water Features
Resource Site: FP7

Updated: July 2021



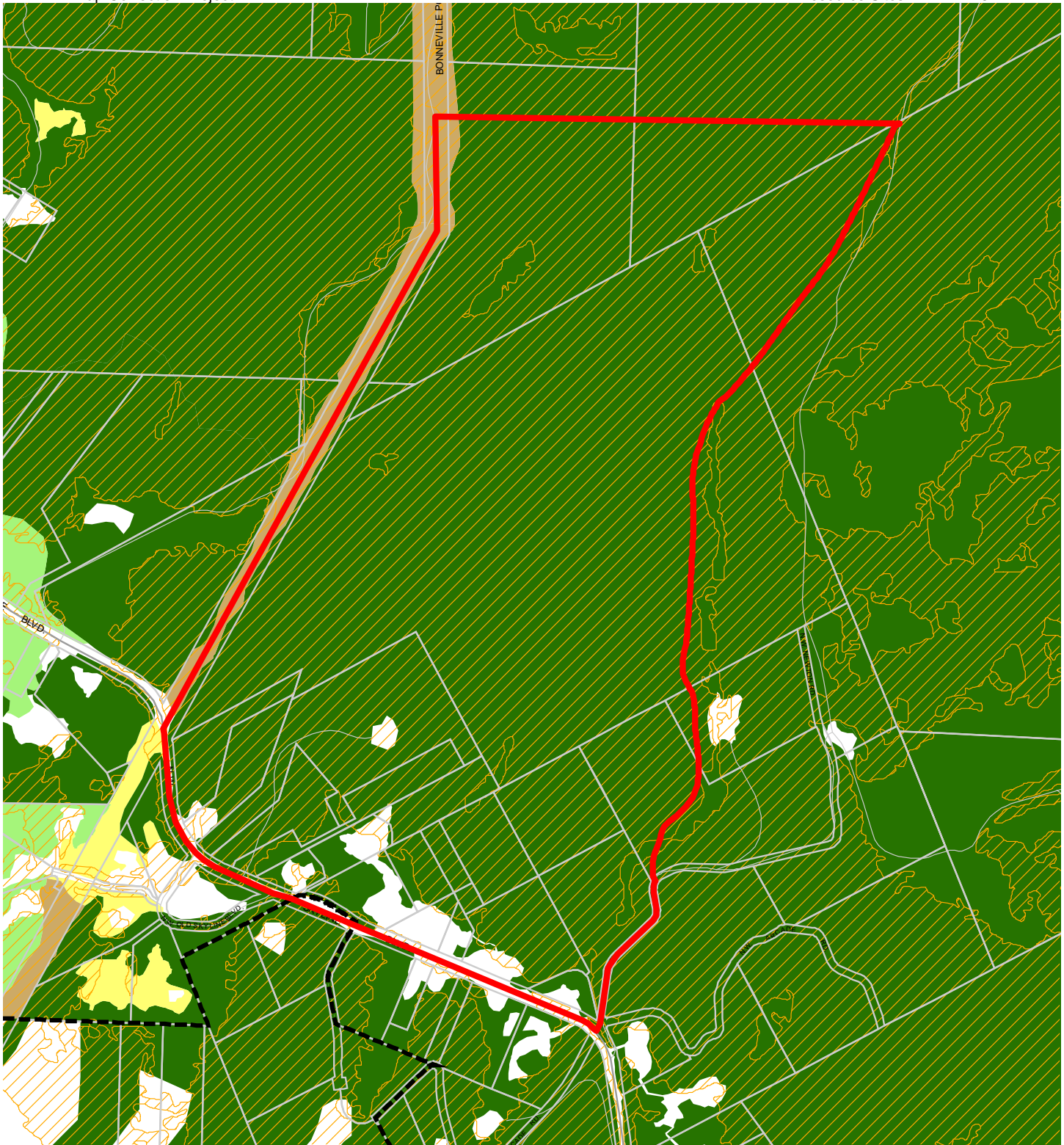
0 295 590 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



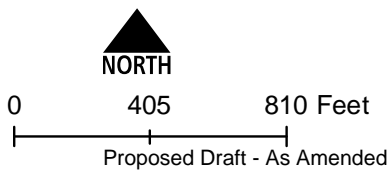
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP7

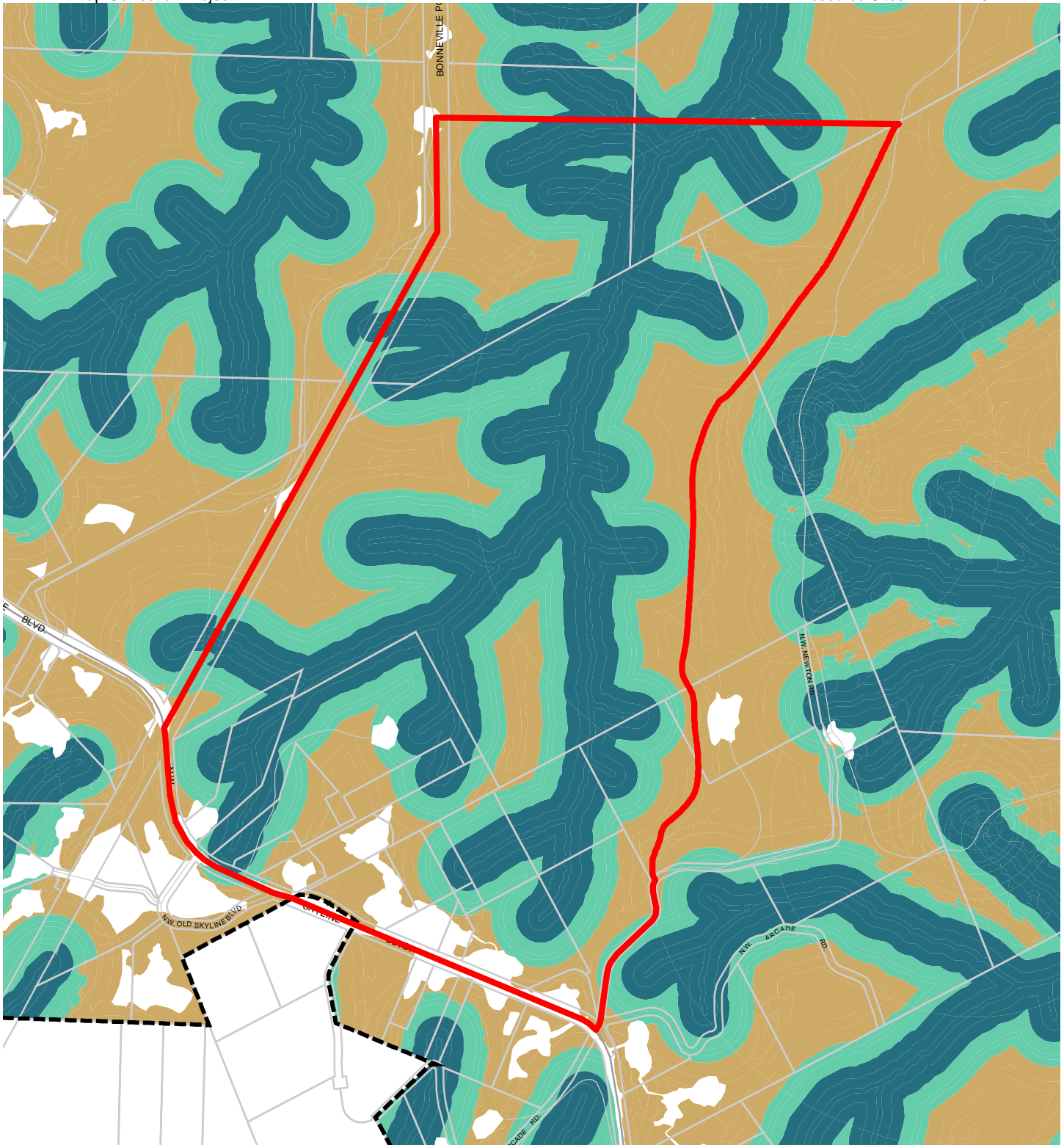
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021

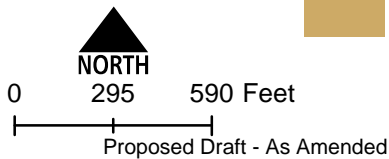


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP7**

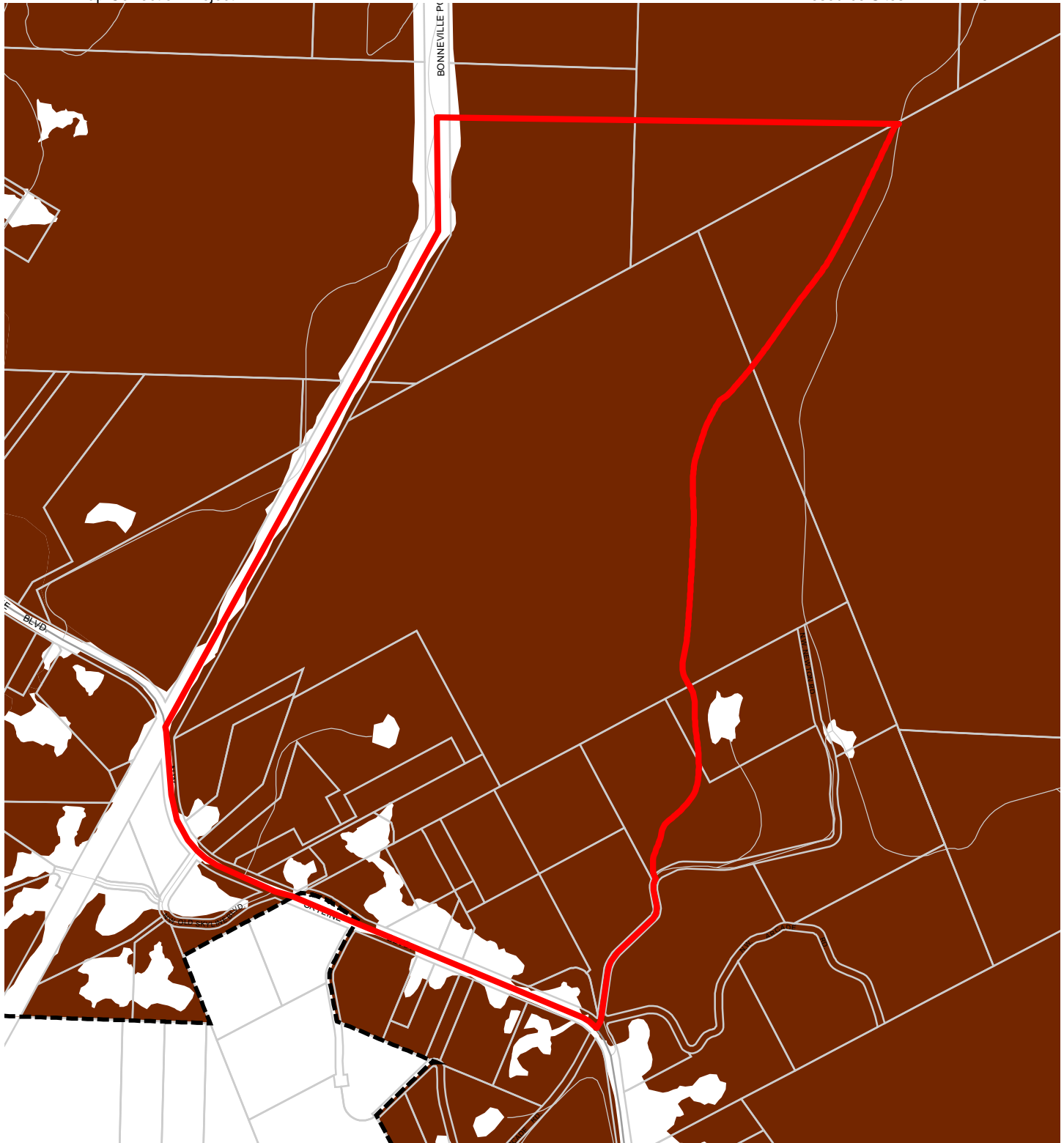
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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**Map E: Wildlife
Habitat Classification
Resource Site:
FP7**

Updated: July 2021



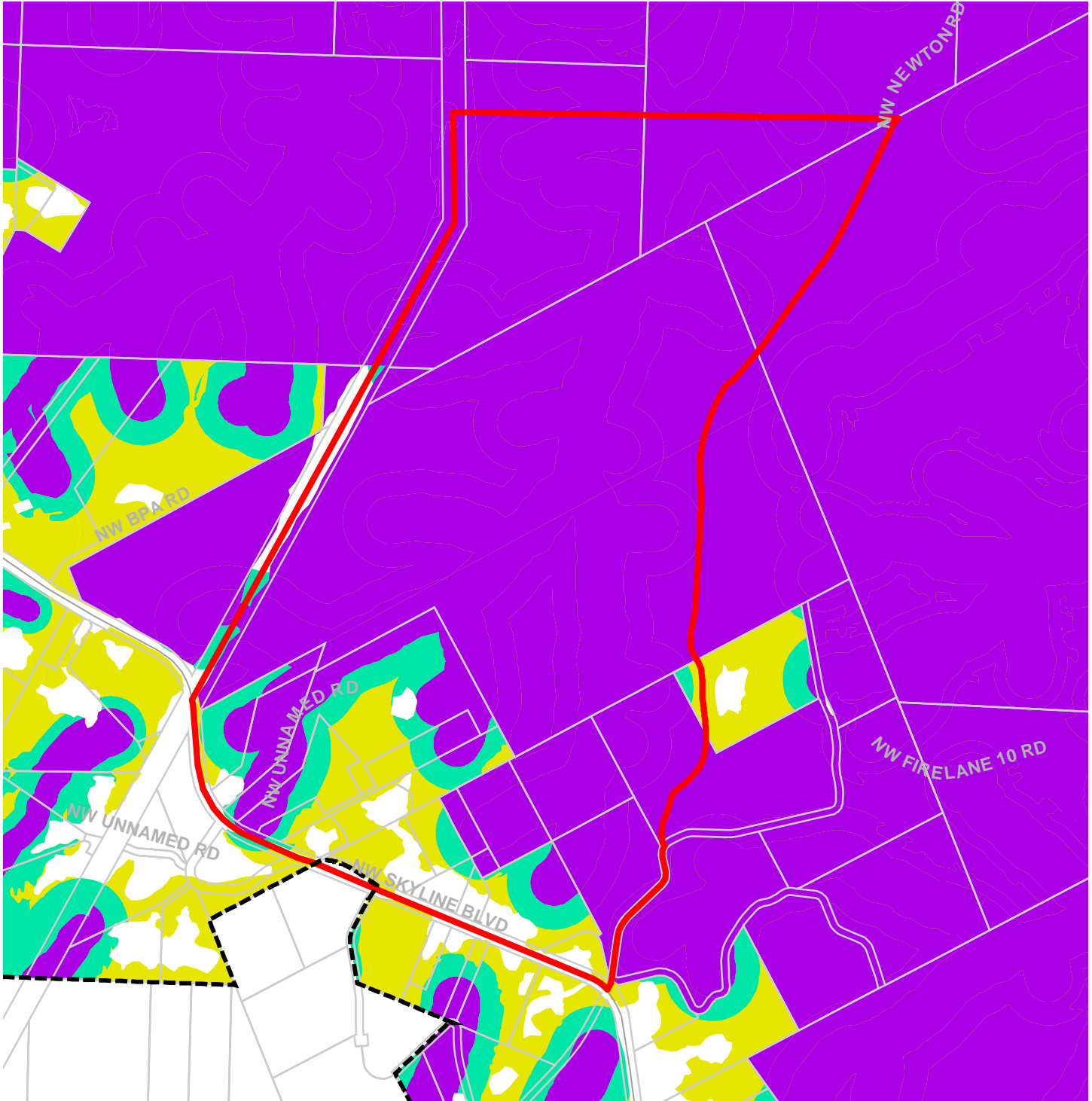
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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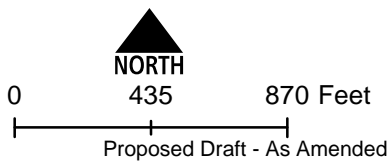
July 2021



Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP7

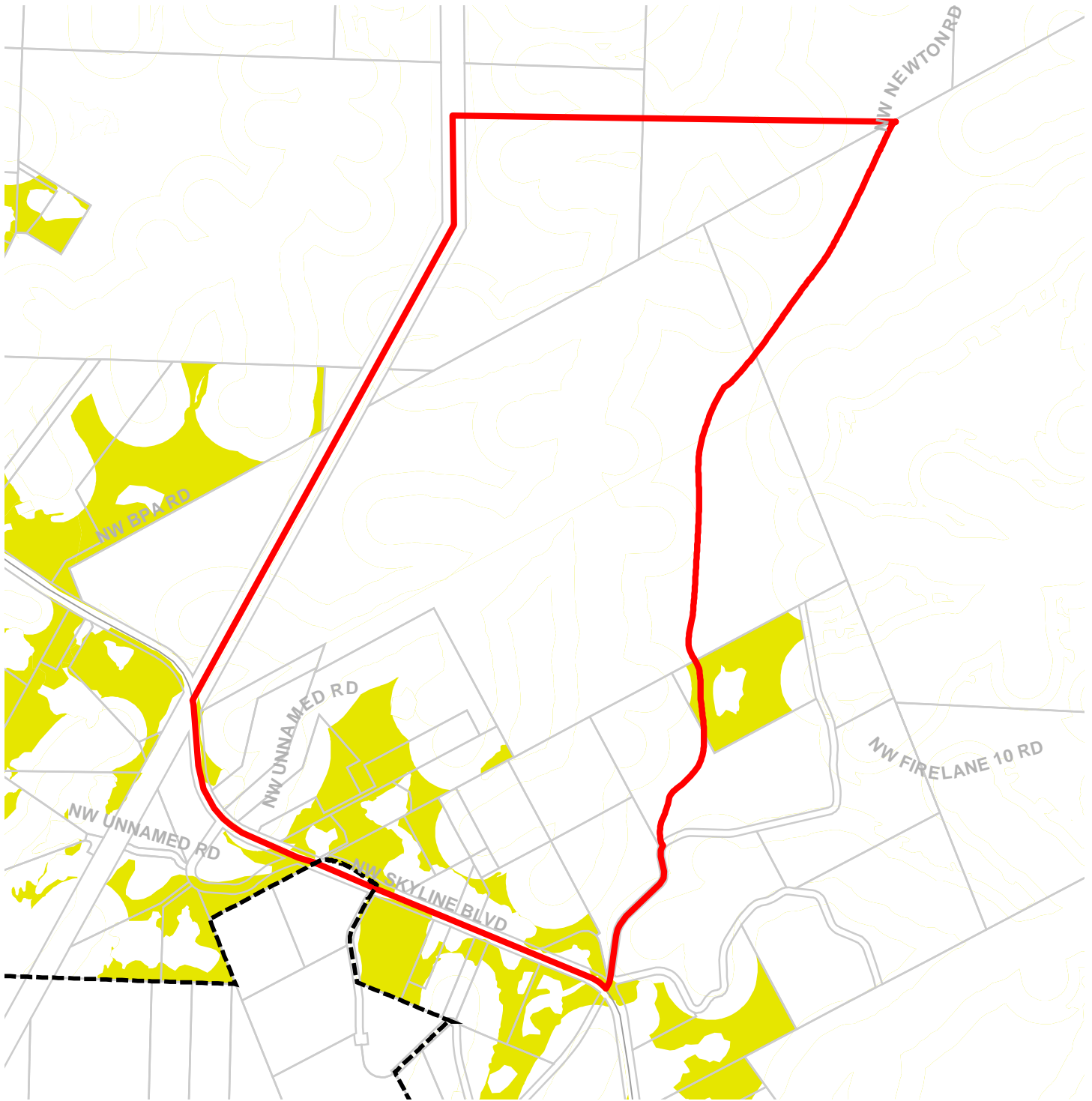
Updated: July 2021



- Urban Service Boundary
- ▭ Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



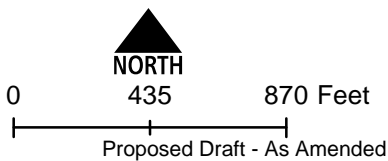
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.



Map H: Goal 5 Resources

Resource Site: FP7

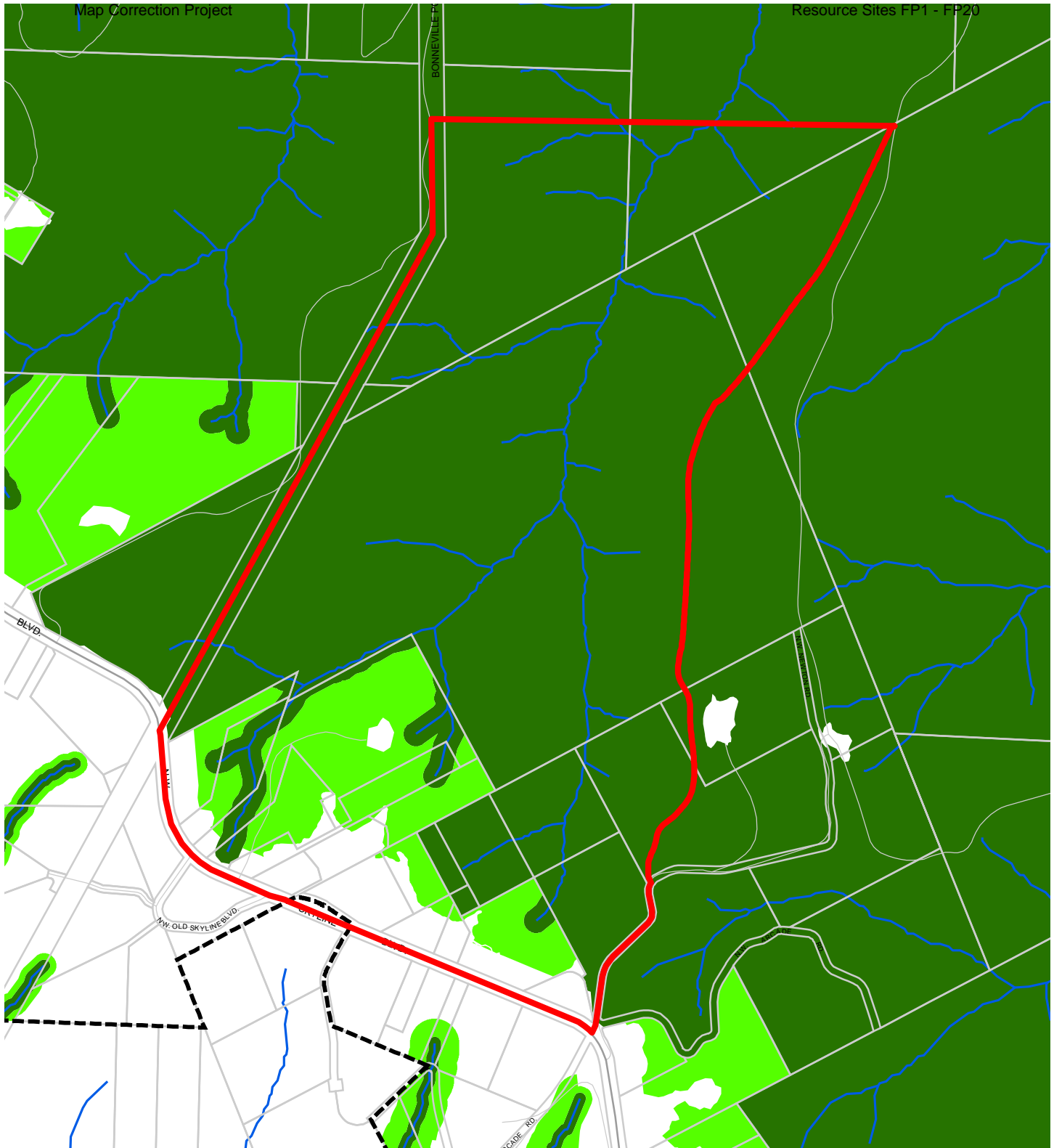
Updated: July 2021



- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.



Map I: DRAFT Proposed Environmental Overlay Zones

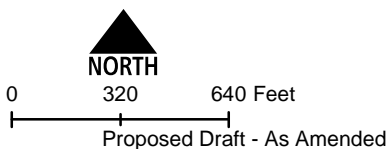
Resource Site: FP7

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Natural Resource Description

Within resource site FP7 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: Forest Park (O, B, M, C, S, P, E)

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 FP7	
	Study Area
Stream (Miles)	2.4
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	131.4
Woodland (acres)	0.0
Shrubland (acres)	2.3
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	129.7
* 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 headwaters of Newton Creek originate in this resource area. Forest cover at the site is a mix of seral stages of second growth western hemlock forest. The most prominent forest type is conifer-topping hardwood. Mature hardwood is found along the upper reaches of the creek and stands of mid-aged conifer and hardwood with young conifer are present on the upland slopes. Forest cover provides open space, scenic and recreational resources; serves as habitat for resident and migratory wildlife; and helps to balance the local water regimen. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. Non-native plants are present in some of the cleared areas along Skyline Boulevard.

The site provides high quality food and cover for resident and migratory wildlife. The creek headwaters provide a seasonal water source for aquatic organisms, amphibians and terrestrial vertebrates. Bird species identified at the site include the protected bald eagle (adult), pileated woodpecker and a variety of songbirds. Other wildlife species observed include the rough-skinned newt and coyote. The site's interspersion with surrounding forest allows for free migration of wildlife and increases its value as habitat. Traffic along Skyline Boulevard impedes migration to the southwest.

Table B: Quality of Natural Resource Functions in Resource Site FP7				
Resource Site (acres) = 138				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	53.8	42.4	37.4	133.6
percent total inventory site area	38.9%	30.7%	27.0%	96.6%
Wildlife Habitat*				
acres	131.2	0.0	0.0	131.2
percent total inventory site area	94.9%	0.0%	0.0%	94.9%
Special Habitat Areas**				
acres	81.6			
percent total inventory site area	59.0%			
Combined Total⁺				
acres	131.4	0.5	1.7	133.6
percent total inventory site area	95.0%	0.4%	1.2%	96.6%
* 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 site FP7, 0.8% 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 FP7			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
138.5	1.8	1.1	0.8%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP7. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP7 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 R20 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP7, 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*.

Natural Resources Protection 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 FP7, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of streams top-of-bank or wetlands and areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Apply a protection overlay zone ('p' zone) to areas of forest or woodland vegetation in the parcel zoned RF that is completely surrounded by Forest Park.
4. Outside of public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of streams top-of-bank; and areas of forest or woodland vegetation located on steep slopes and contiguous to but more than 50 feet from stream top-of-bank.
5. Outside of public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from wetlands.
6. Allow conflicting uses within all other areas containing significant natural resources.

There is one parcel zoned RF that has the same significant features and provides the same significant functions as the features and functions in Forest Park. The parcel is surrounded on all sides by the park and contiguous forest canopy. Additional impacts to the forest canopy should be avoided. This parcel is substantively different than the parcels zoned RF that are along the perimeter of Forest Park and are not surrounded on all sides by contiguous tree canopy.

Resource Site No.: FP8 Resource Site Name: Linnton Park

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 101

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.

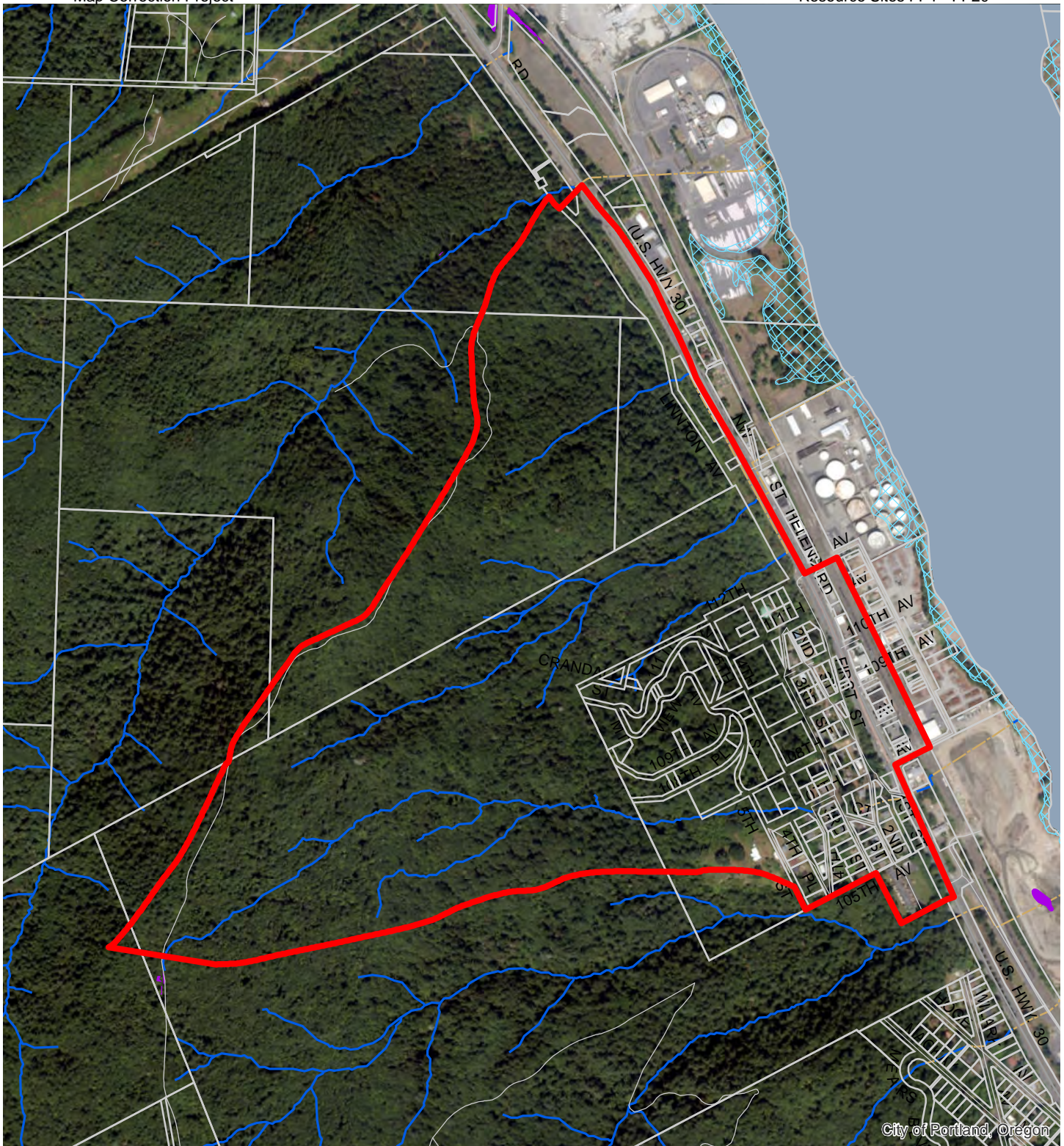
Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site FP8 includes the following:

Site (acres) 261.4

Base zones (acres)

CE	2.9
CM2	6.7
EG1	0.0
IH	0.0
OS	214.4
R10	6.7
R20	9.3
R5	21.3



Map A: Water Features

Resource Site: FP8

Updated: July 2021



0 445 890 Feet

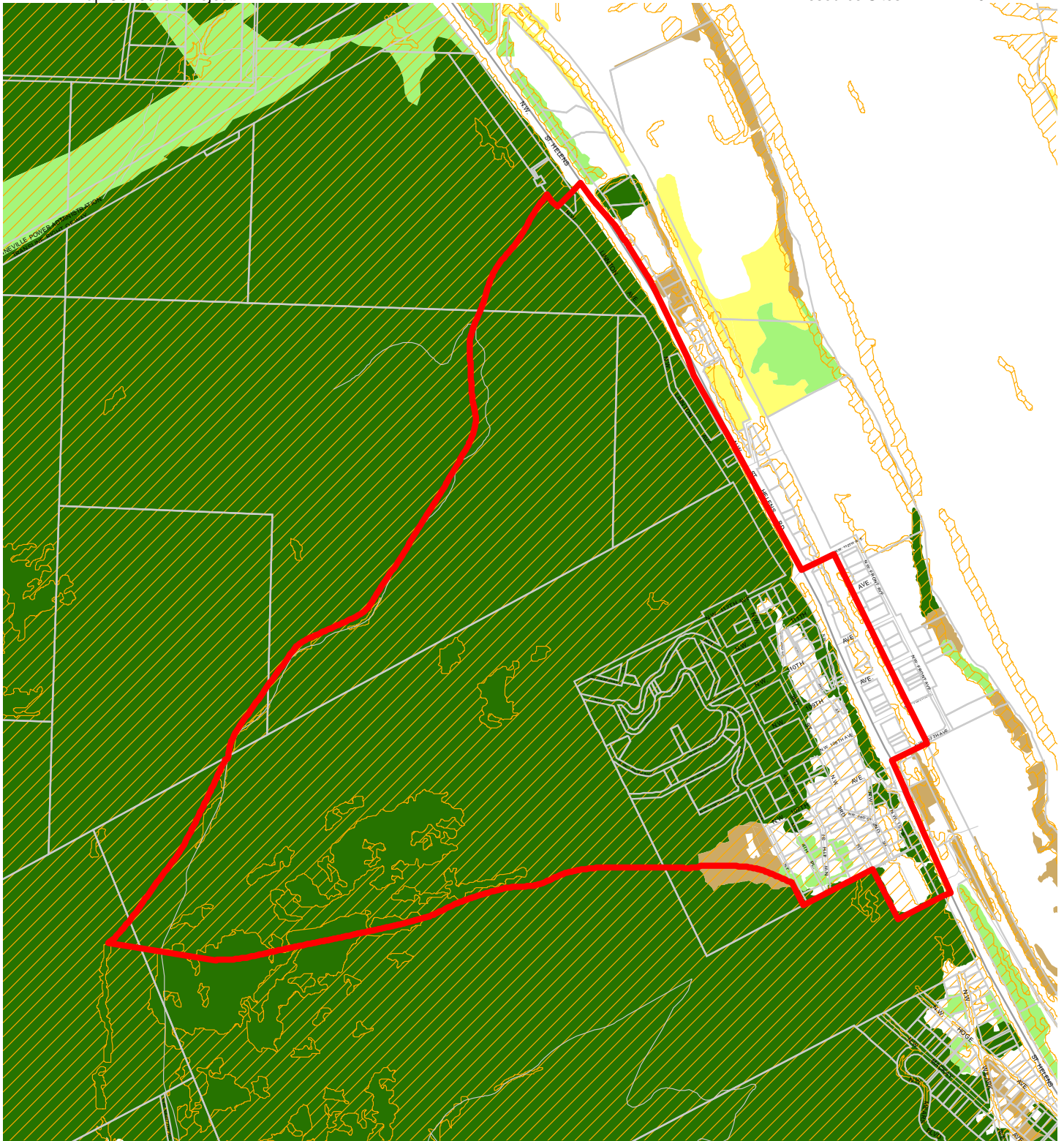
Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



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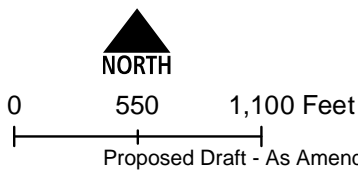
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP8

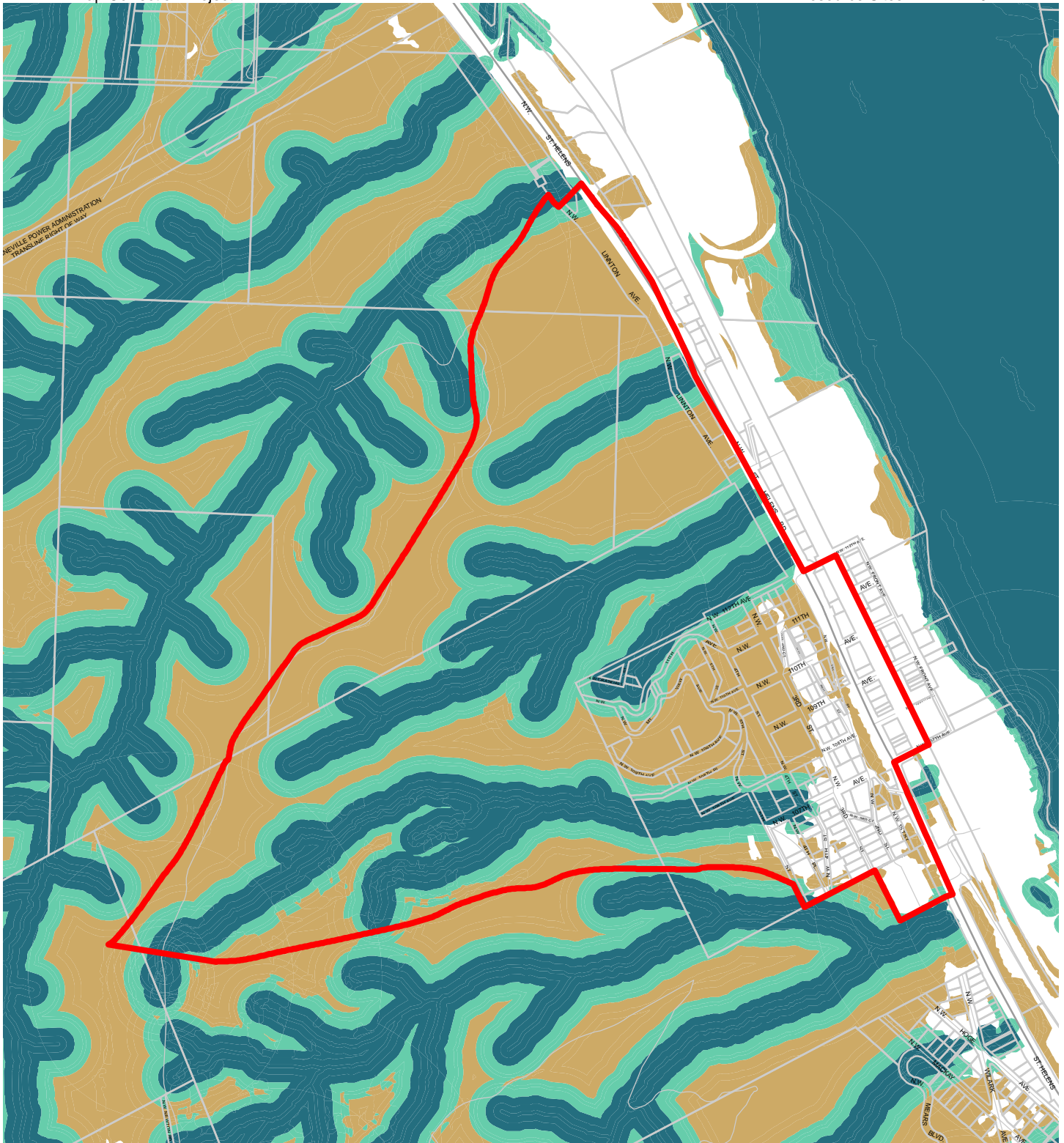
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous



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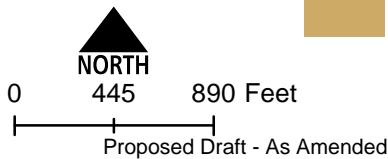


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP8**

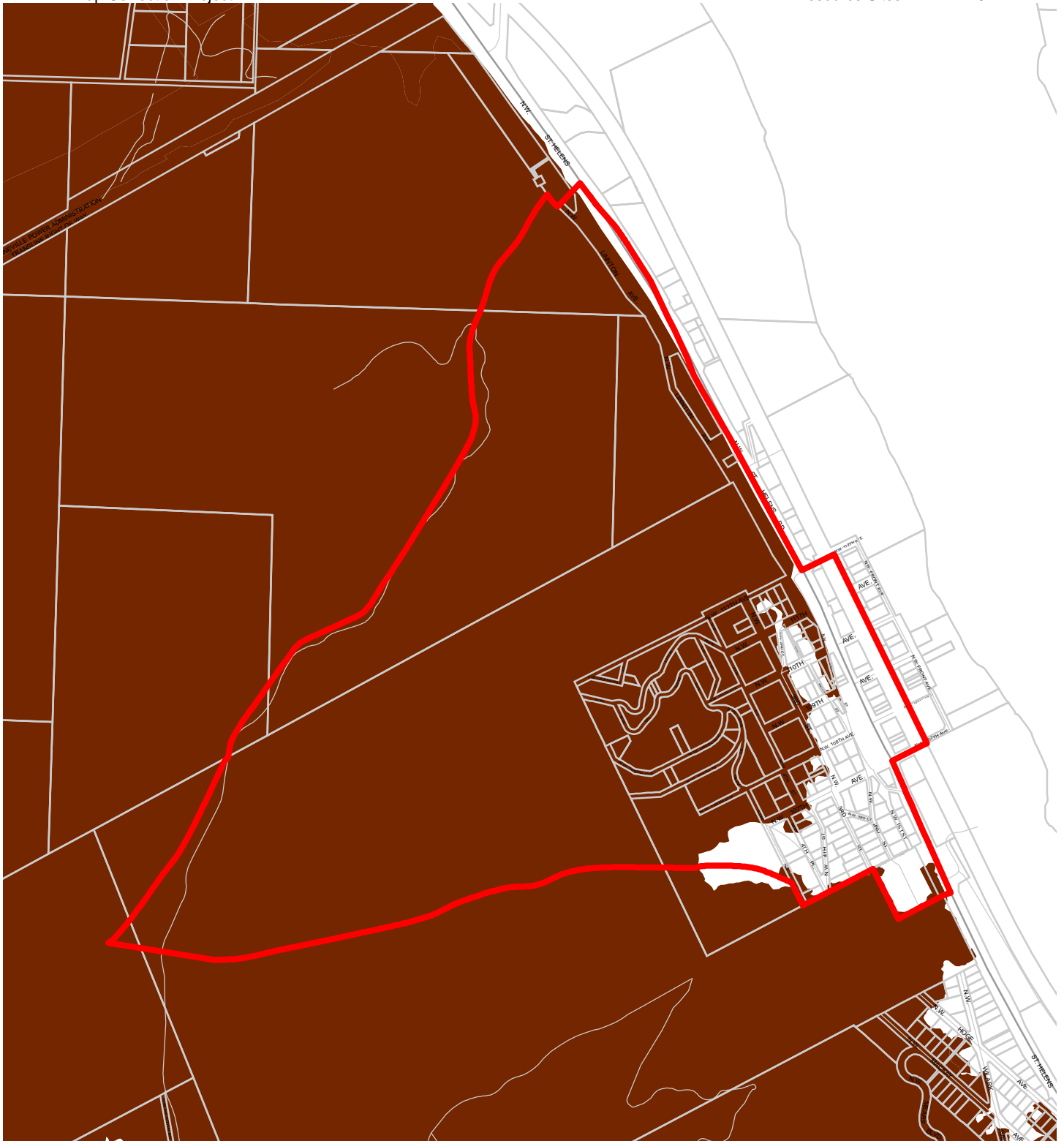
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



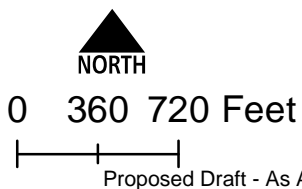
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July 2021









**Map E: Wildlife
Habitat Classification
Resource Site:
FP8**

Updated: July 2021



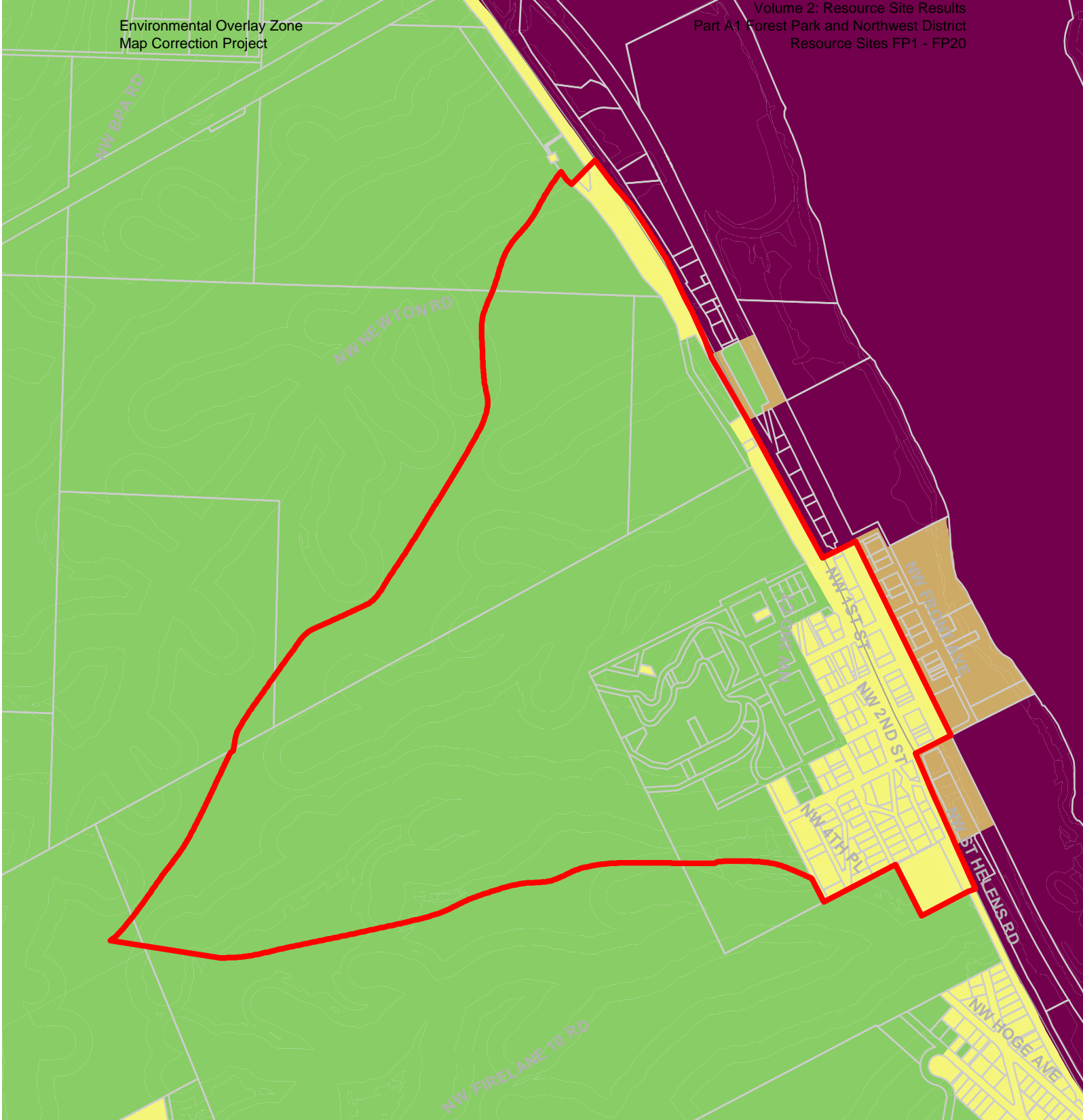
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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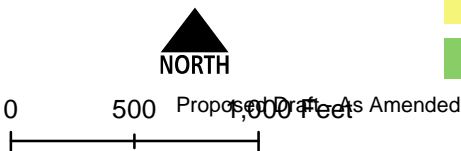
July 2021



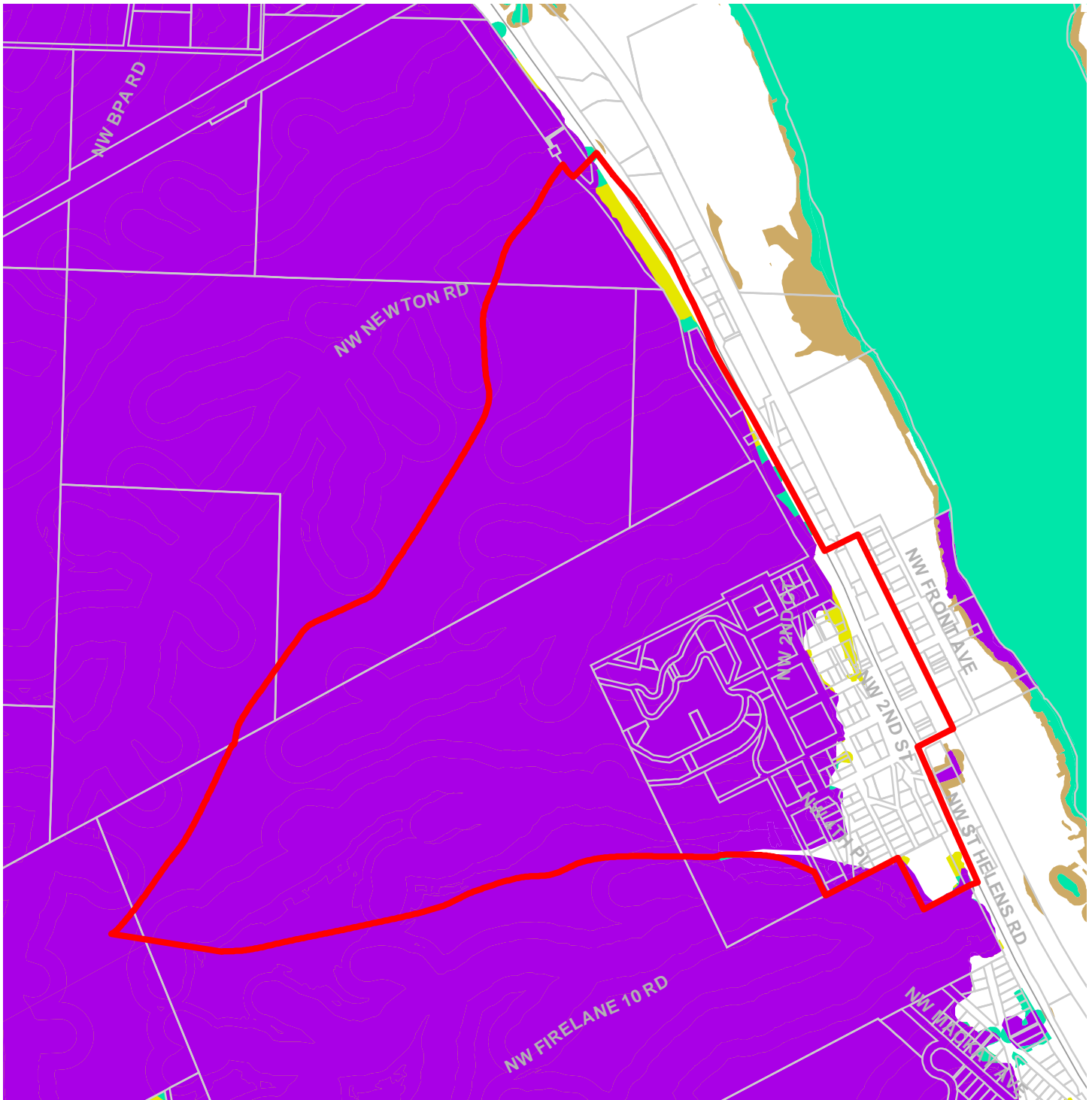
Map F: Urban Development Value (Title 13)
Resource Site: FP8

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

Updated: July 2021



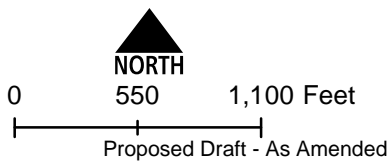
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP8

Updated: July 2021

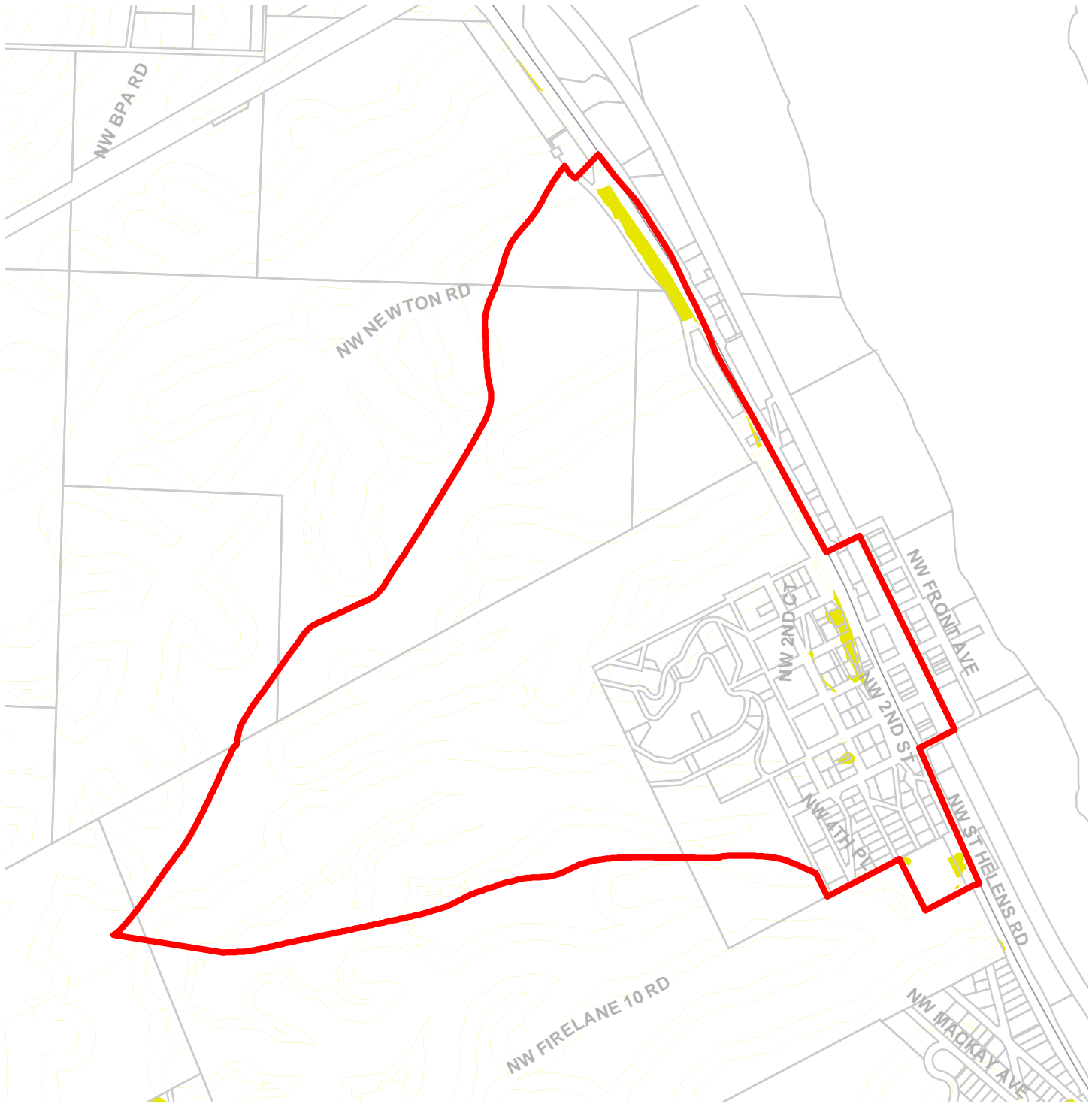


- Urban Service Boundary
- Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



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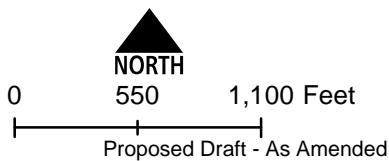
July 2021



Map H: Goal 5 Resources

Resource Site: FP8

Updated: July 2021

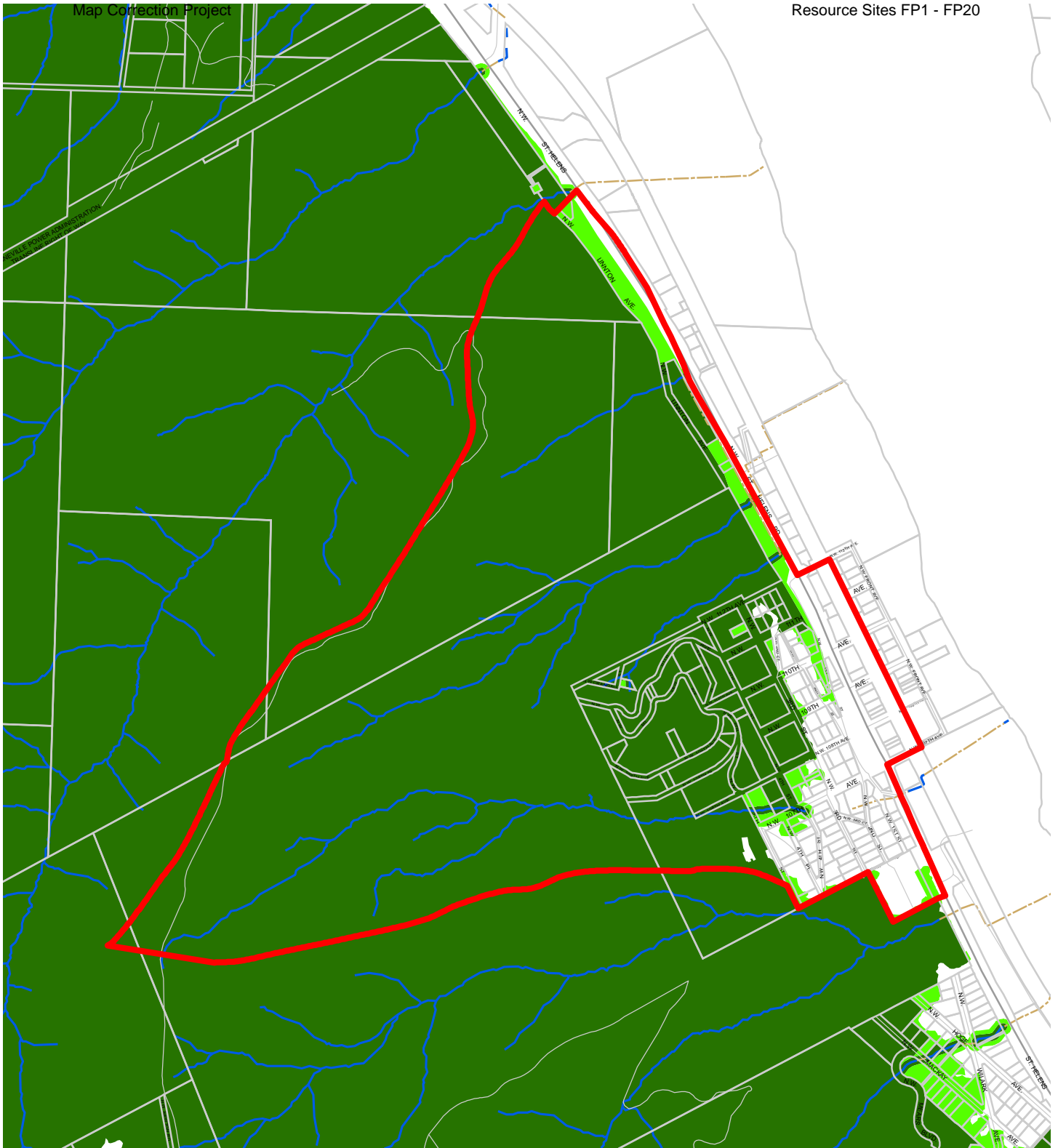


- Urban Service Boundary
- ▭ Resource Sites
- Goal 5 Significant Natural Resources



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

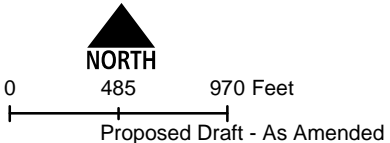
Map Correction Project



Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP8

Updated: July 2021



- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resource Description

Within resource site FP8 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: Forest Park (O, B, M, C, S, P, E)

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 FP8	
	Study Area
Stream (Miles)	3.0
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	231.3
Woodland (acres)	1.4
Shrubland (acres)	2.0
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	235.4
* 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 site's forest cover is composed of a mix of vegetation types, the most prominent of which is *conifer-topping hardwood*. Also present are *shrub* (along St. Helens Rd.), *mature hardwood* (along the creek) and *mid-aged conifer* (scattered on the slopes). Climax tree species are well established within the *mid-aged conifer* forest, and within one such stand is a patch of *old growth* on the hillside above Linnton. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. This resource area includes some Oregon white oak woodland/mixed forest, which is an infrequent habitat type in the city. It includes species such as *Viburnum ellipticum* and *Toxicodendron diversilobum* as dominant shrub layer components, as well as numerous less common herbaceous species. Non-native plants and industrial emissions have degraded the vitality of the plant community near St. Helens Rd.

This site provides high quality food and cover sources for wildlife in the area. Water is also available on a seasonal basis. Identified bird species include pileated woodpecker, screech and saw-whet owls, and sharp-shinned hawk. Interspersion with surrounding forest enhances the site's value as wildlife habitat; however, Highway 30 impedes migration to the east.

Table B: Quality of Natural Resource Functions in Resource Site FP8				
Resource Site (acres) = 261				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	70.7	57.4	106.6	234.7
percent total inventory site area	27.1%	21.9%	40.8%	89.8%
Wildlife Habitat*				
acres	229.5	0.0	0.0	229.5
percent total inventory site area	87.8%	0.0%	0.0%	87.8%
Special Habitat Areas**				
acres	229.4			
percent total inventory site area	87.8%			
Combined Total⁺				
acres	229.5	0.8	4.4	234.7
percent total inventory site area	87.8%	0.3%	1.7%	89.8%
* 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 site FP8, 3.7% 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 FP8			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
283.5	16.8	10.5	3.7%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP8. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP8 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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, R10 and R5 base zones. Commercial uses are allowed in the CM2 and CE base zone. Employment and industrial uses are allowed in the EG2 and IH base zones. Open space use is 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP8, 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.

Linnton town center is located in this resource site. There are commercial uses along Highway 30 and residential development at the base of the hills. 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*.

Natural Resources Protection 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 FP8, 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 or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP9 **Resource Site Name:** Linnton Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 99

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:

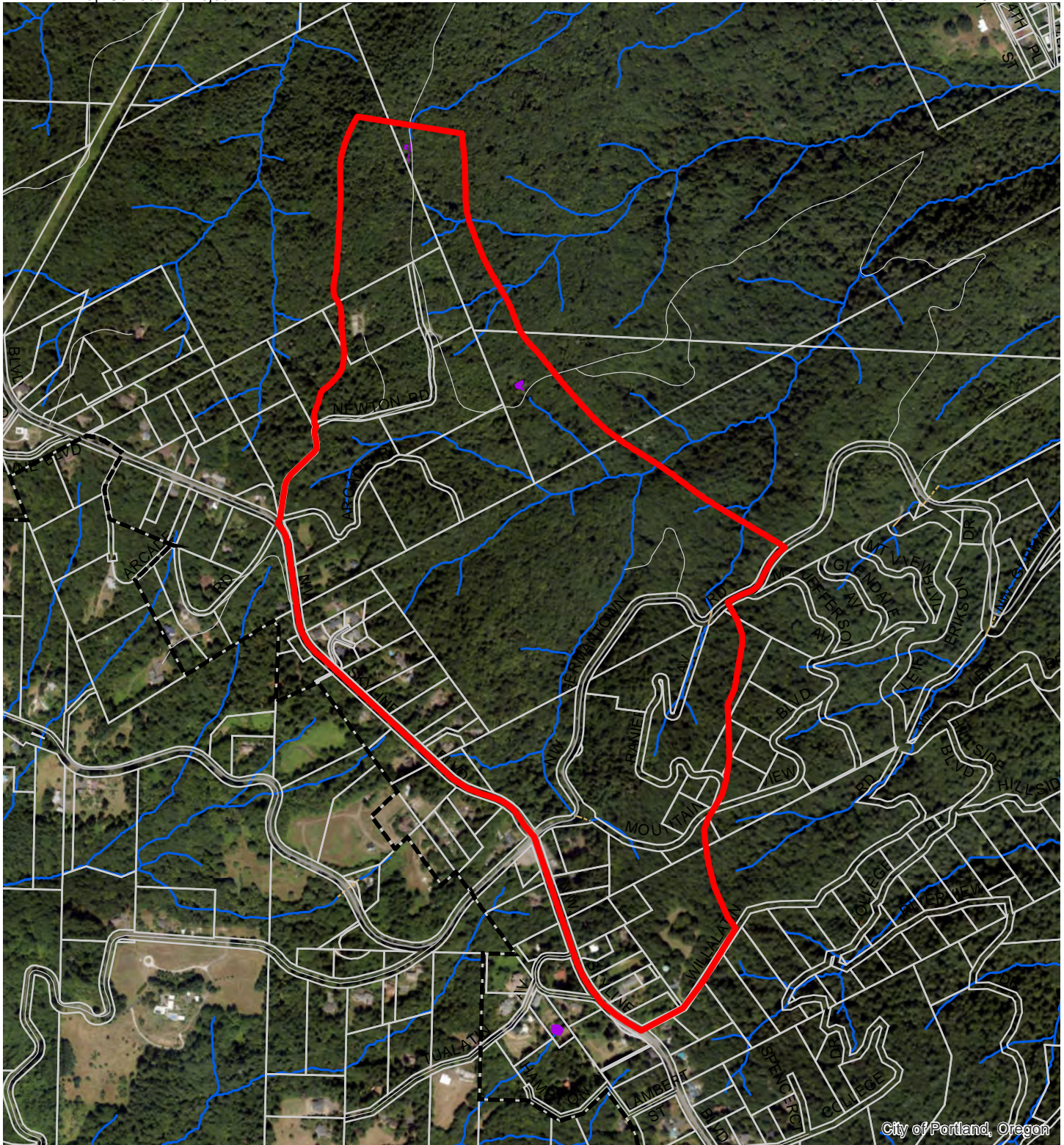
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP9 includes the following:

Site (acres)	208.0
Base zones (acres)	
CM1	0.7
OS	164.4
R20	29.1
RF	13.8



City of Portland, Oregon

Map A: Water Features

Resource Site: FP9

Updated: July 2021



0 460 920 Feet

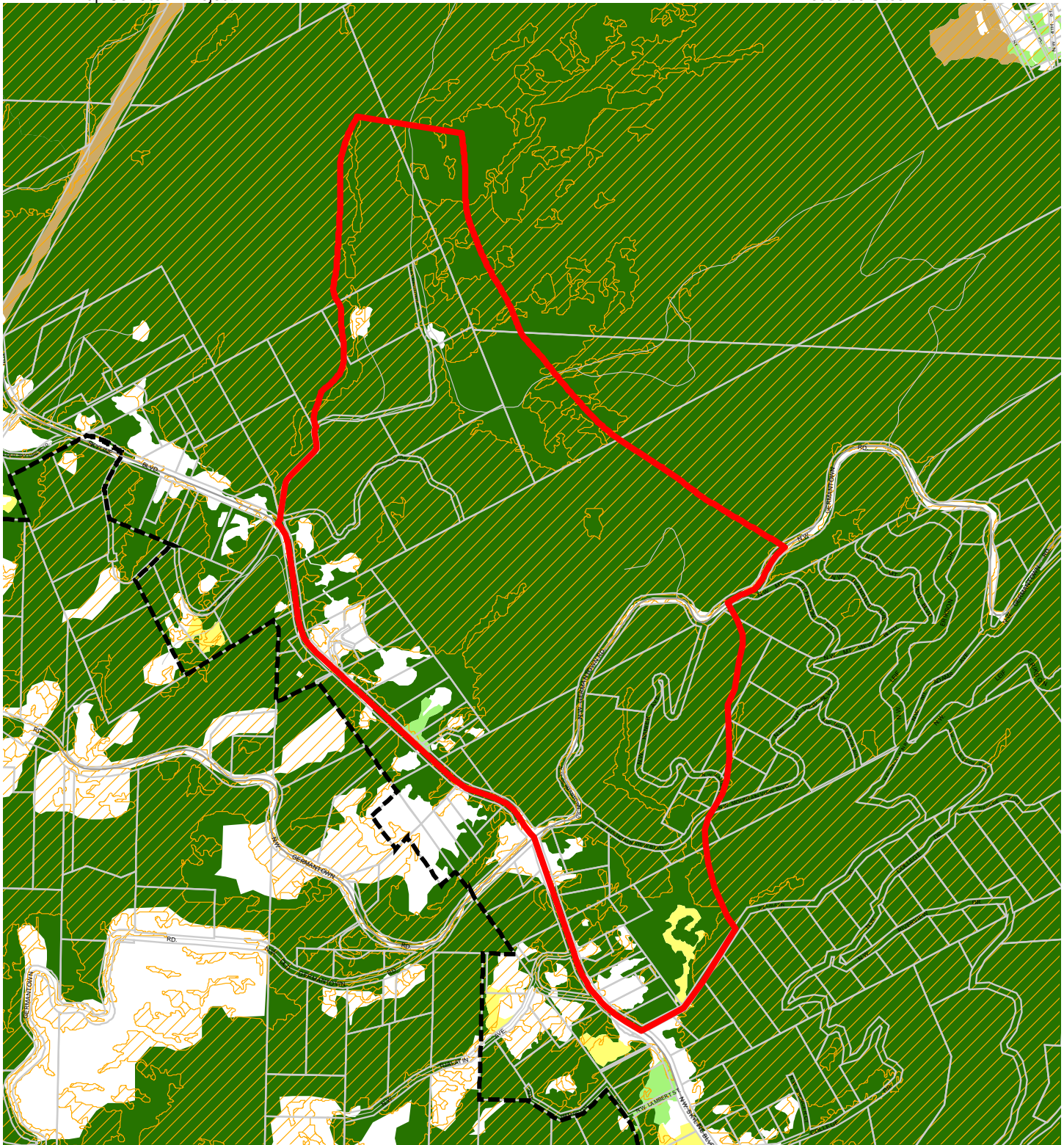
Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



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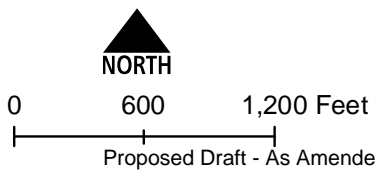
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP9

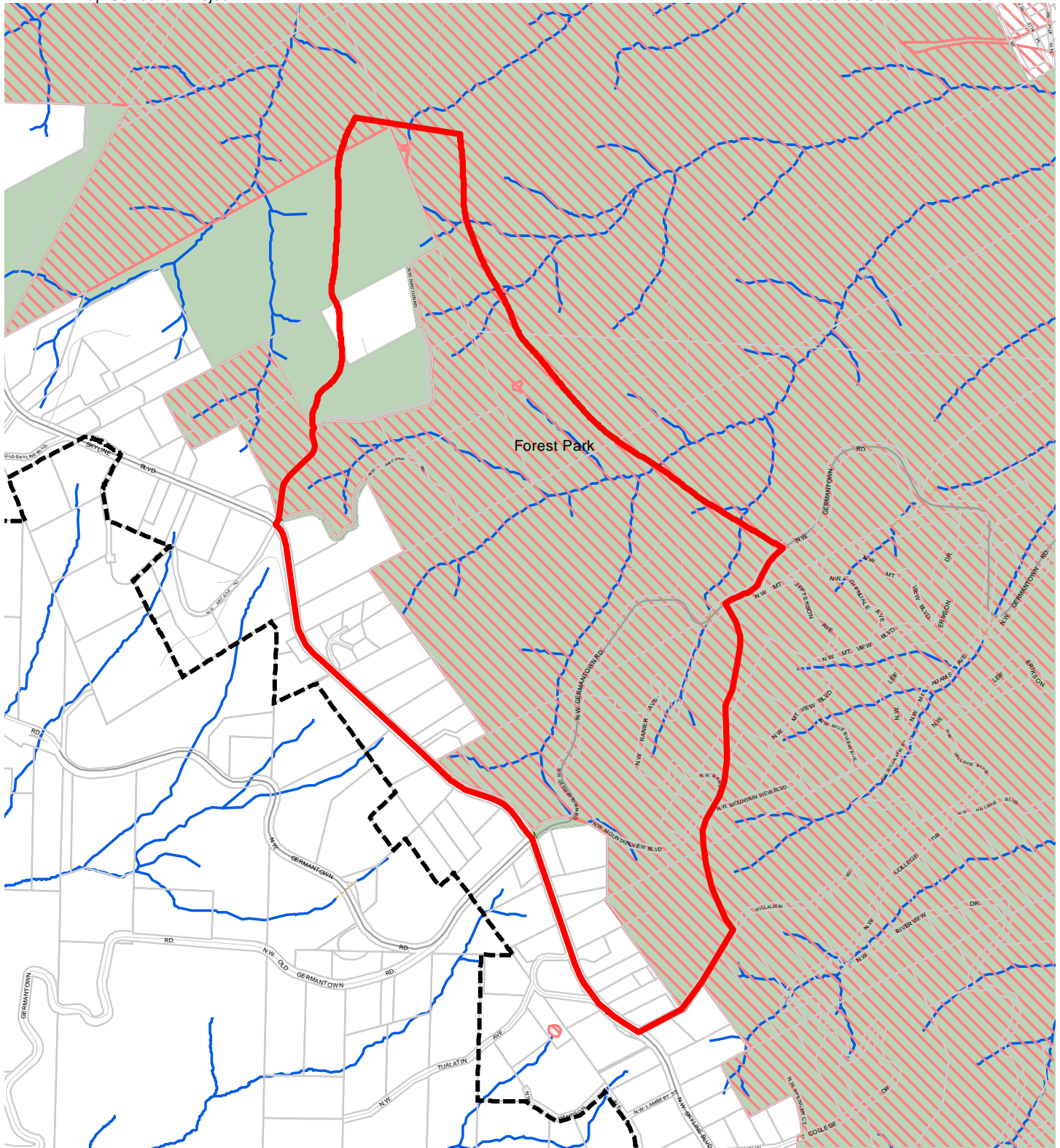
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

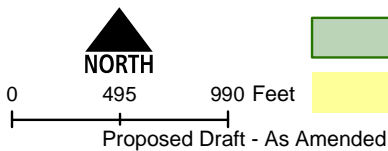


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**Map C: Special
Habitat Areas**
**Resource Site:
FP9**

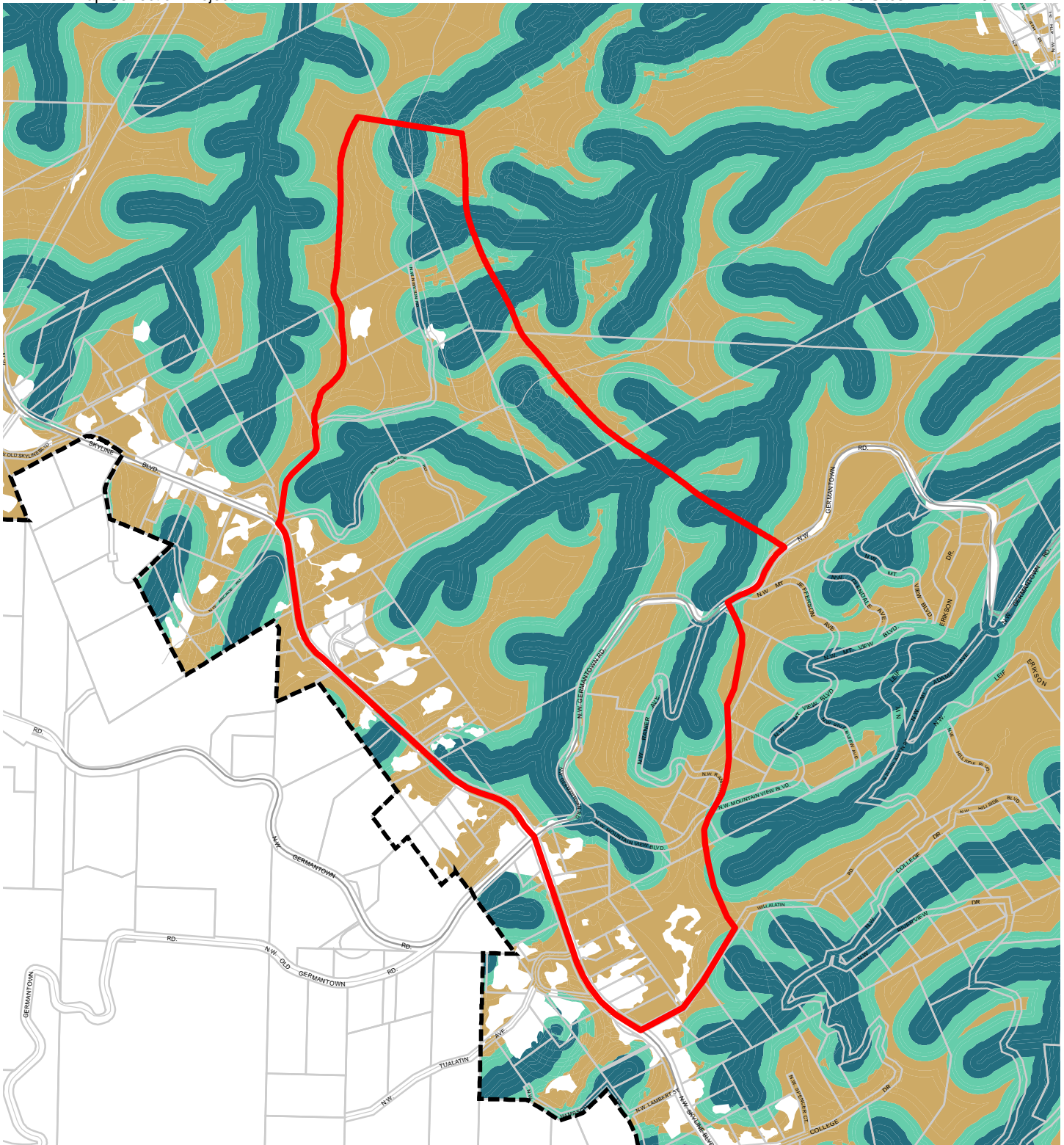
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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July 2021



**Map D: Riparian
Corridors Habitat
Classification**

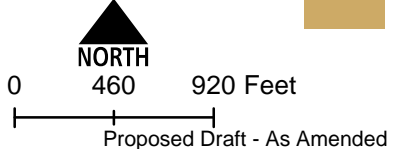
**Resource Site:
FP9**

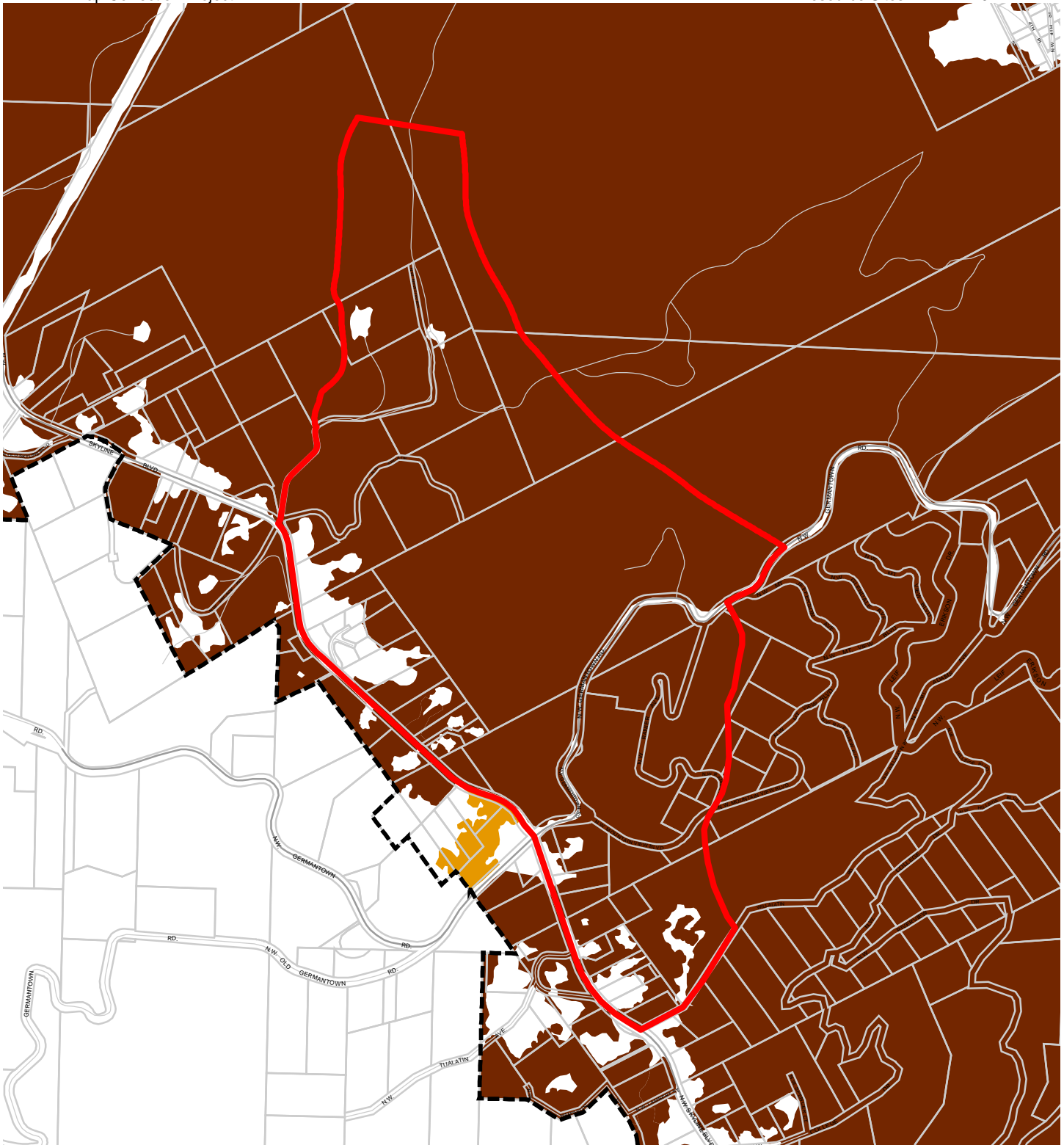
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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**Map E: Wildlife
Habitat Classification
Resource Site:
FP9**

Updated: July 2021

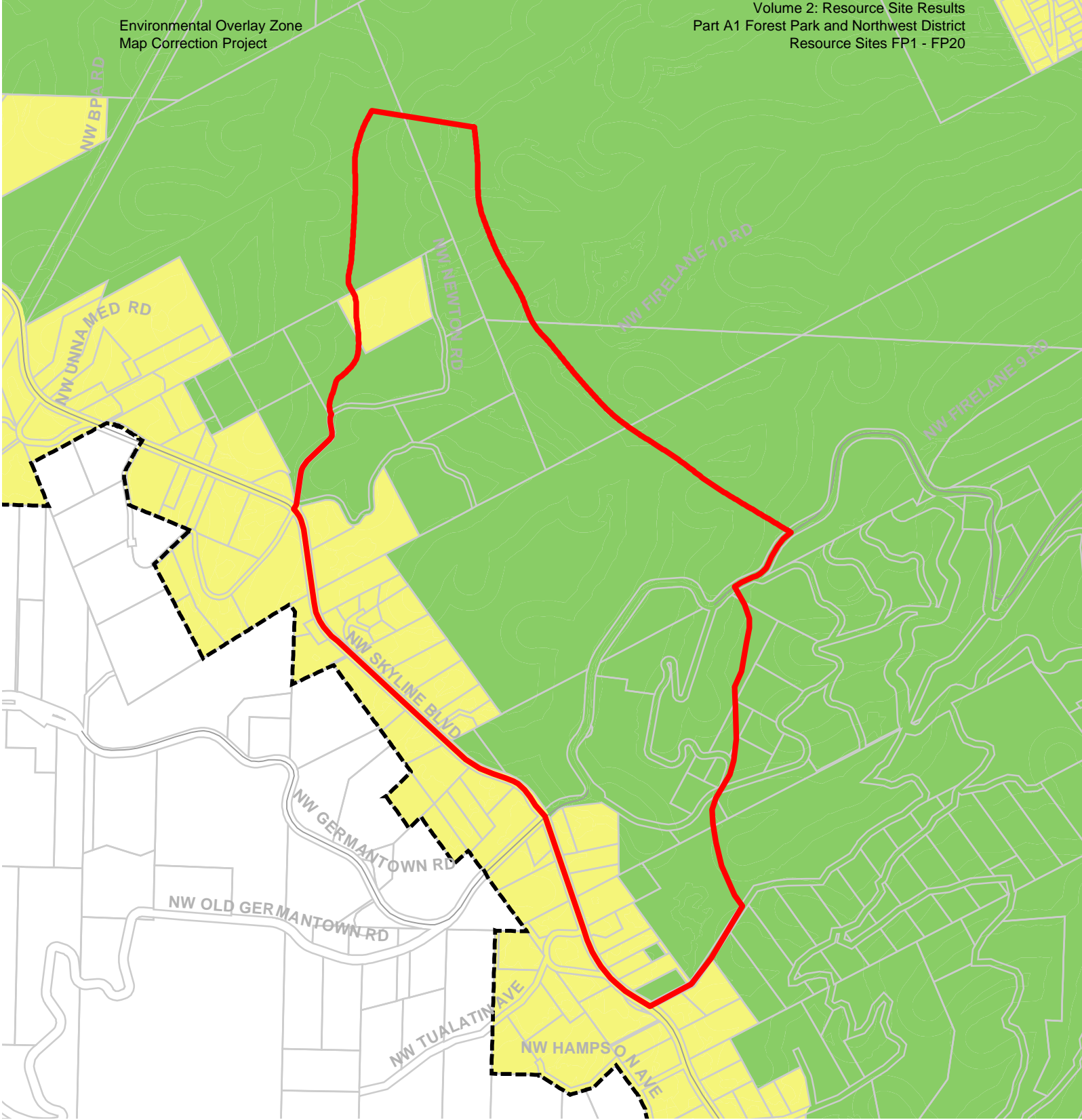


Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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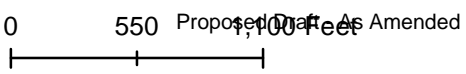


**Map F: Urban Development Value (Title 13)
Resource Site: FP9**

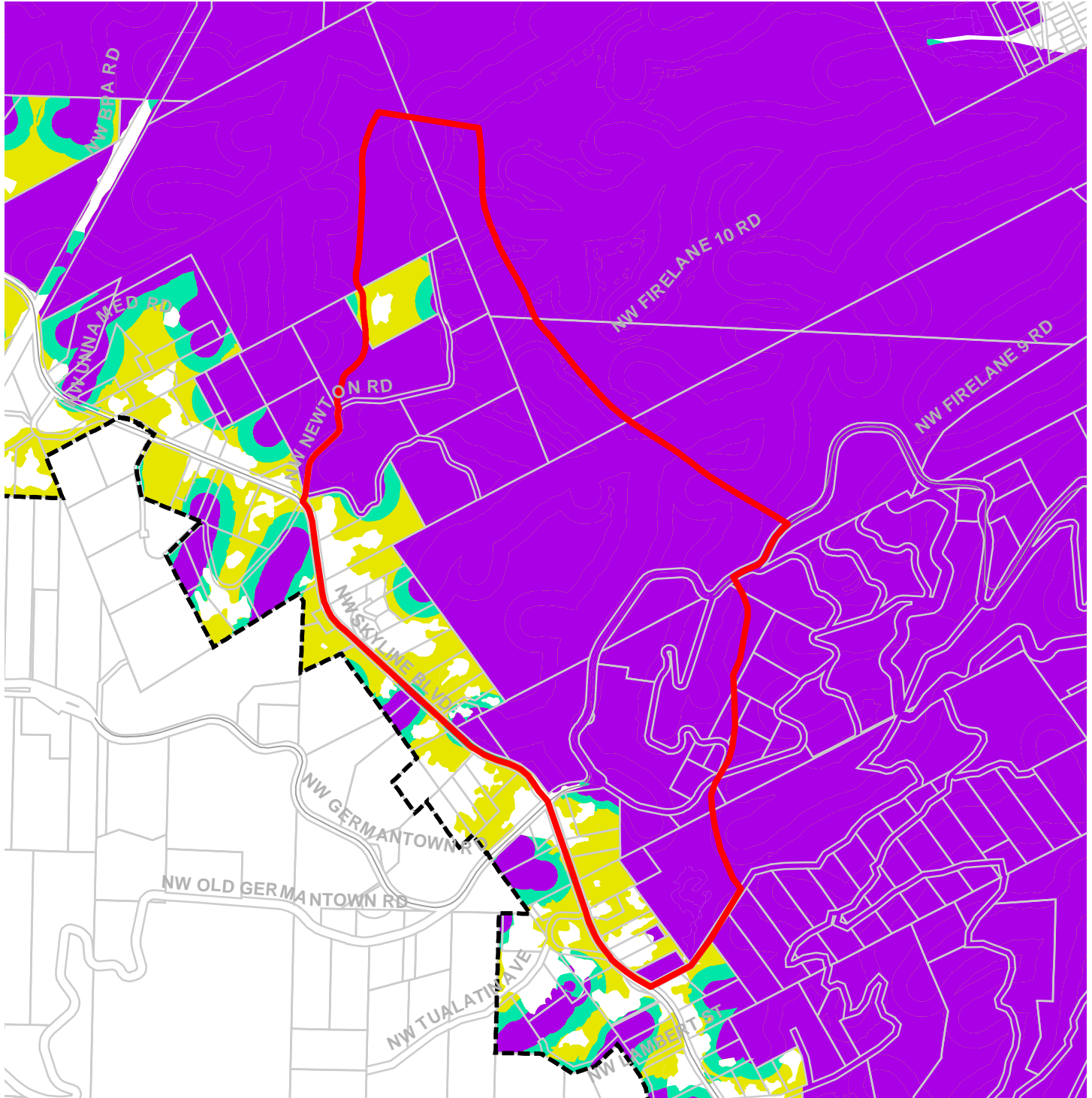
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



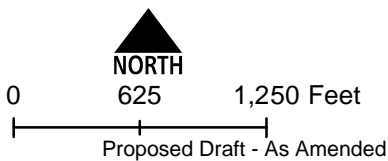
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP9

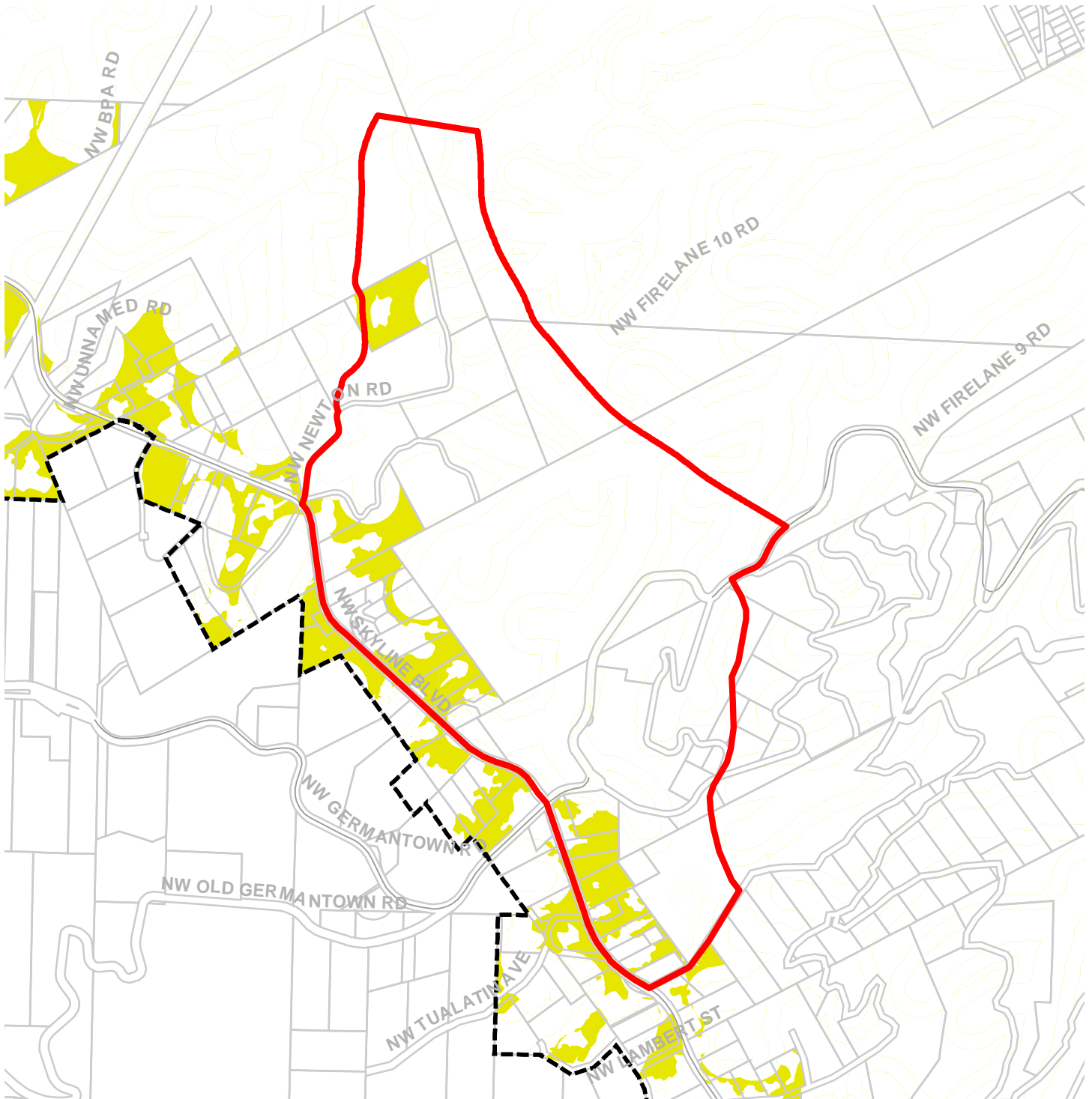
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources






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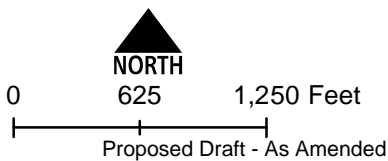


Map H: Goal 5 Resources

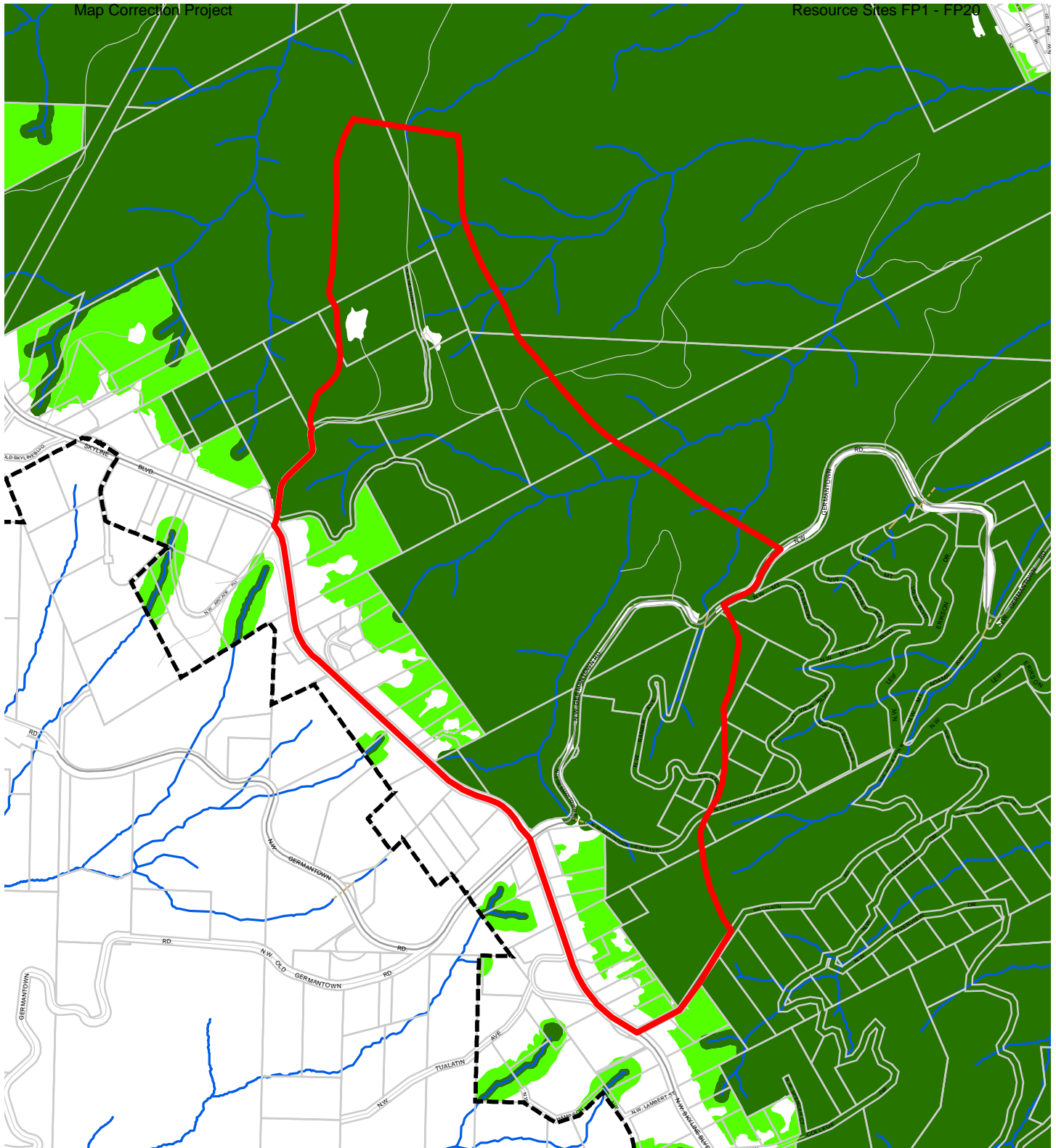
Resource Site: FP9

Updated: July 2021

-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



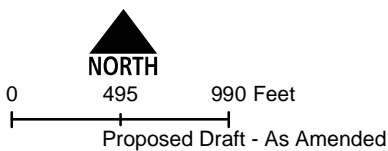
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Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP9**

Updated: July 2021



- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resource Description

Within resource site FP9 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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 FP9	
	Study Area
Stream (Miles)	2.4
Wetlands (acres)	0.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	194.0
Woodland (acres)	0.6
Shrubland (acres)	0.0
Herbaceous (acres)	1.1
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	156.1
* 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%.	

The site’s vegetation is predominantly second growth western hemlock forest in the hardwood with young conifer successional stage. Mid-aged conifer, conifer-topping hardwood and shrub stages are also represented at the site. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem.

The Linnton Creek headwaters and the palustrine wetland provide a valuable upland water source for terrestrial wildlife. Game trails are evident at this site and large mammals have been observed using them as a migration corridor to and from nearby foraging areas. Traffic along Germantown Road poses a significant threat the migrating wildlife.

Table B: Quality of Natural Resource Functions in Resource Site FP9				
Resource Site (acres) = 208				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	60.9	50.7	83.3	194.9
percent total inventory site area	29.3%	24.4%	40.0%	93.7%
Wildlife Habitat*				
acres	191.7	0.1	0.0	191.8
percent total inventory site area	92.2%	0.0%	0.0%	92.2%
Special Habitat Areas**				
acres	151.2			
percent total inventory site area	72.7%			
Combined Total⁺				
acres	191.7	0.3	3.0	195.0
percent total inventory site area	92.2%	0.1%	1.4%	93.7%
* 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 site FP9, 1.3% 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 FP9			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
208	4.7	2.6	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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP9. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP9 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 R20 base zones. Commercial uses are allowed in the CM1 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP9, 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*.

Natural Resources Protection 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 FP9, 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, and land within 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetland or within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Apply a protection overlay zone ('p' zone) to areas of forest or woodland vegetation in the parcel zoned RF that is completely surrounded by Forest Park.
4. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
5. Allow conflicting uses within all other areas containing significant natural resources.

There is one parcel zoned RF has the same significant features and provides the same significant functions as the features and functions in Forest Park. The parcel is surrounded on all sides by the park and contiguous forest canopy. Additional impacts to the forest canopy should be avoided. This parcel is substantively different than the parcels zoned RF that are along the perimeter of Forest Park and are not surrounded on all sides by contiguous tree canopy.

Resource Site No.: FP10 **Resource Site Name:** Lower Linnton Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 100

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:

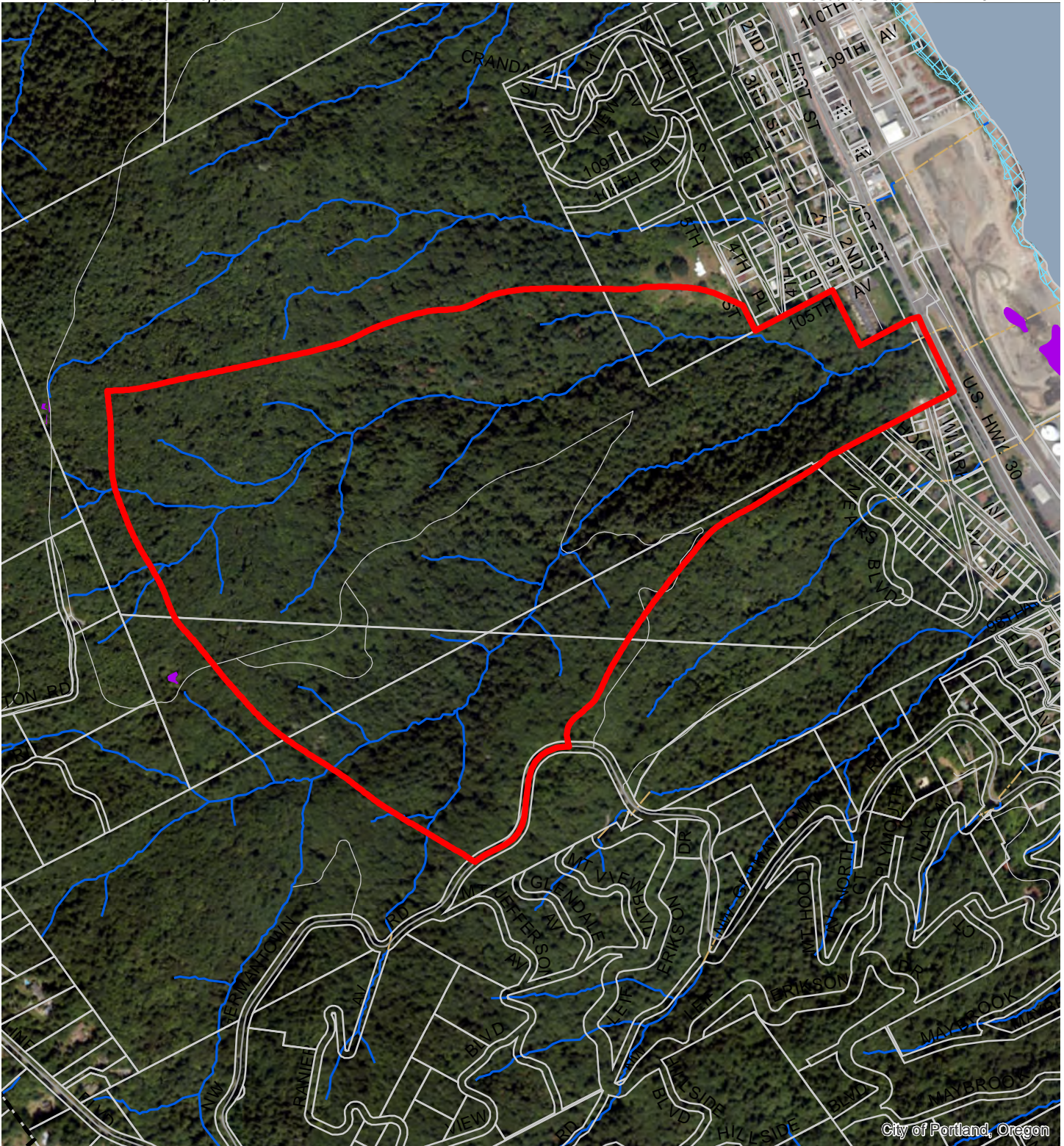
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title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

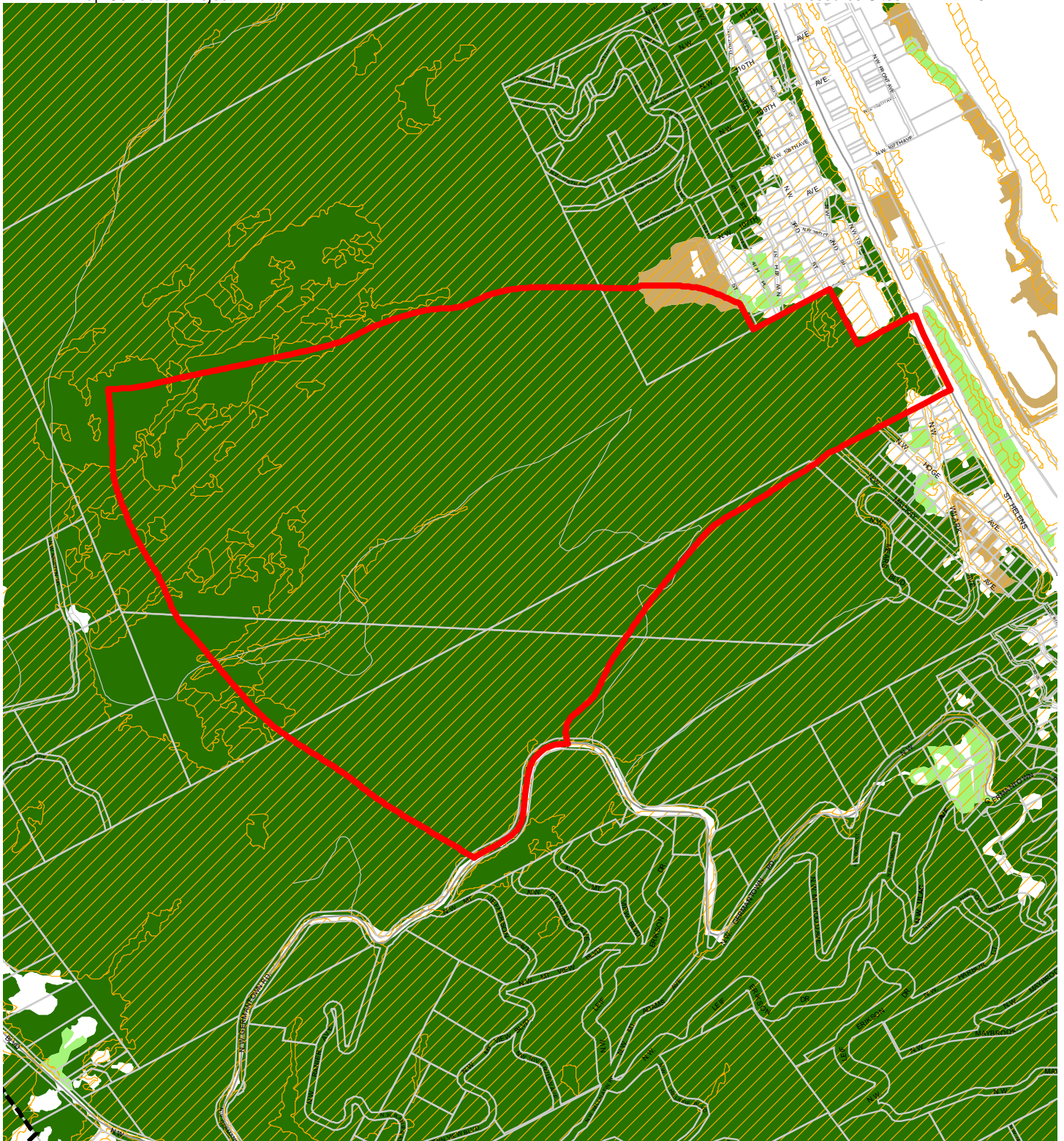
Following the maps, additional information about existing natural resource features and functions in the resource site is presented.

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

Resource site FP10 includes the following:

Site (acres)	185.5
Base zones (acres)	
OS	179.1
R20	6.4

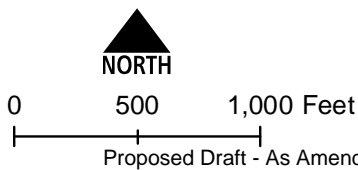












Map B: Vegetation and Steep Slopes

Resource Site: FP10

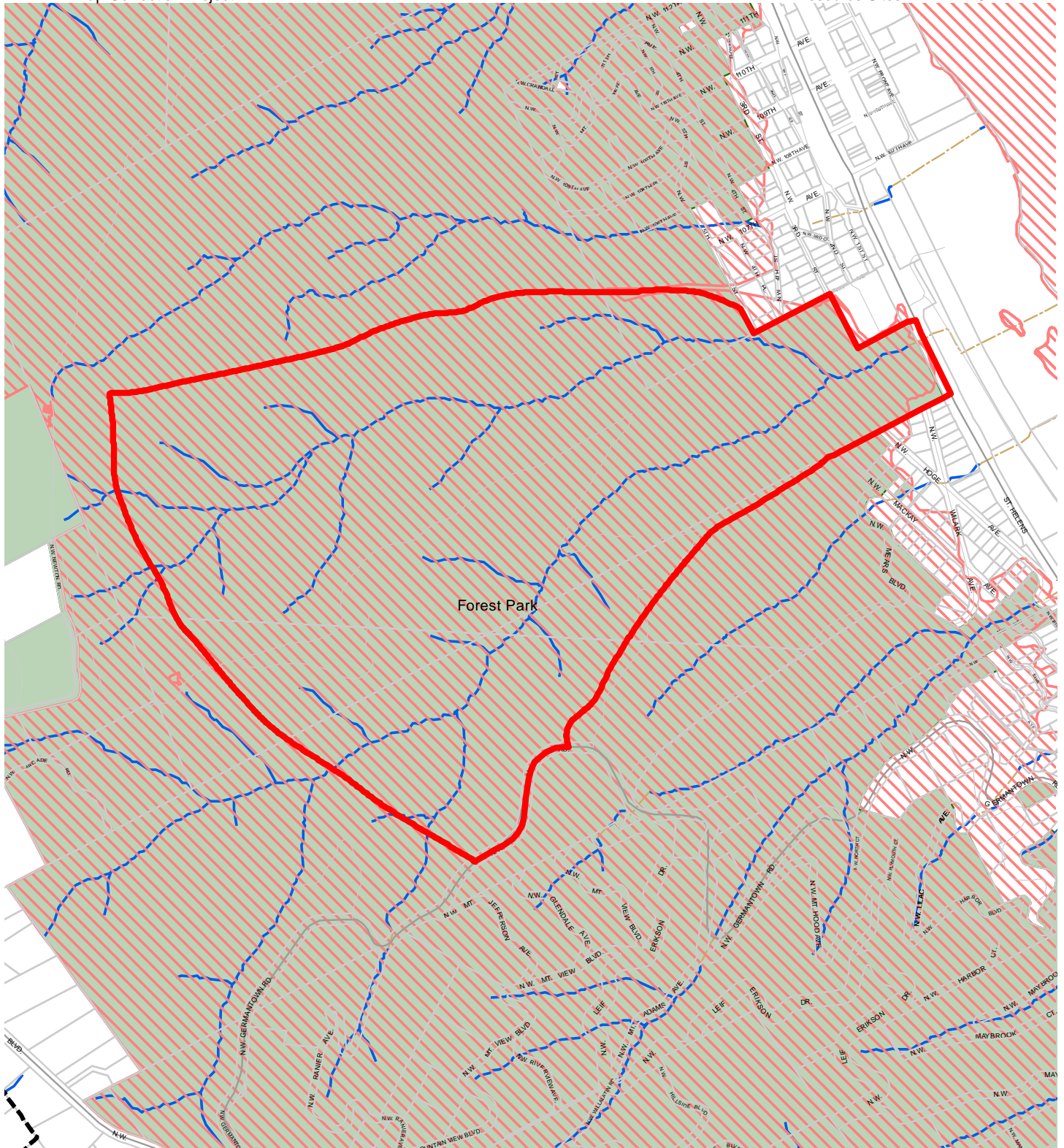
Updated: July 2021



-  Resource Sites
-  Urban Service Boundary
-  Taxlots
-  Slopes >25%
-  Forest
-  Woodland
-  Shrubland
-  Herbaceous

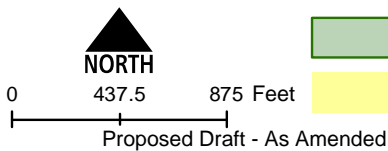


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**Map C: Special
Habitat Areas**
**Resource Site:
FP10**

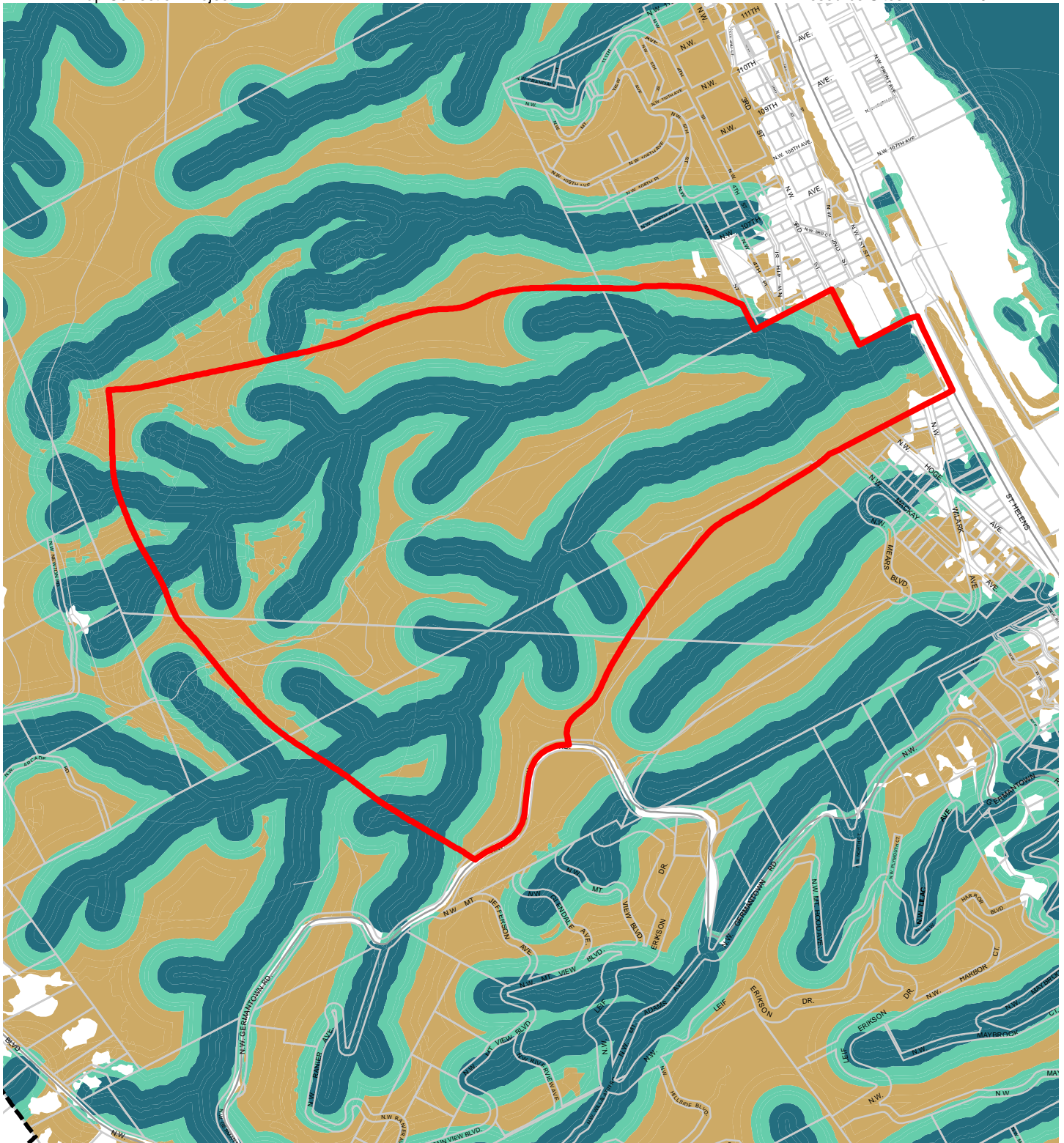
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

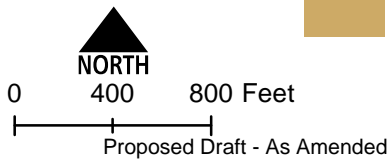
**Resource Site:
FP10**

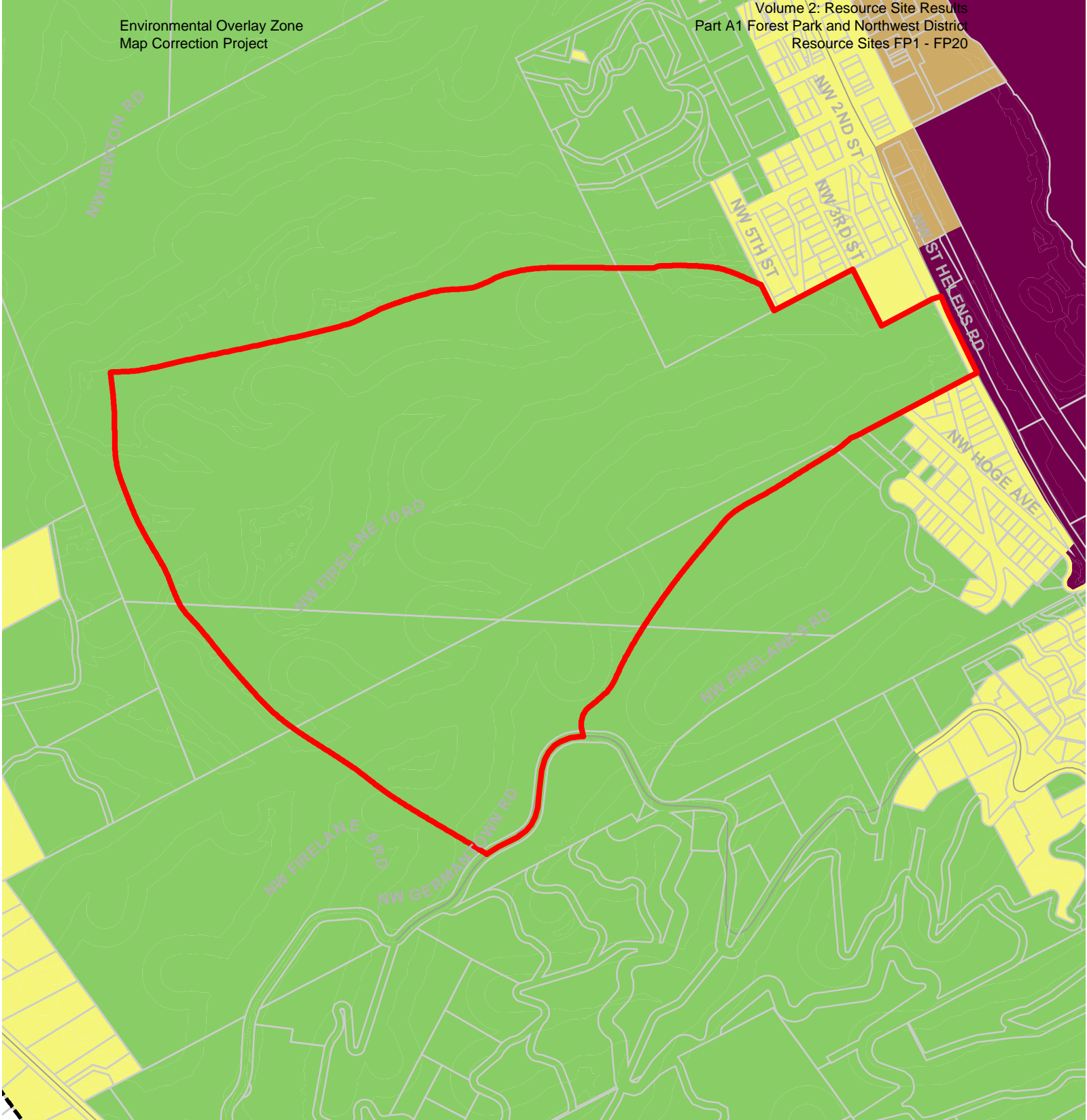
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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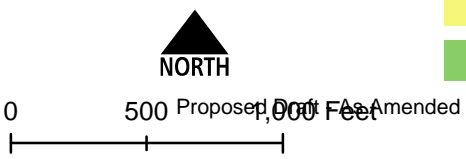


Map F: Urban Development Value (Title 13)
Resource Site: FP10

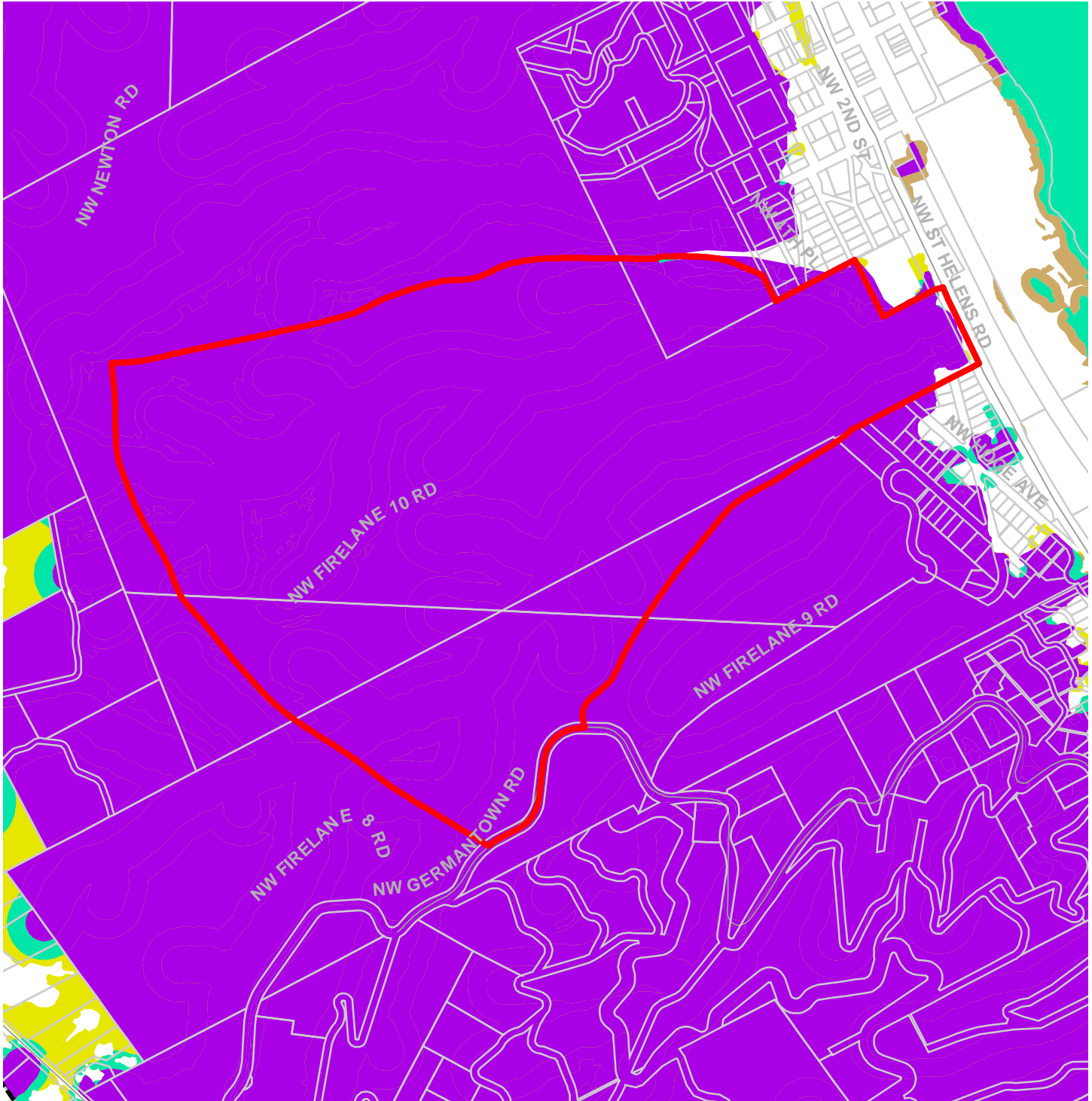
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and aids and services. To request these services, contact 503-823-7700, City July 2021 TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP10

Updated: July 2021



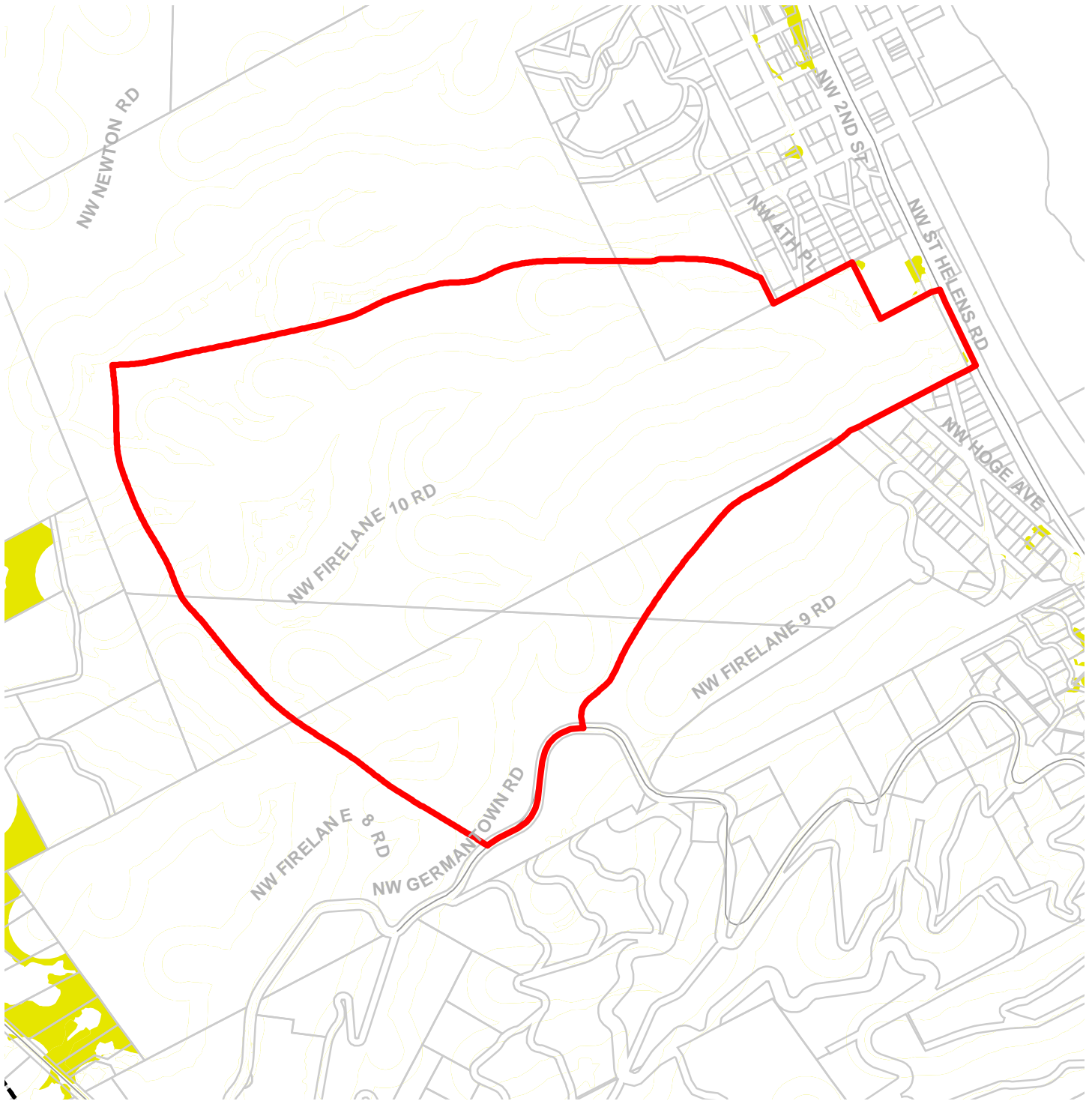
Proposed Draft - As Amended

-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



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July 2021



Map H: Goal 5 Resources

Resource Site: FP10

Updated: July 2021



Proposed Draft - As Amended

- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

Natural Resources Description

Within resource site FP10 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: Forest Park (O, B, M, C, S, P, E)

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 FP10	
	Study Area
Stream (Miles)	3.3
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	183.5
Woodland (acres)	0.0
Shrubland (acres)	1.1
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	169.2
* 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%.	

Note – This resource site contains no site-specific resource description. Please refer to the section E.1 natural resource description.

Table B: Quality of Natural Resource Functions in Resource Site FP10				
Resource Site (acres) = 186				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	74.3	58.1	52.3	184.6
percent total inventory site area	40.0%	31.3%	28.2%	99.5%
Wildlife Habitat*				
acres	183.5	0.0	0.0	183.5
percent total inventory site area	98.9%	0.0%	0.0%	98.9%
Special Habitat Areas**				
acres	184.5			
percent total inventory site area	99.5%			
Combined Total⁺				
acres	183.5	0.7	0.4	184.6
percent total inventory site area	98.9%	0.4%	0.2%	99.5%
<p>* 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.</p>				

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 site FP10, 0.2% 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 FP10			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
181.3	0.5	0.4	0.2%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP10. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

All of the significant natural resources within resource site FP10 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required.

Natural Resources Protection 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 FP10, 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, and land within 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP11 **Resource Site Name:** Upper Clark-Wilson Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 98

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 FP11 includes the following:

Site (acres)	268
Base zones (acres)	
IH	0.0
OS	239.6
R10	8.8
R20	10.6
R5	0.0
R7	8.9
RM1	0.0

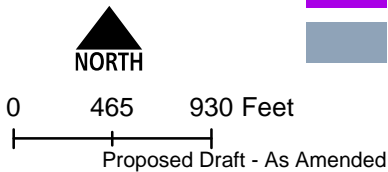


City of Portland, Oregon

Map A: Water Features

Resource Site: FP11

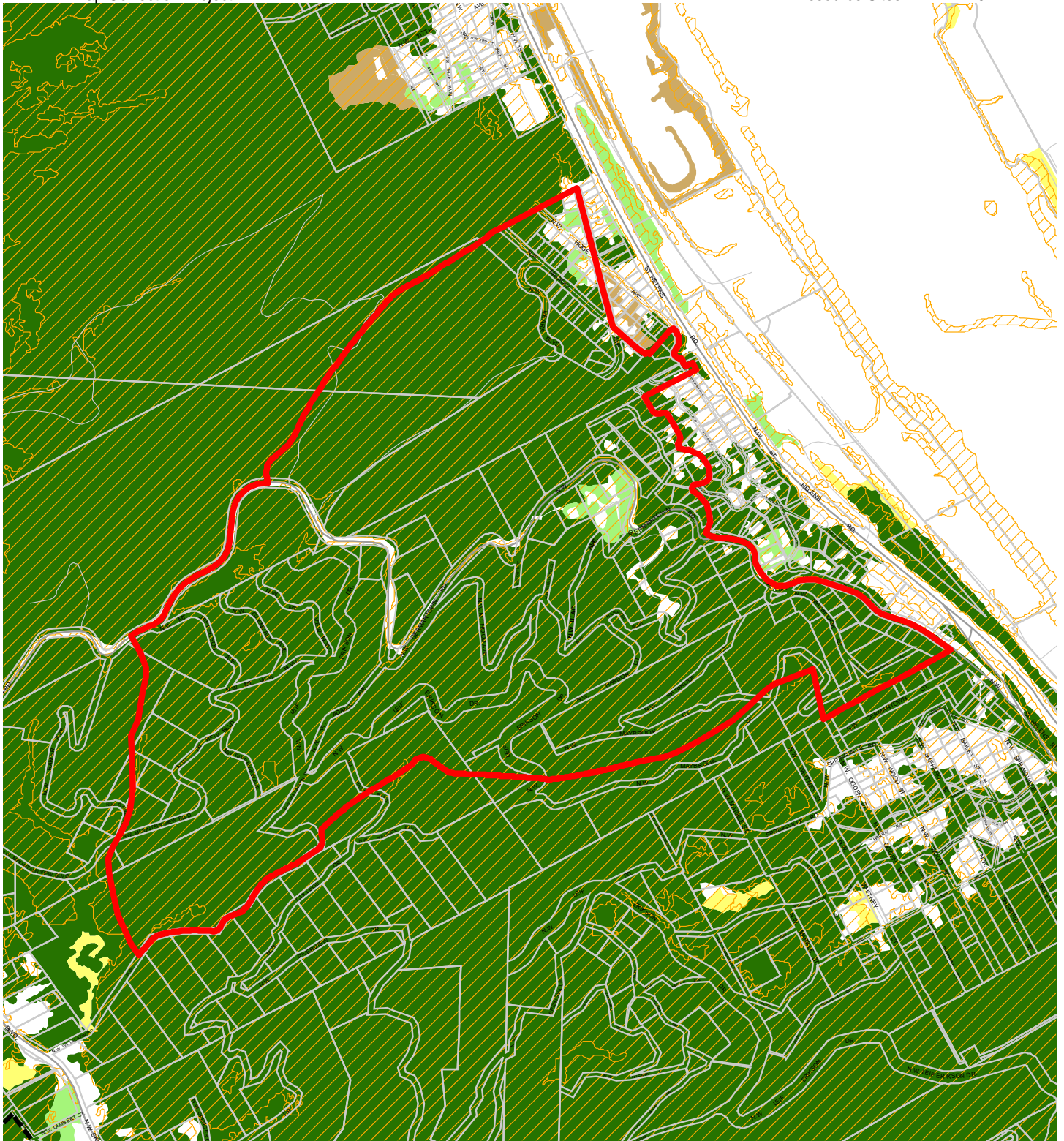
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



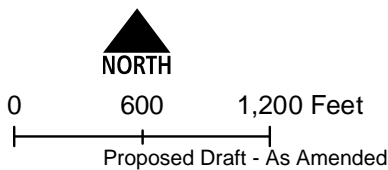
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
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Map B: Vegetation and Steep Slopes

**Resource Site:
FP11**

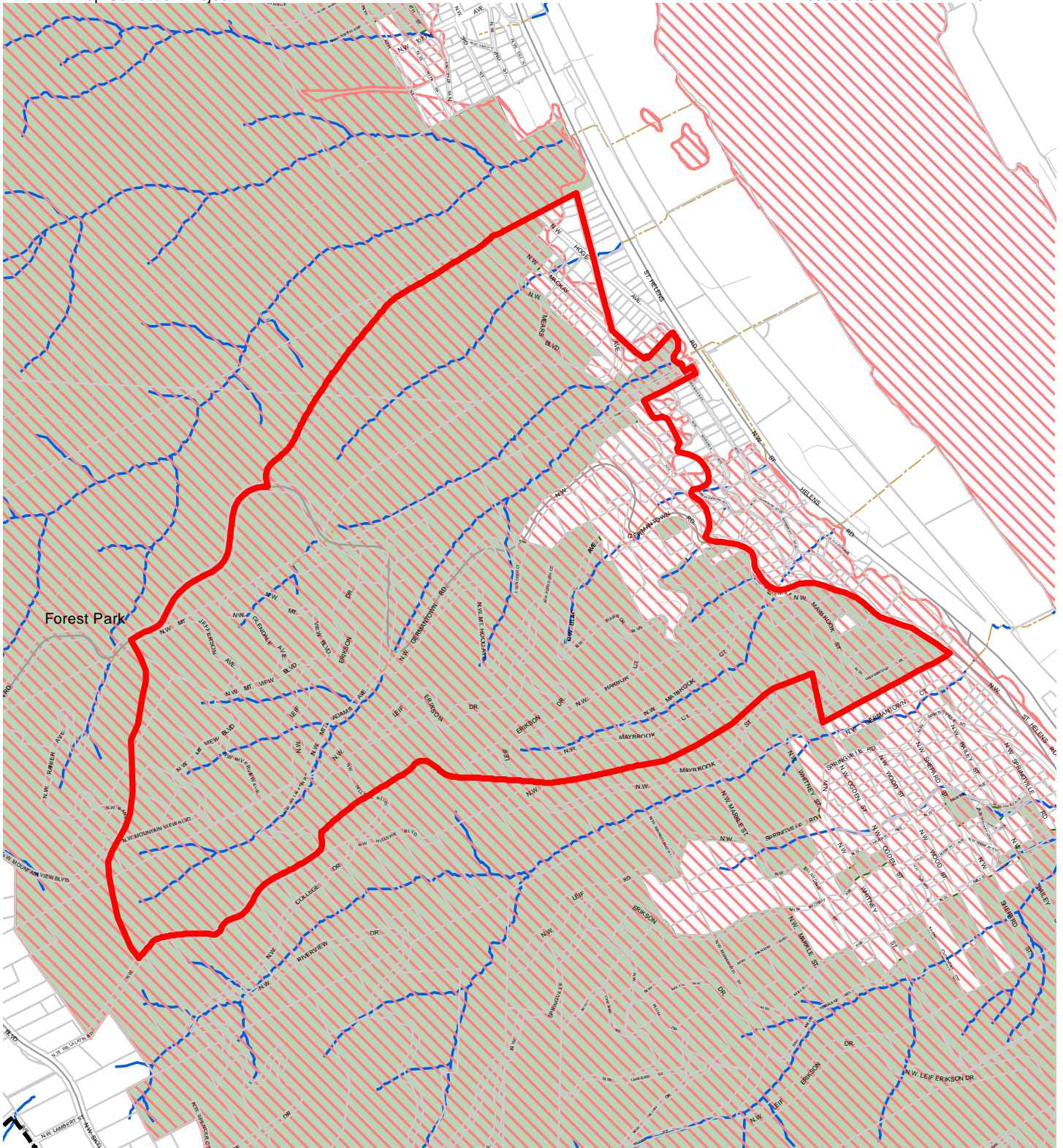
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

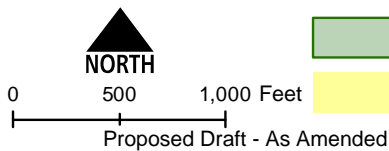


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**Map C: Special
Habitat Areas**
**Resource Site:
FP11**

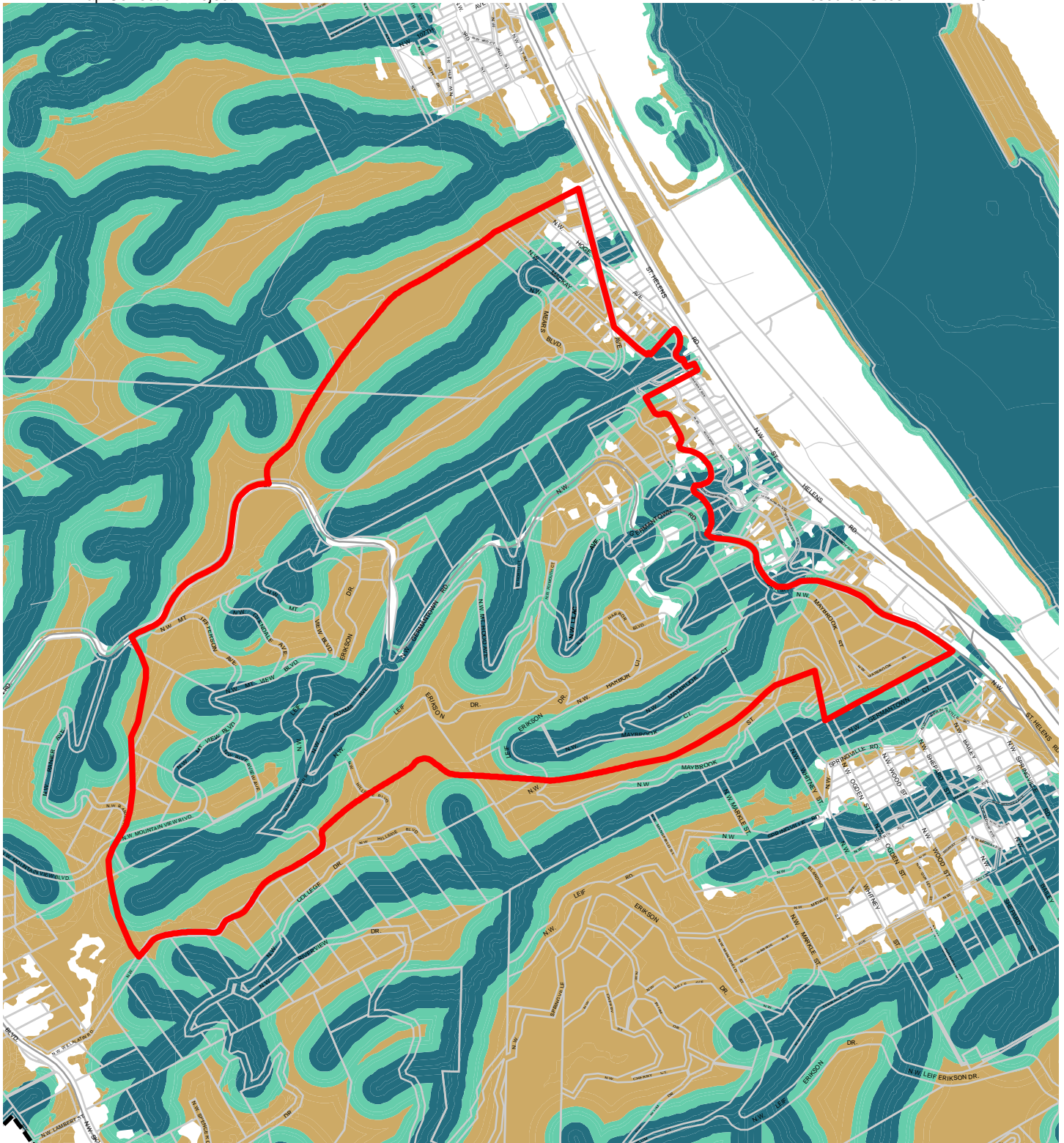
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- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

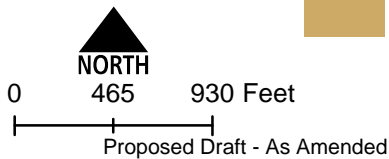
**Resource Site:
FP11**

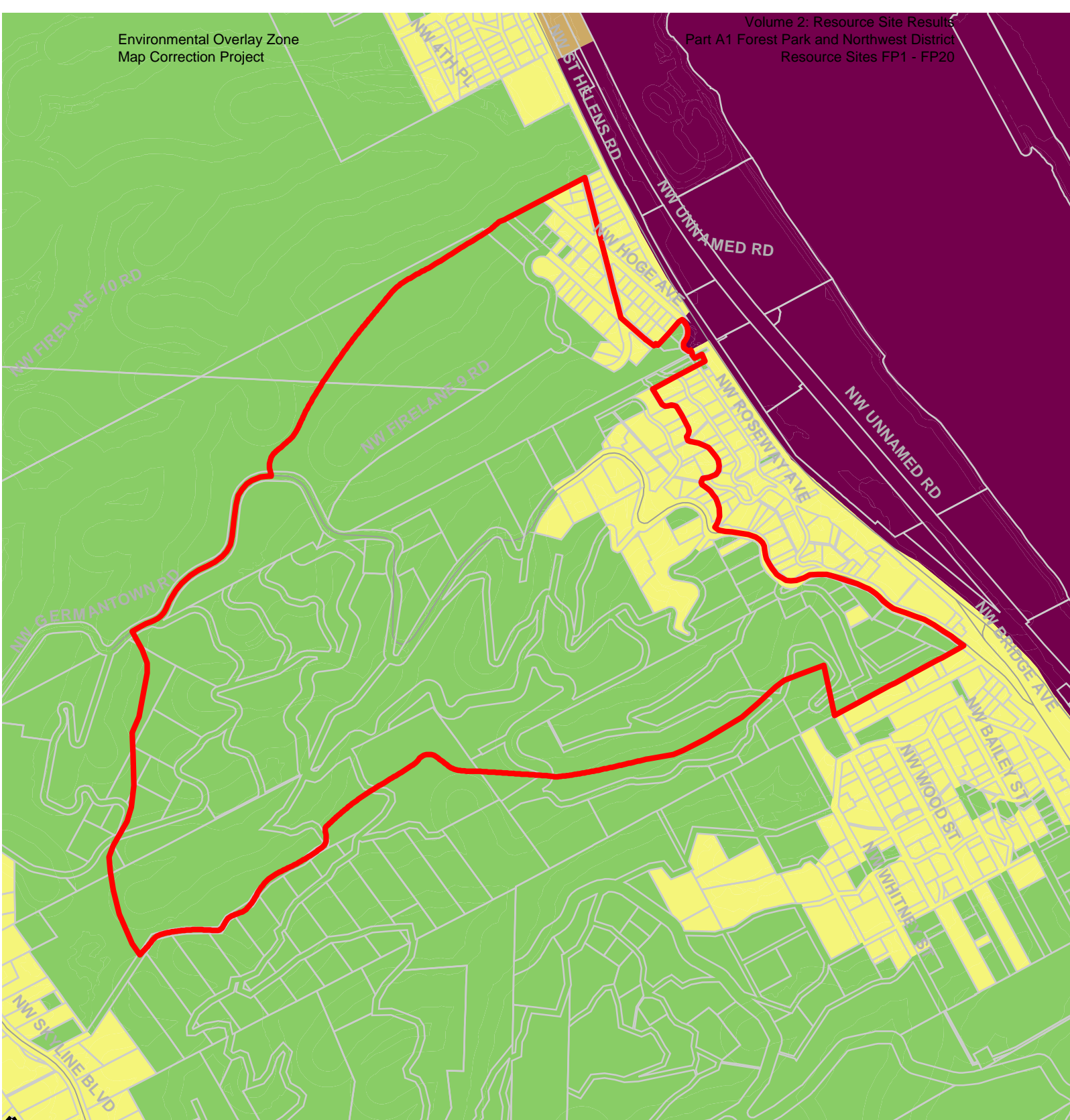
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- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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Map F: Urban Development Value (Title 13)
Resource Site: FP11

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

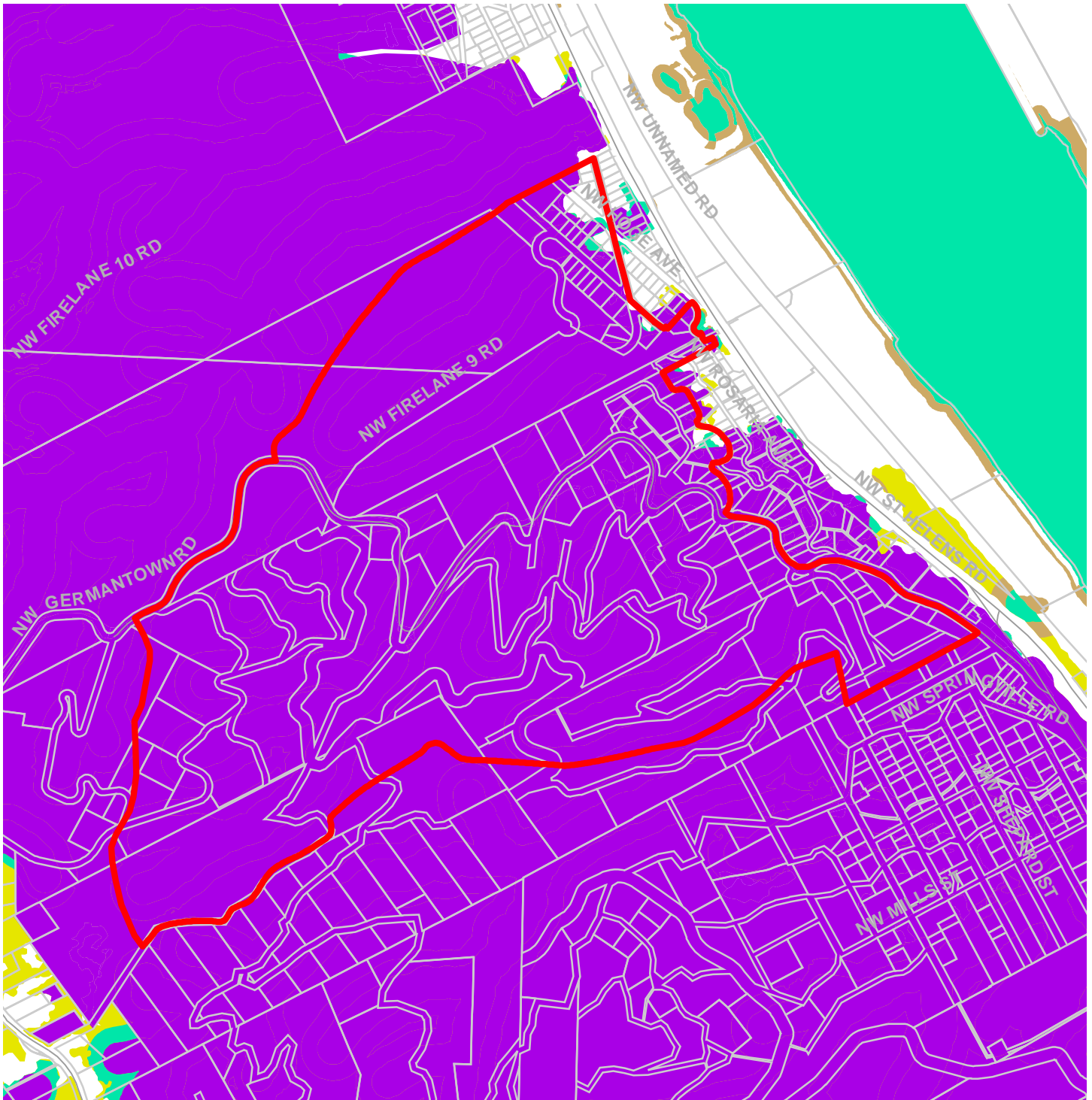


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0 550 Proposed Draft As Amended 1,100 Feet

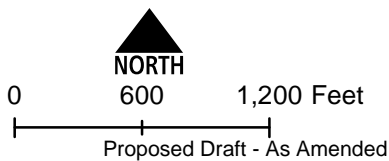
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP11

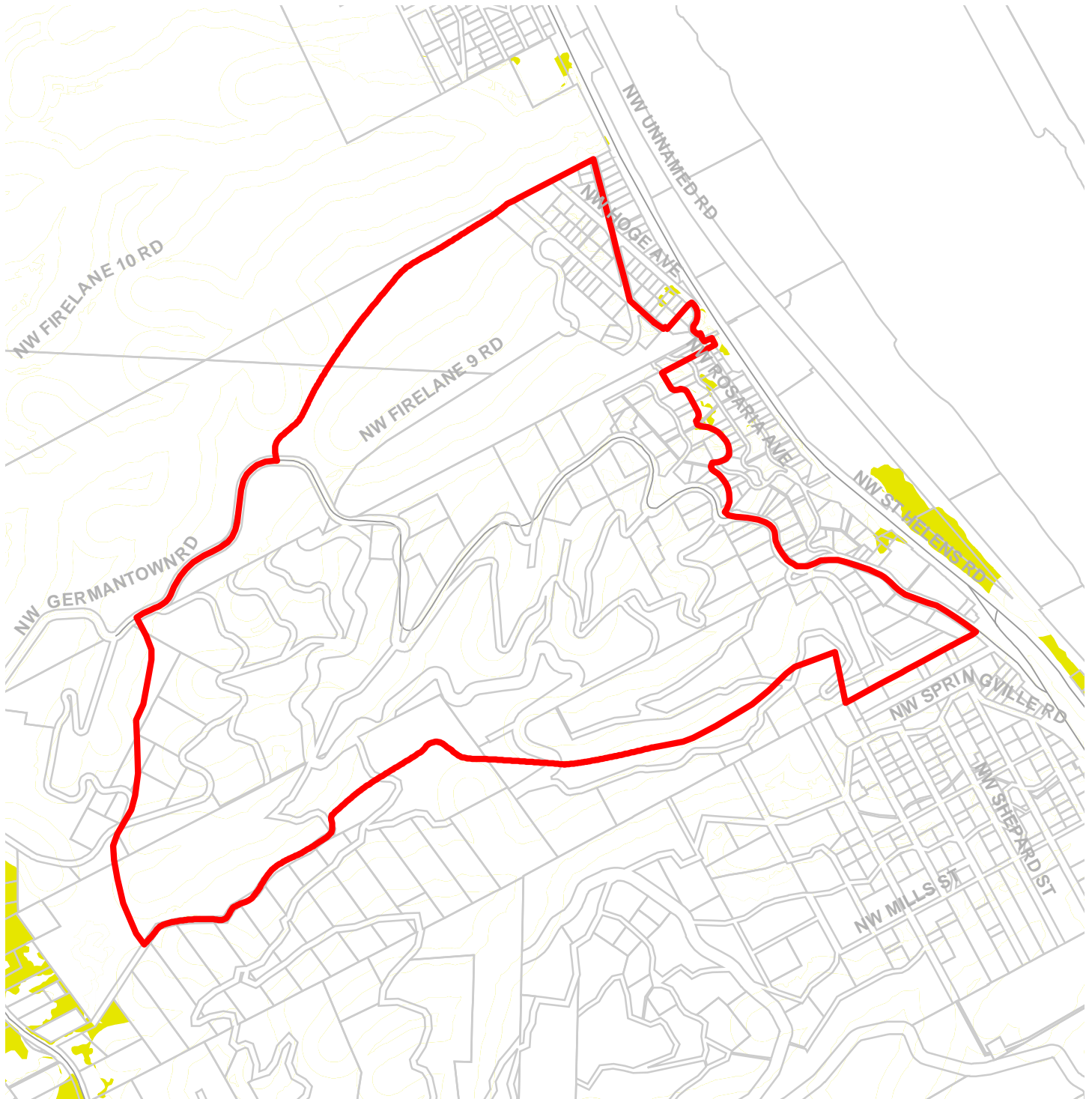
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- Urban Service Boundary
- Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



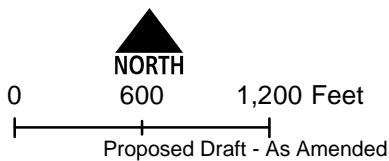
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Map H: Goal 5 Resources

Resource Site: FP11

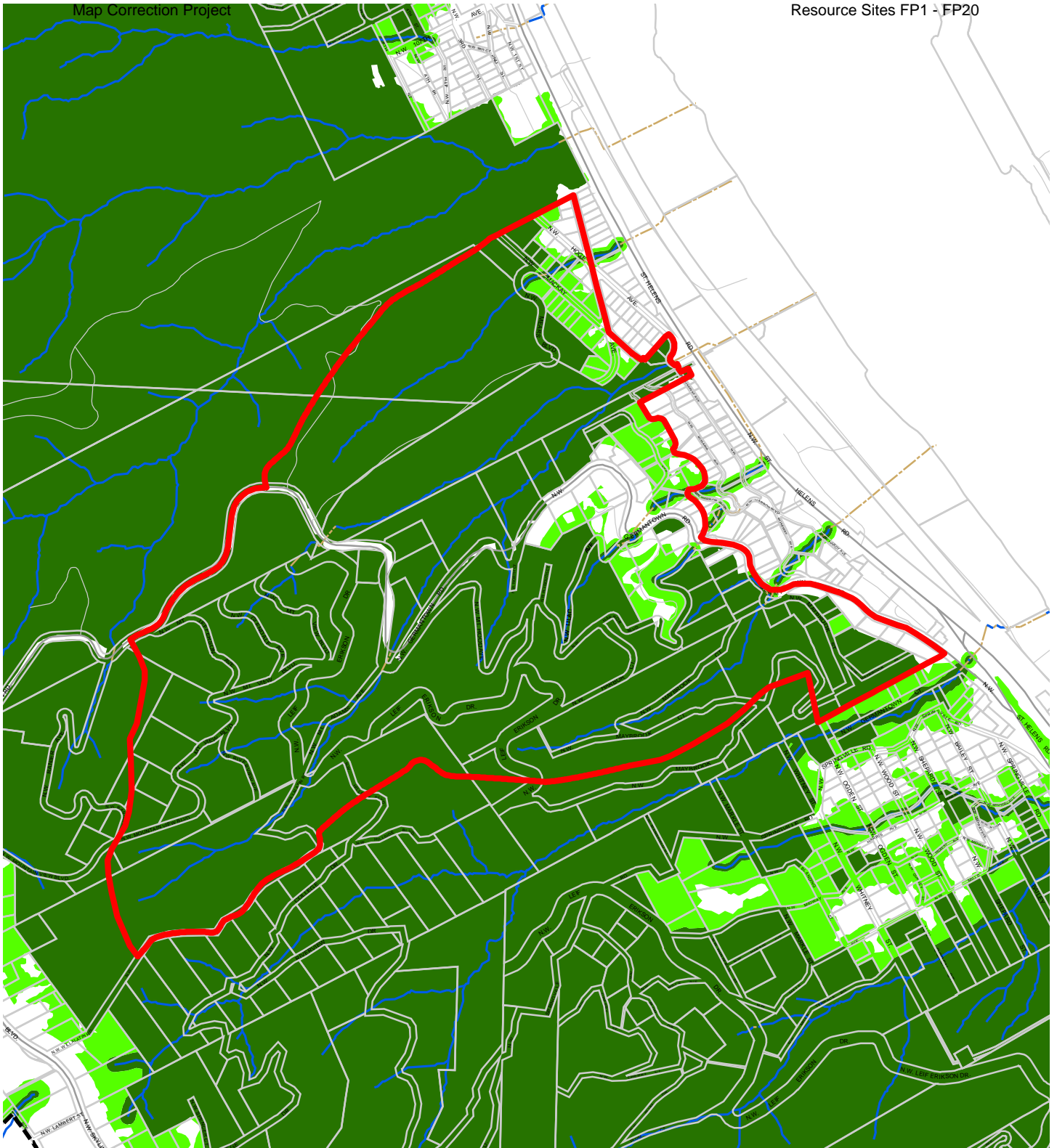
Updated: July 2021



- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources



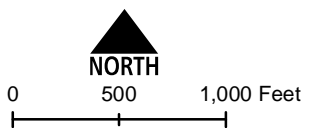
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Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP11**

Updated: July 2021



Proposed Draft - As Amended

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resources Description

Within resource site FP11 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: Forest Park (O, B, M, C, S, P, E)

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 FP11	
	Study Area
Stream (Miles)	3.5
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	257.1
Woodland (acres)	3.0
Shrubland (acres)	0.0
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	260.2
* 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%.	

Note – This resource site contains no site-specific resource description. Please refer to the section E.1 natural resource description.

Table B: Quality of Natural Resource Functions in Resource Site FP11				
Resource Site (acres) = 268				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	86.4	78.3	96.0	260.7
percent total inventory site area	32.2%	29.2%	35.8%	97.3%
Wildlife Habitat*				
acres	259.8	0.0	0.0	259.8
percent total inventory site area	96.9%	0.0%	0.0%	96.9%
Special Habitat Areas**				
acres	264.7			
percent total inventory site area	98.8%			
Combined Total⁺				
acres	259.8	0.5	0.4	260.7
percent total inventory site area	96.9%	0.2%	0.1%	97.3%
<p>* 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.</p>				

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 site FP11, 0.8% 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 FP11			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
264.1	4.8	2.1	0.8%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP11. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP11 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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, R10 and R7 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP11, 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*.

Natural Resources Protection

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 FP11, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP12 **Resource Site Name:** Lower Clark-Wilson Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 98

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.

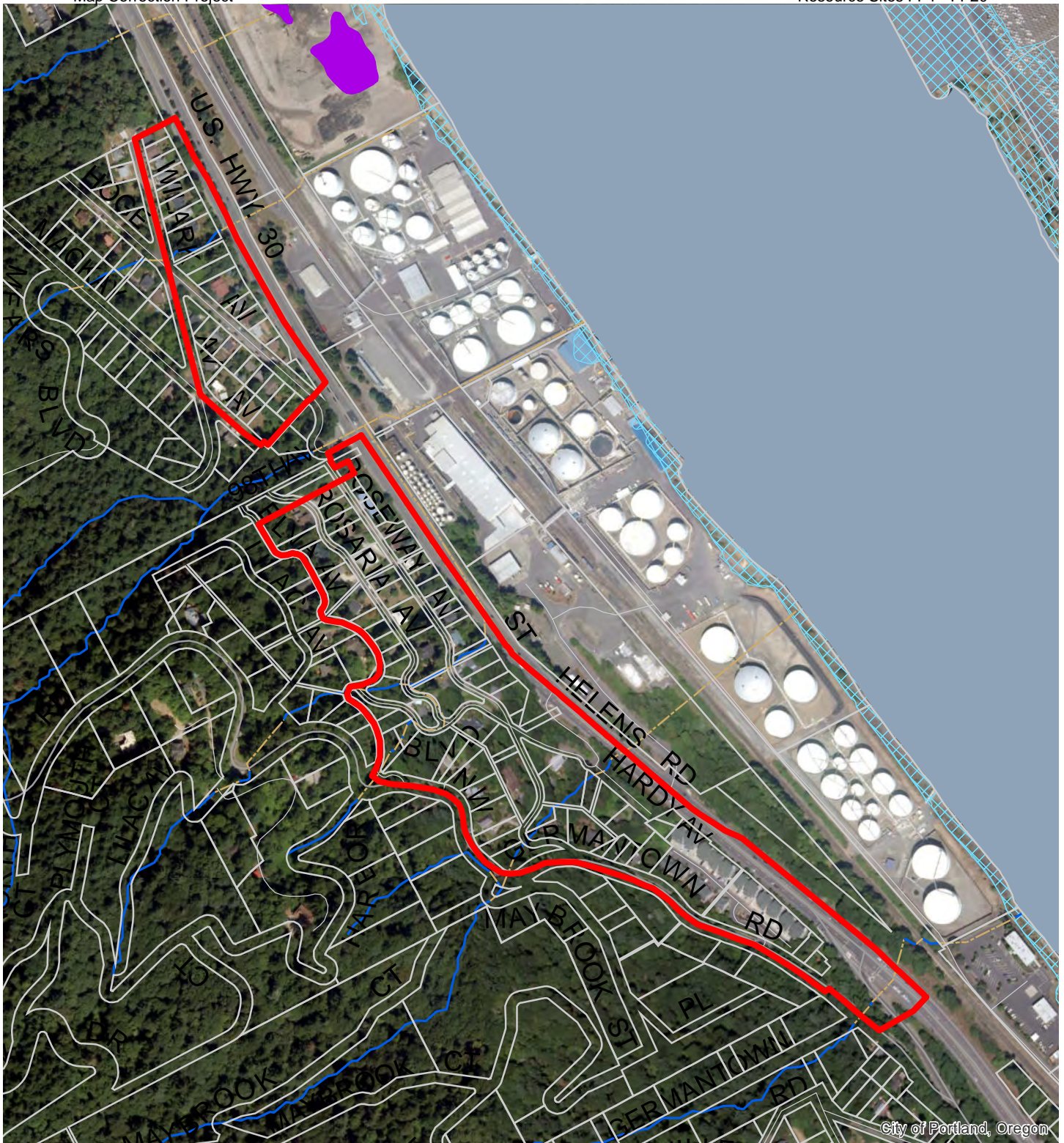
Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site FP12 includes the following:

Site (acres) 33.1

Base zones (acres)

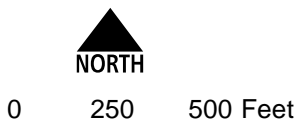
IH	0.0
OS	0.9
R10	13.1
R20	0.3
R5	10.6
R7	3.3
RM1	5.0



Map A: Water Features

Resource Site: FP12

Updated: July 2021

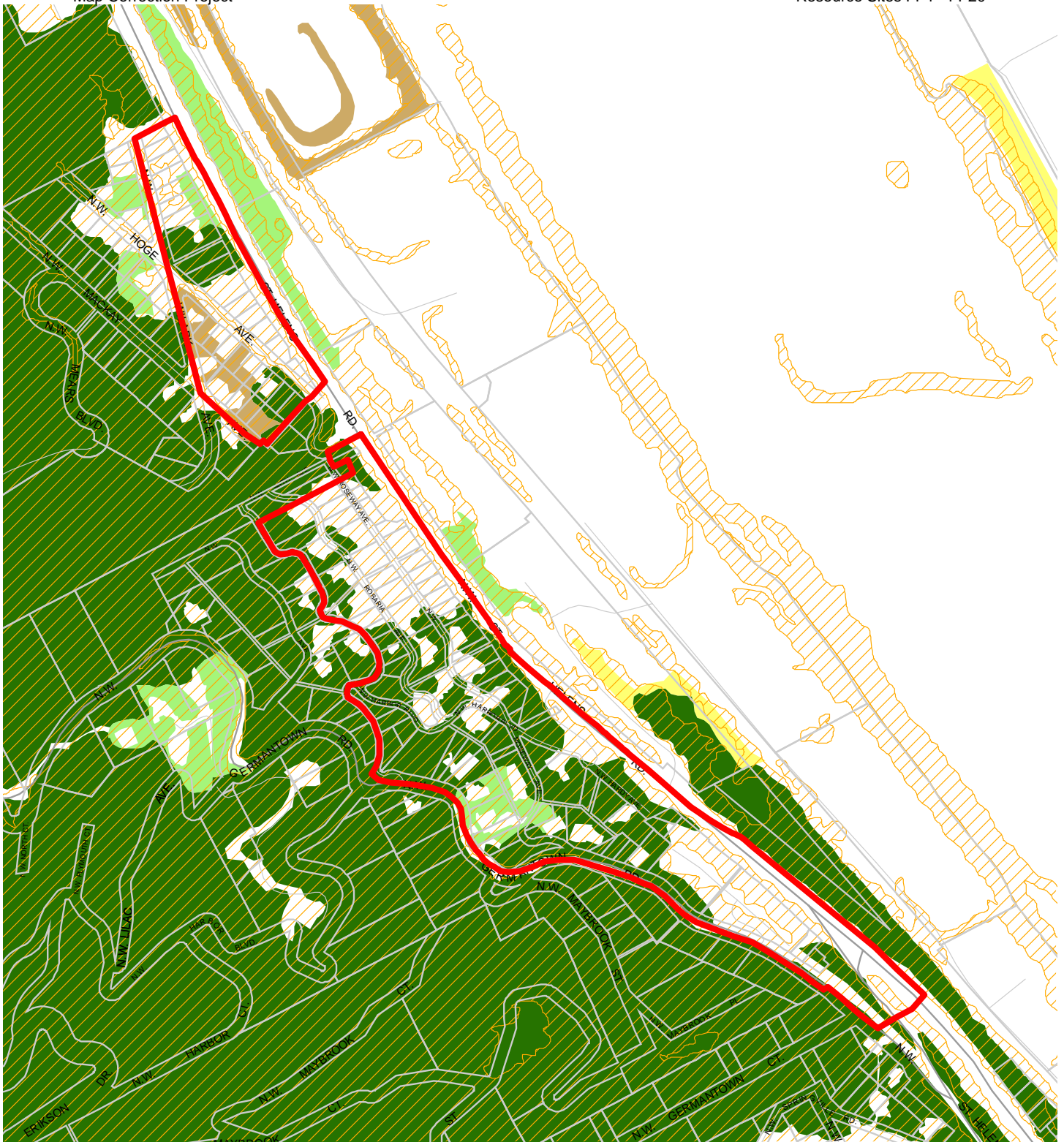


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- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



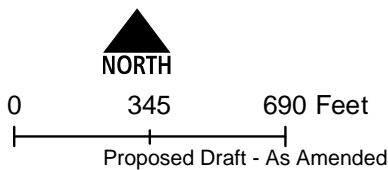
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Map B: Vegetation and Steep Slopes

Resource Site: FP12

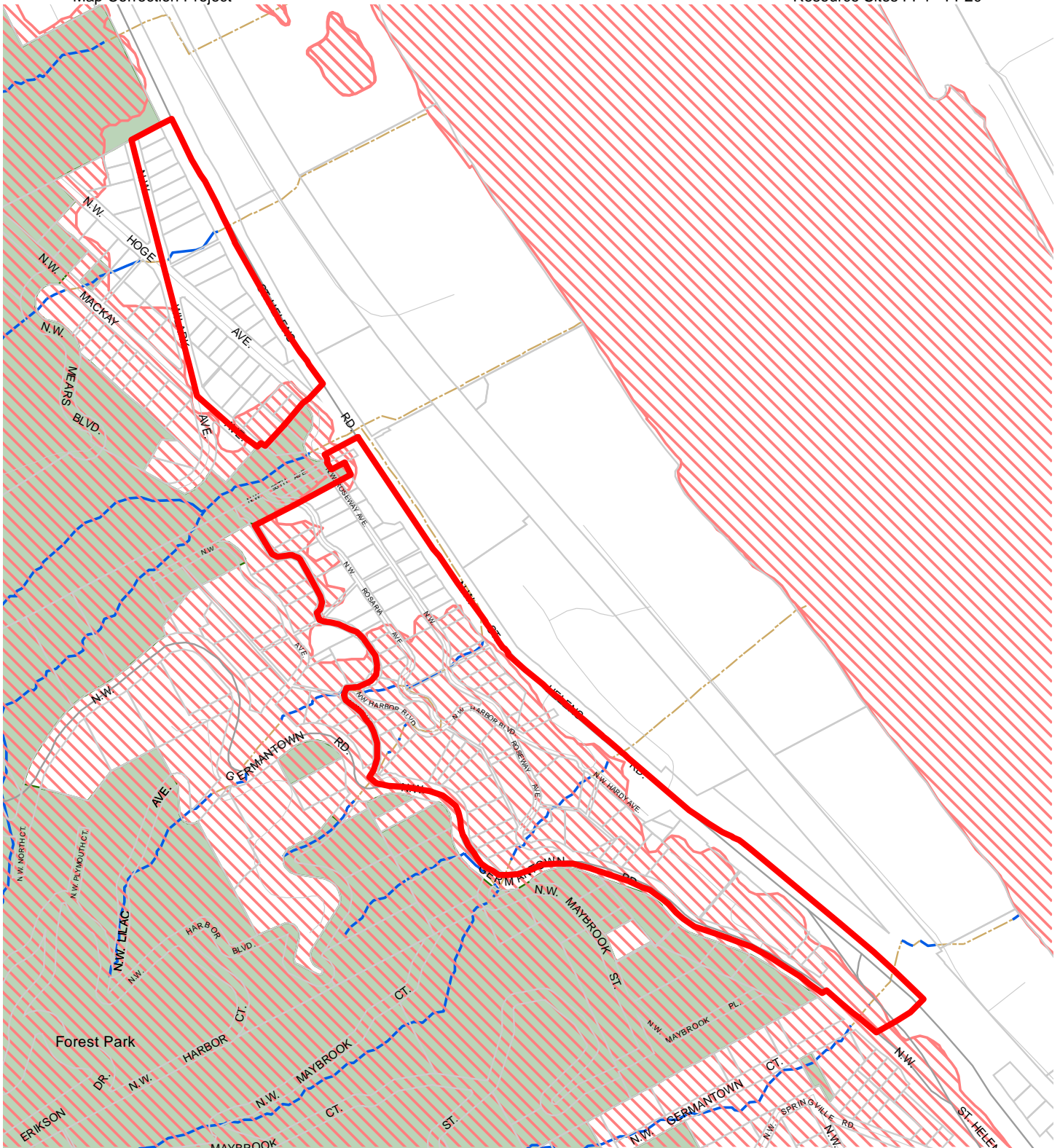
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- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

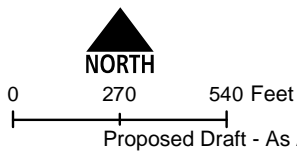


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**Map C: Special
Habitat Areas**
**Resource Site:
FP12**

Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

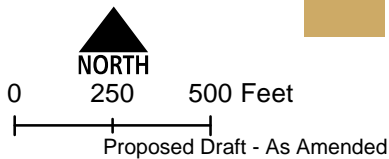
**Resource Site:
FP12**

Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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


**Map E: Wildlife
Habitat Classification
Resource Site:
FP12**

Updated: July 2021

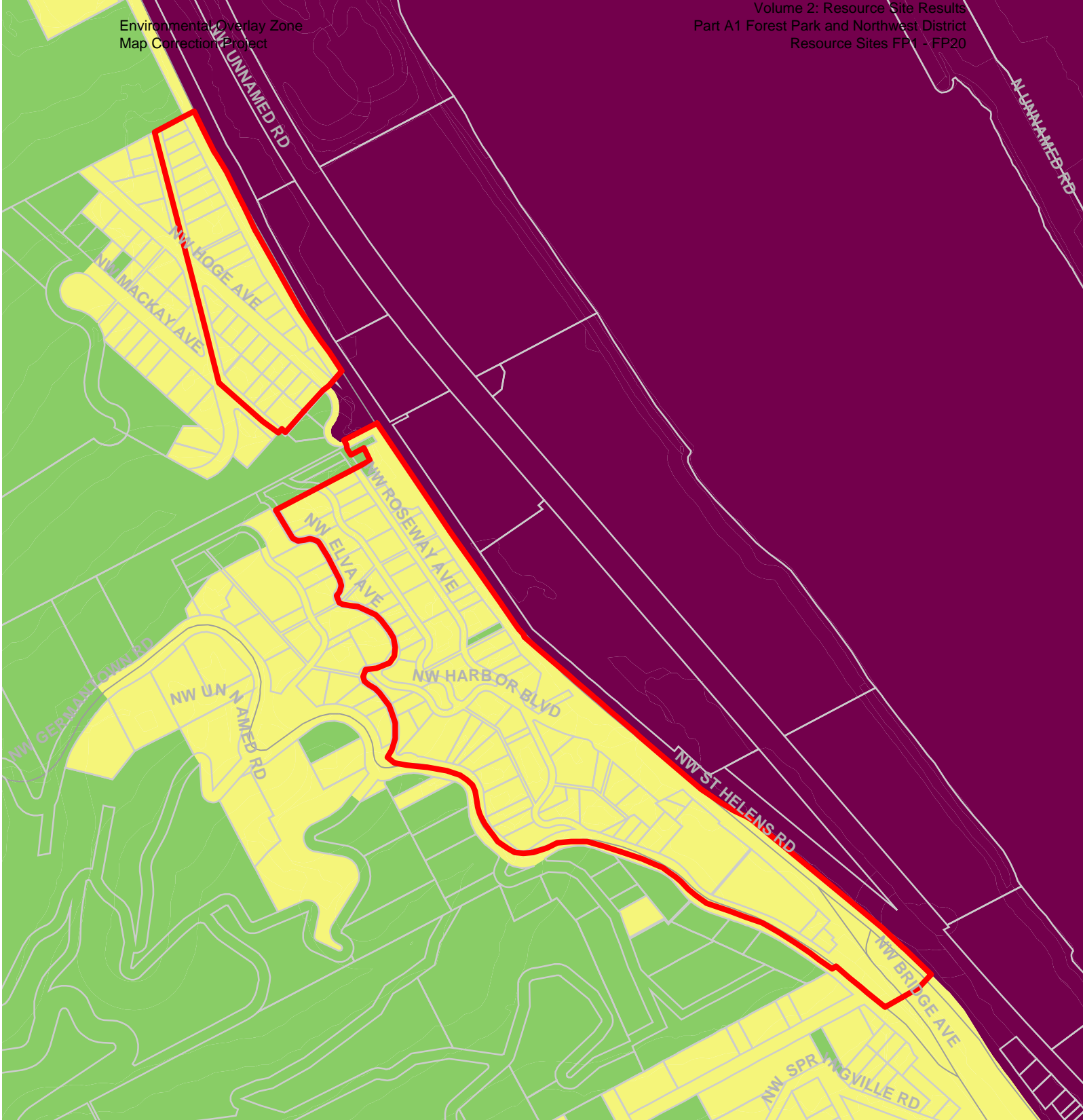


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-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
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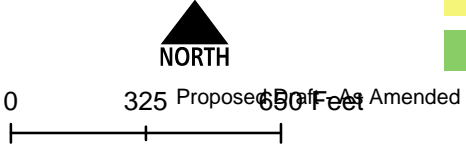


Map F: Urban Development Value (Title 13)
Resource Site: FP12

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



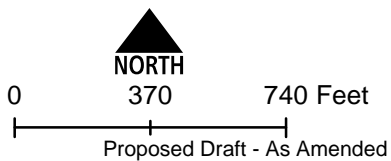
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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP12

Updated: July 2021



- Urban Service Boundary
- Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



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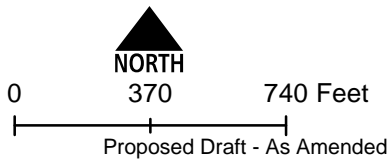
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Map H: Goal 5 Resources

Resource Site: FP12

Updated: July 2021



- Urban Service Boundary
- Resource Sites
- Goal 5 Significant Natural Resources



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Natural Resources Description

Within resource site FP12 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: Forest Park (O, B, M, C, S, P, E)

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 FP12	
	Study Area
Stream (Miles)	0.2
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	13.3
Woodland (acres)	1.2
Shrubland (acres)	1.1
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	28.3
* 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%.	

Note – This resource site contains no site-specific resource description. Please refer to the section E.1 natural resource description.

Table B: Quality of Natural Resource Functions in Resource Site FP12				
Resource Site (acres) = 33				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	5.5	5.4	5.5	16.4
percent total inventory site area	16.7%	16.3%	16.5%	49.6%
Wildlife Habitat*				
acres	12.8	0.0	0.0	12.8
percent total inventory site area	38.7%	0.0%	0.0%	38.7%
Special Habitat Areas**				
acres	17.8			
percent total inventory site area	53.6%			
Combined Total⁺				
acres	13.8	1.6	1.1	16.4
percent total inventory site area	41.7%	4.7%	3.2%	49.6%
* 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 FP12, 21.6% 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 FP12			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
38.4	9.7	8.3	21.6%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP12. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.

5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP12 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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, R5 and R2 base zones. Industrial uses are allowed in the IH 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP12, 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*.

Natural Resources Protection 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 FP12, 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 and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP13 **Resource Site Name:** Springville Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 97

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:

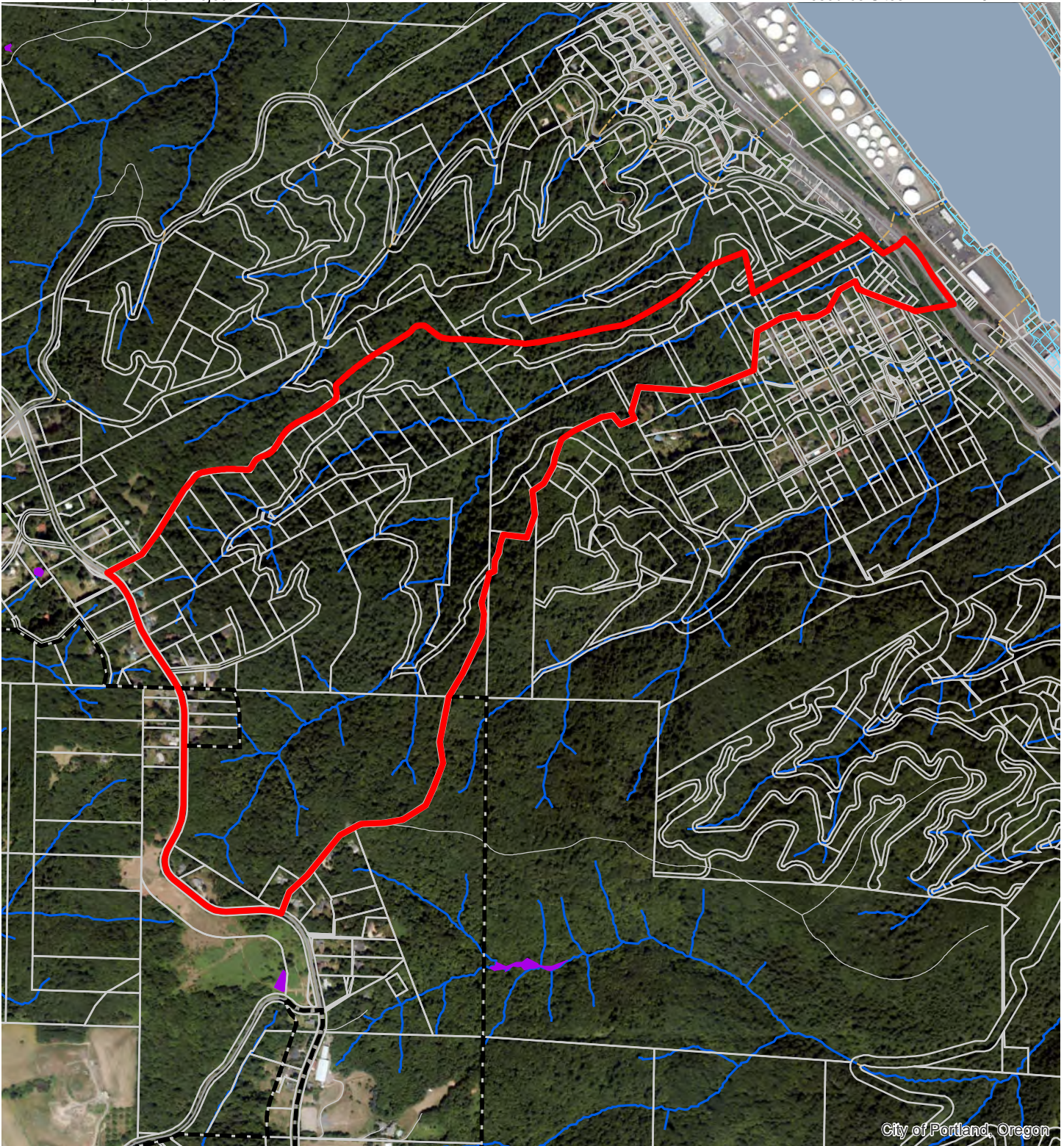
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP13 includes the following:

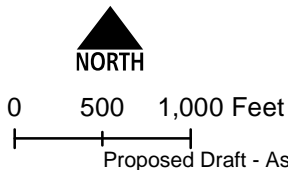
Site (acres)	248.9
Base zones (acres)	
OS	219.1
R20	15.2
R7	4.8
RF	9.8
RM1	0.0



City of Portland, Oregon

Map A: Water Features
Resource Site: FP13

Updated: July 2021

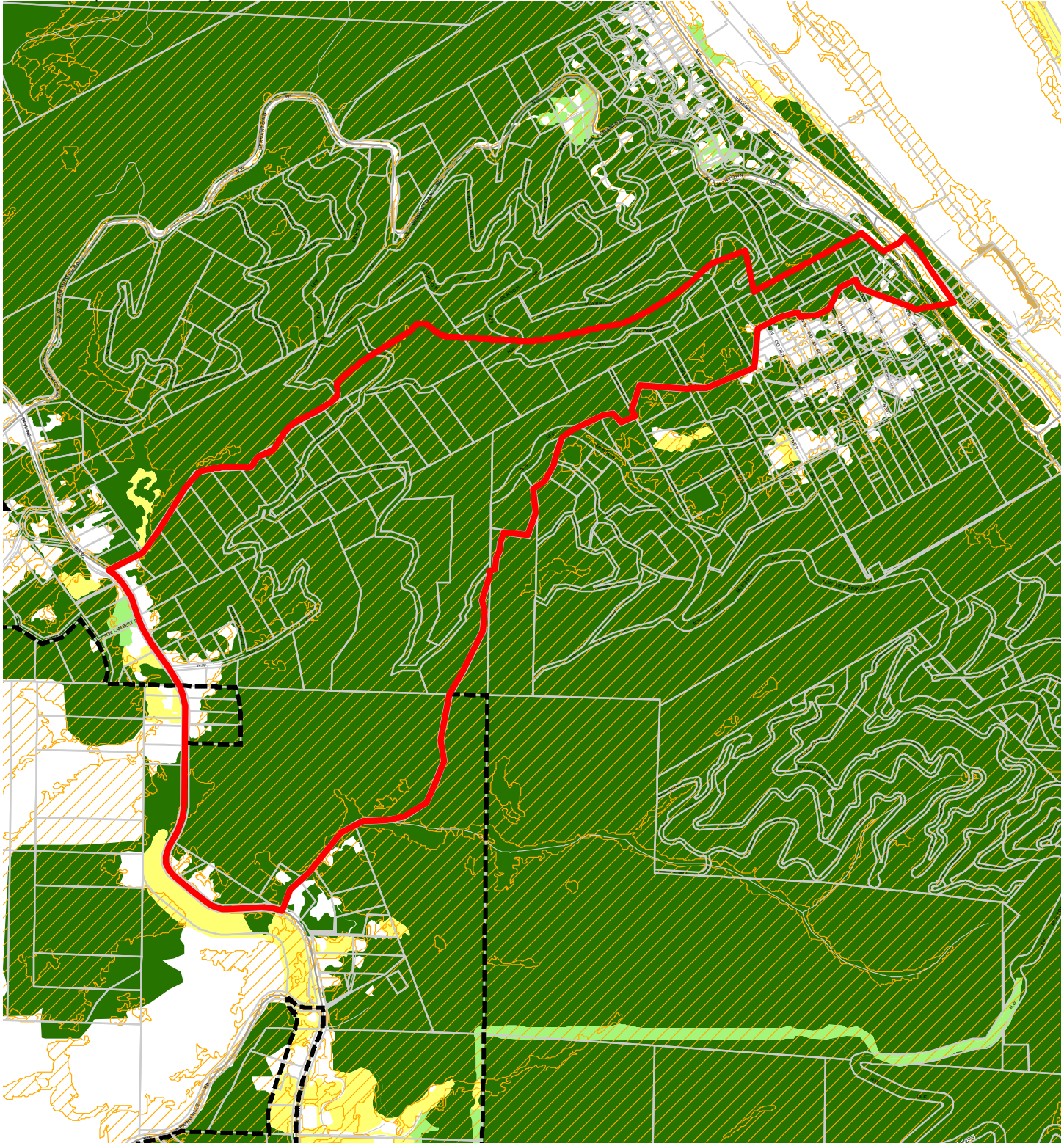


Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



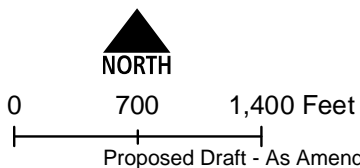
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP13

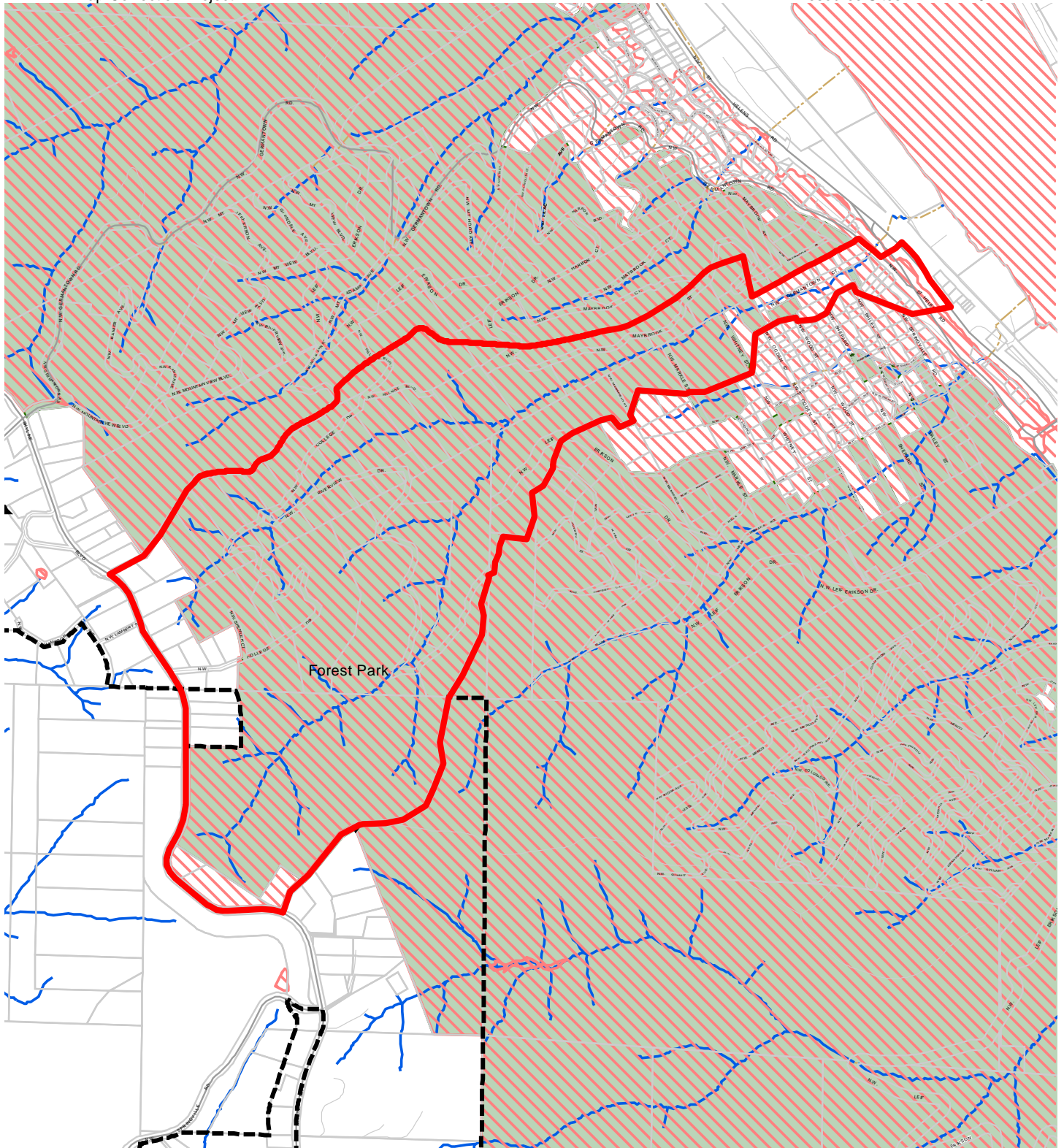
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

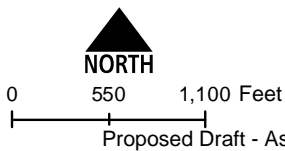


The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP13**

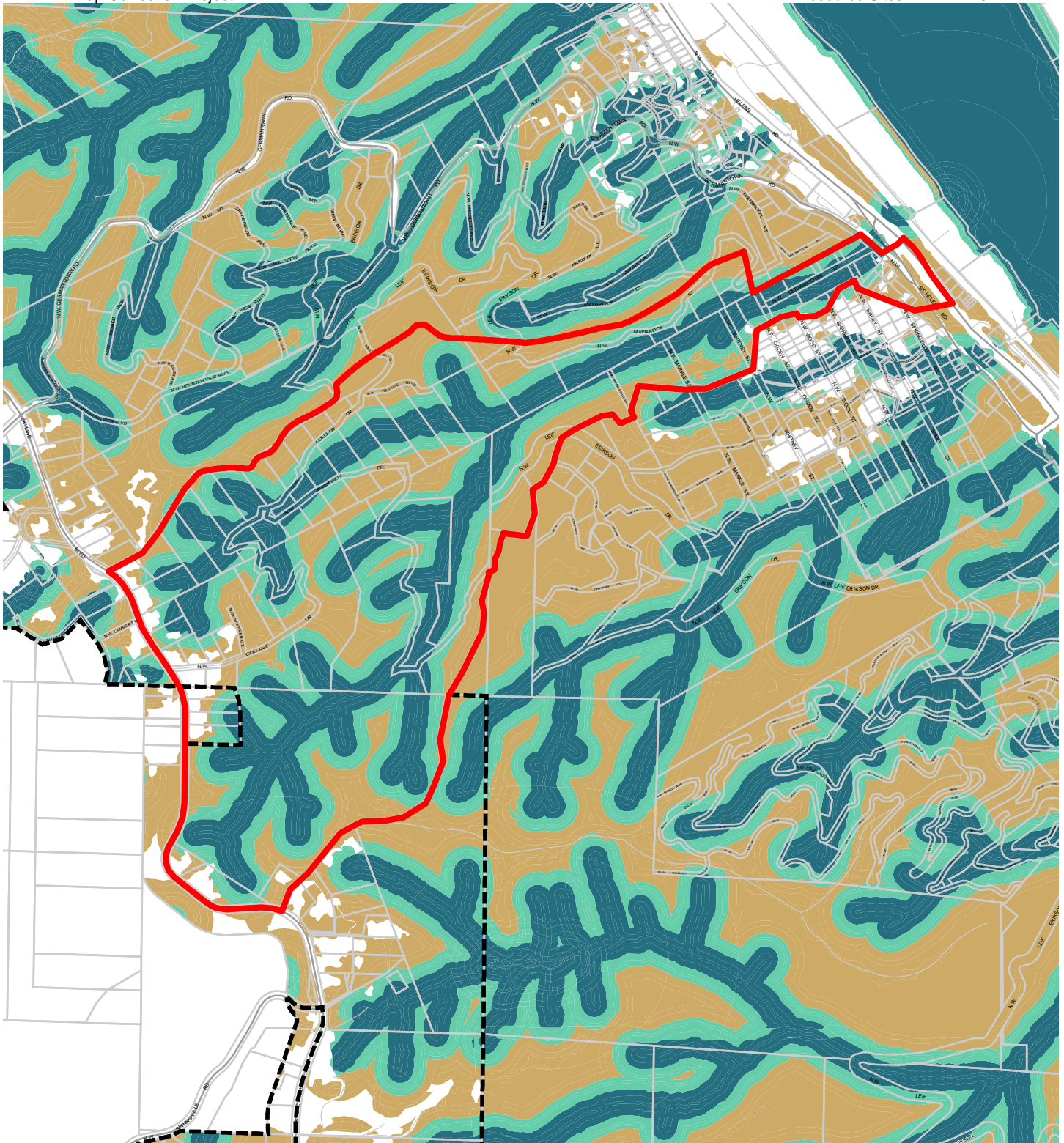
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP13**

Updated: July 2021



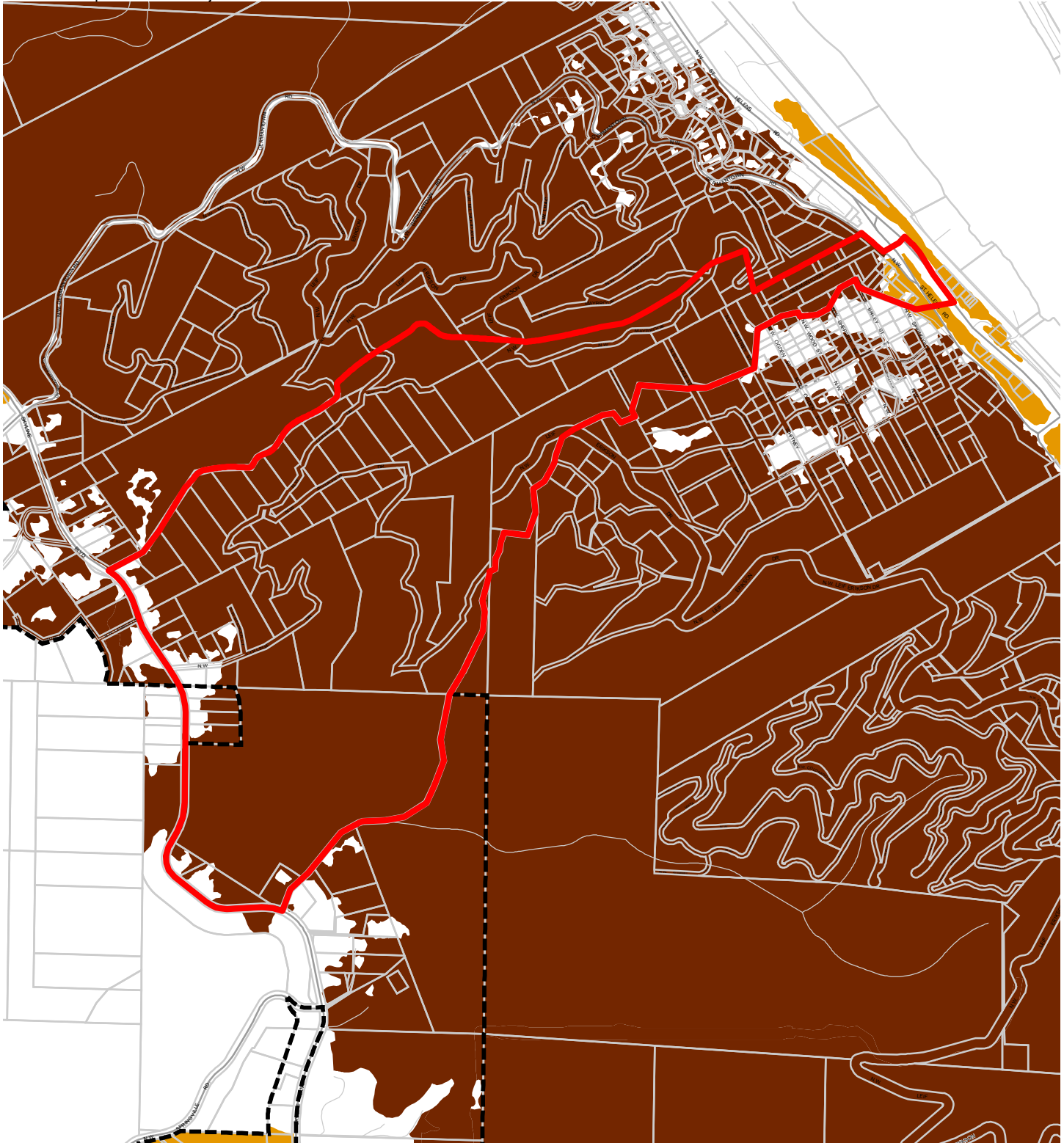
Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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July 2021









**Map E: Wildlife
Habitat Classification
Resource Site:
FP13**

Updated: July 2021

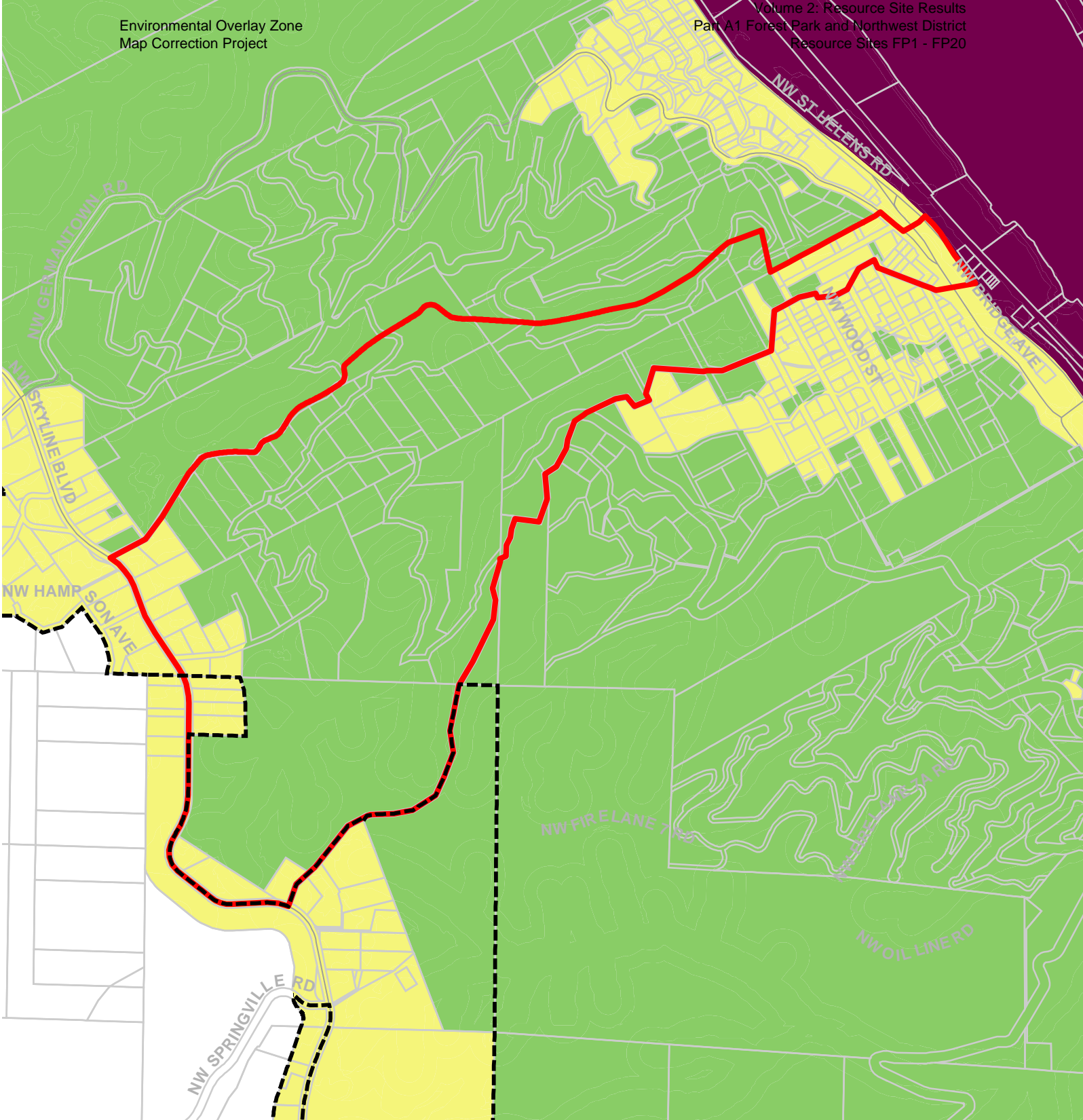


Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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July 2021

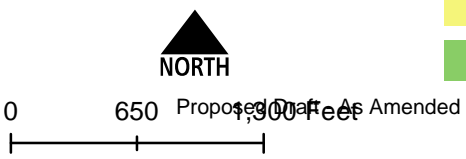


Map F: Urban Development Value (Title 13)
Resource Site: FP13

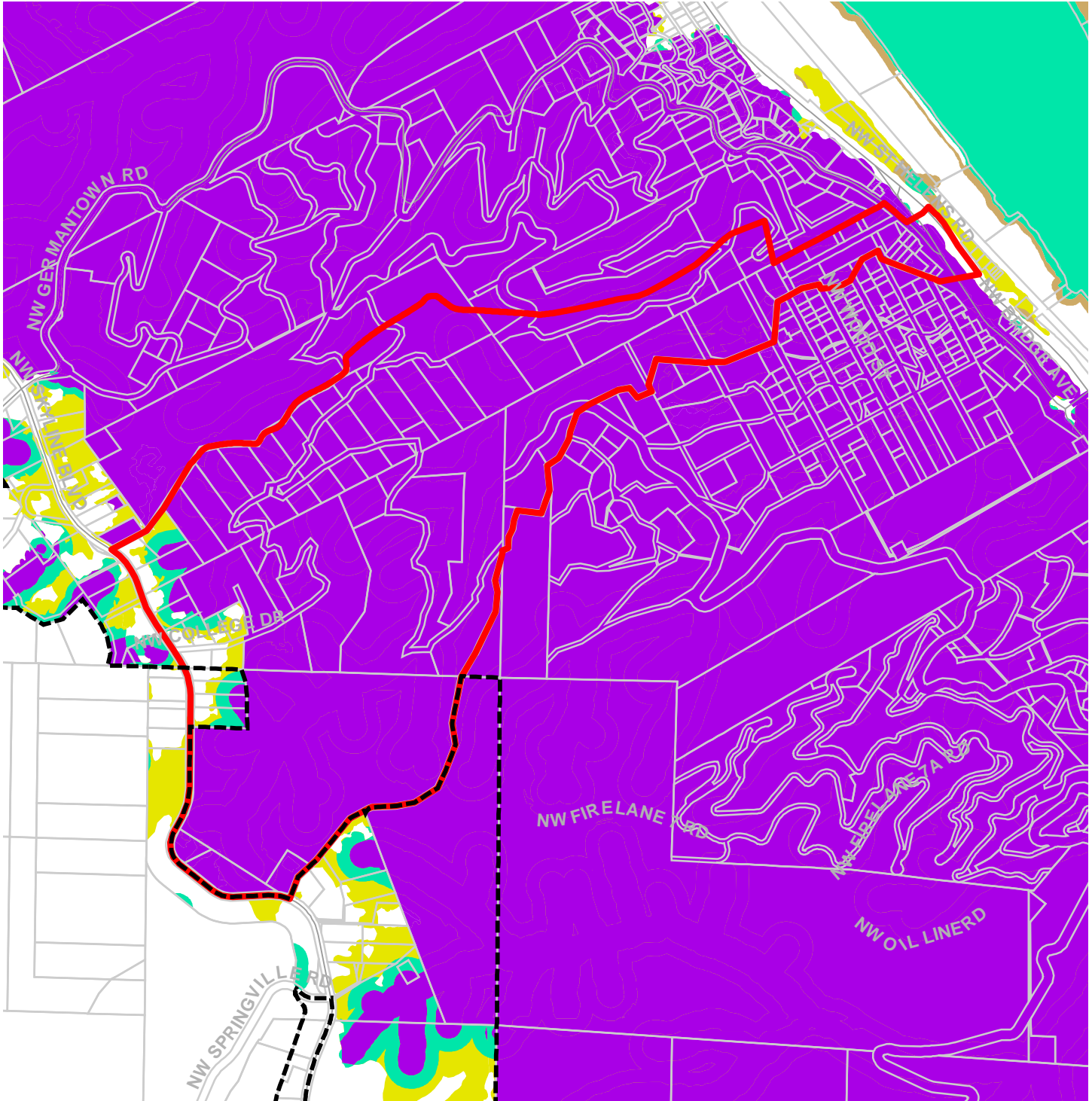
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP13

Updated: July 2021



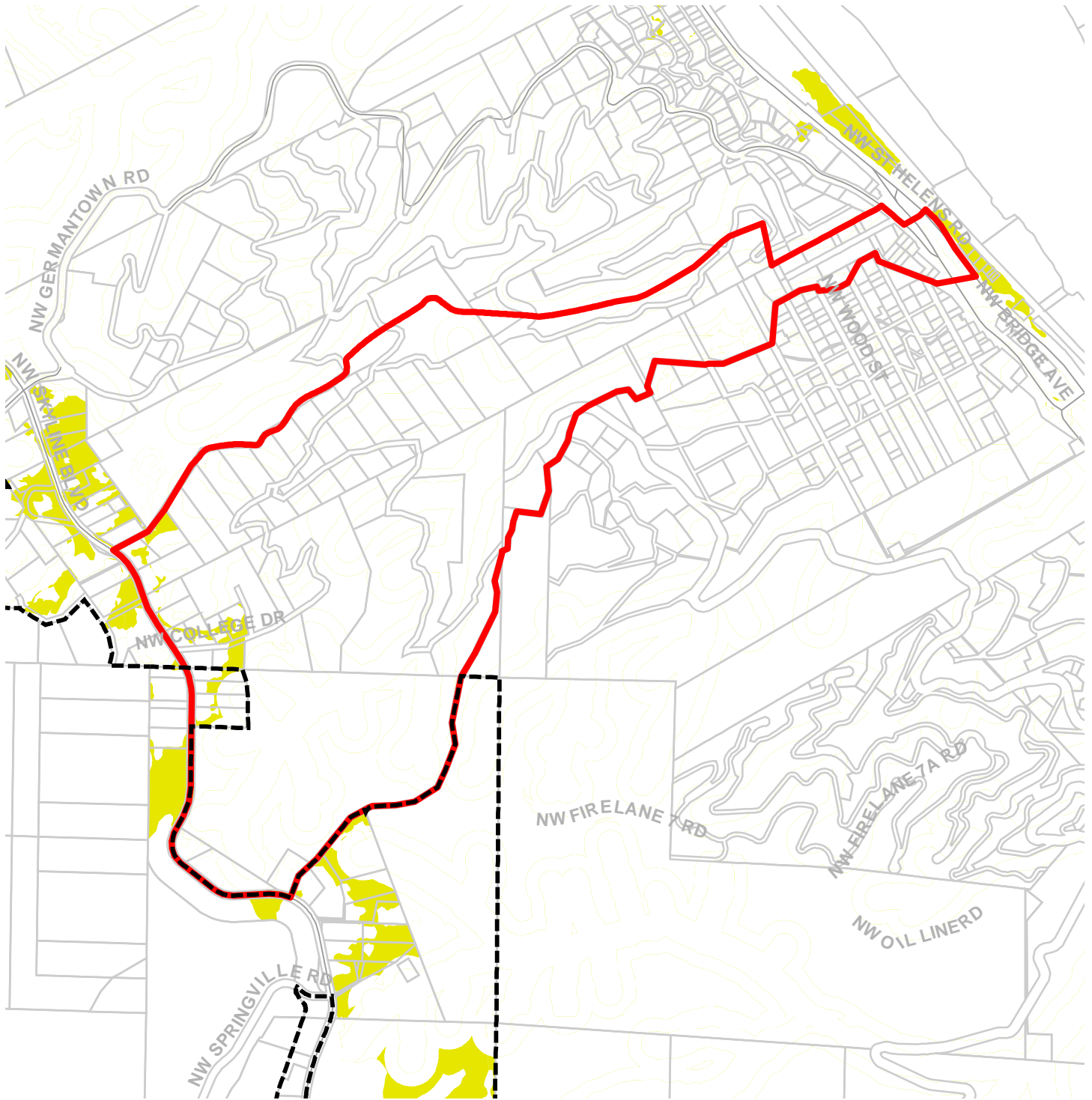
Proposed Draft - As Amended

-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



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July 2021






Map H: Goal 5 Resources

Resource Site: FP13

Updated: July 2021

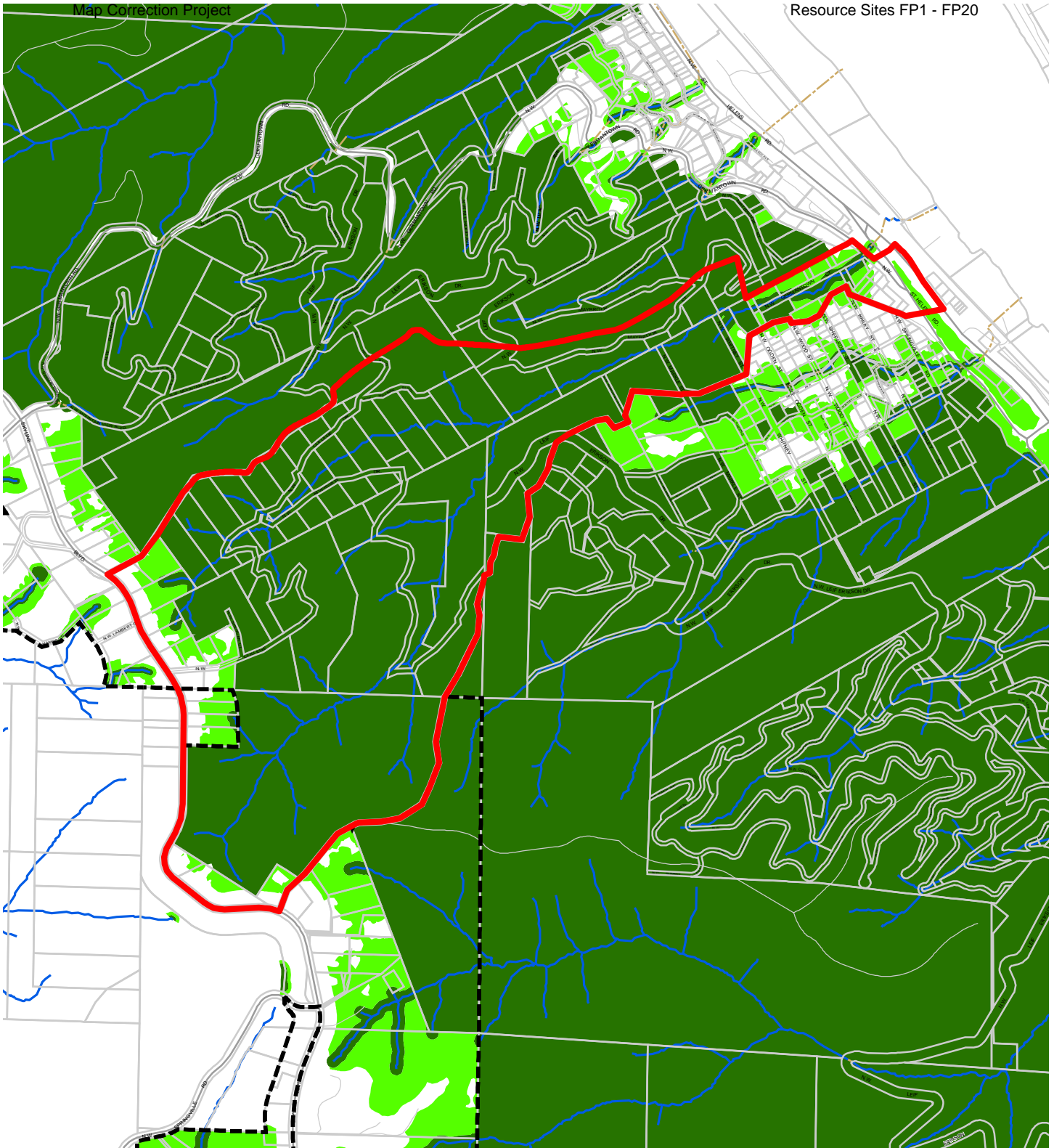


Proposed Draft - As Amended

-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



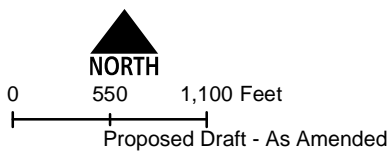
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Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP13

Updated: July 2021



-  Resource Sites
-  Open Stream Channel
-  Piped Stream Segment
-  Proposed Conservation Zone
-  Proposed Protection Zone
-  Urban Service Boundary
-  Taxlots



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July 2021

Natural Resources Description

Within resource site FP13 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: Forest Park (O, B, M, C, S, P, E)

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 FP13	
	Study Area
Stream (Miles)	3.9
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	238.6
Woodland (acres)	0.0
Shrubland (acres)	0.0
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	232.6
* 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 site forms the drainage basin of Springville Creek. A large, mid-aged conifer stand of secondary forest succession covers most of the basin. Western hemlock, western red cedar and Pacific yew are well established within this area, together with a diverse population of herb and shrub species. In the site's largest stand of mid-aged conifer are two remnant stands of old growth. *Conifer-topping hardwood* is the second most common vegetation type in the basin. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem, particularly in the headwaters region. Invasive species such as ivy and holly have infiltrated the site at both ends of the basin.

The forest provides habitat for a variety of songbirds including Oregon junco, kinglets and rufous-sided towhee. Raptors known to frequent the area include red-tailed hawk and screech owl. Interspersion with surrounding forest habitat permits free migration of wildlife to and from the site and increases the site's value as habitat.

Table B: Quality of Natural Resource Functions in Resource Site FP13				
Resource Site (acres) = 249				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	89.1	76.6	73.0	238.7
percent total inventory site area	35.8%	30.8%	29.3%	95.9%
Wildlife Habitat*				
acres	236.4	2.1	0.0	238.6
percent total inventory site area	95.0%	0.9%	0.0%	95.8%
Special Habitat Areas**				
acres	229.2			
percent total inventory site area	92.1%			
Combined Total⁺				
acres	236.4	2.2	0.1	238.7
percent total inventory site area	95.0%	0.9%	0.0%	95.9%
* 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 site FP13, 1.8% 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 FP13			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
250.9	5.2	4.5	1.8%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP13. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP13 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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, R20, and R7 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP13, 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*.

Natural Resources Protection 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 FP13, 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, and land within 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands, and areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands, and areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP14 **Resource Site Name:** Firelane 7 – North
Previous Plan: Northwest Hills Natural Areas Protection Plan
Previous Resource Site No.: 96

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.

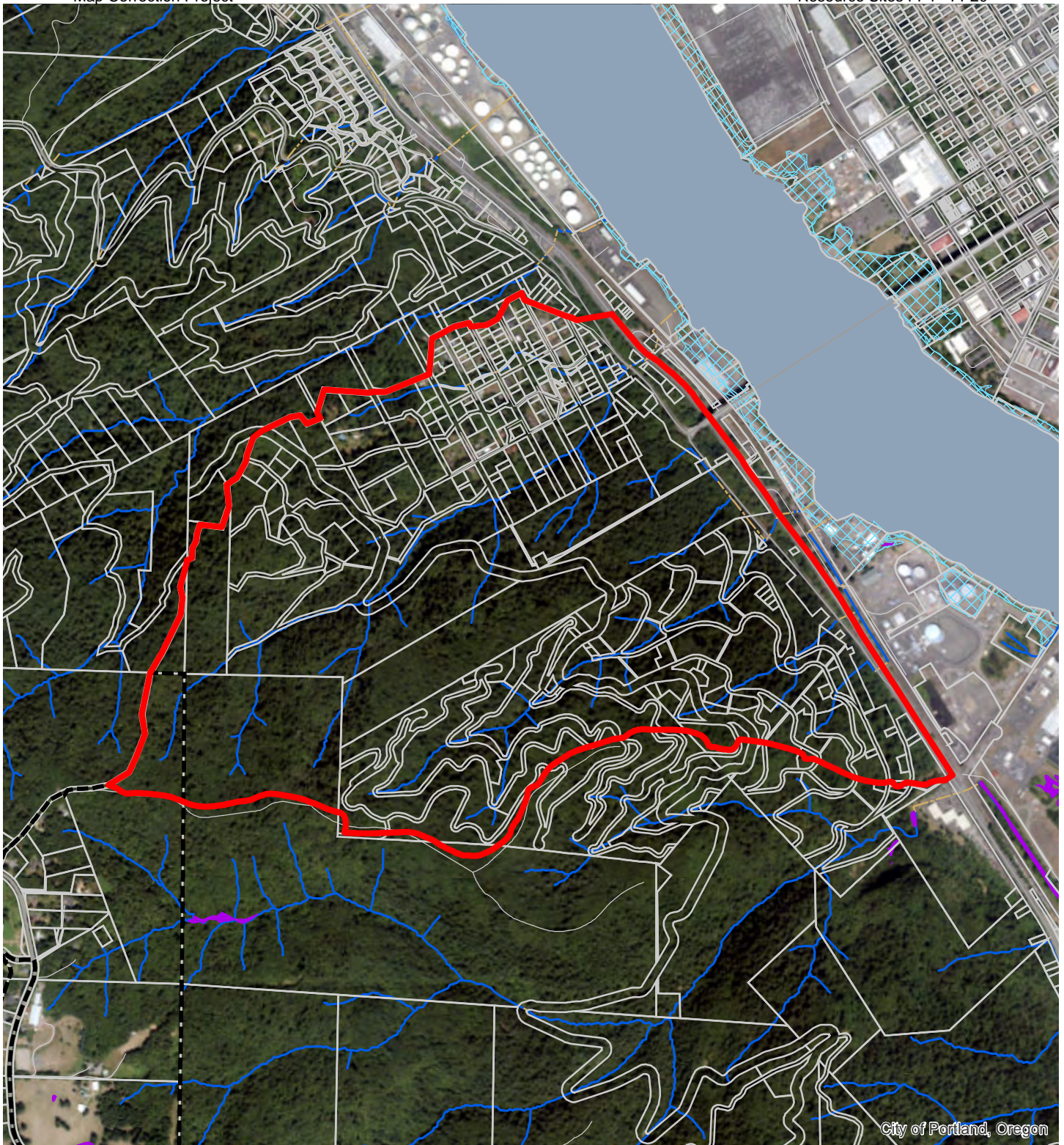
Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site FP14 includes the following:

Site (acres) 439.1

Base zones (acres)

IH	0.1
OS	367.7
R10	19.7
R20	25.7
R7	25.9



City of Portland, Oregon

Map A: Water Features

Resource Site: FP14

Updated: July 2021



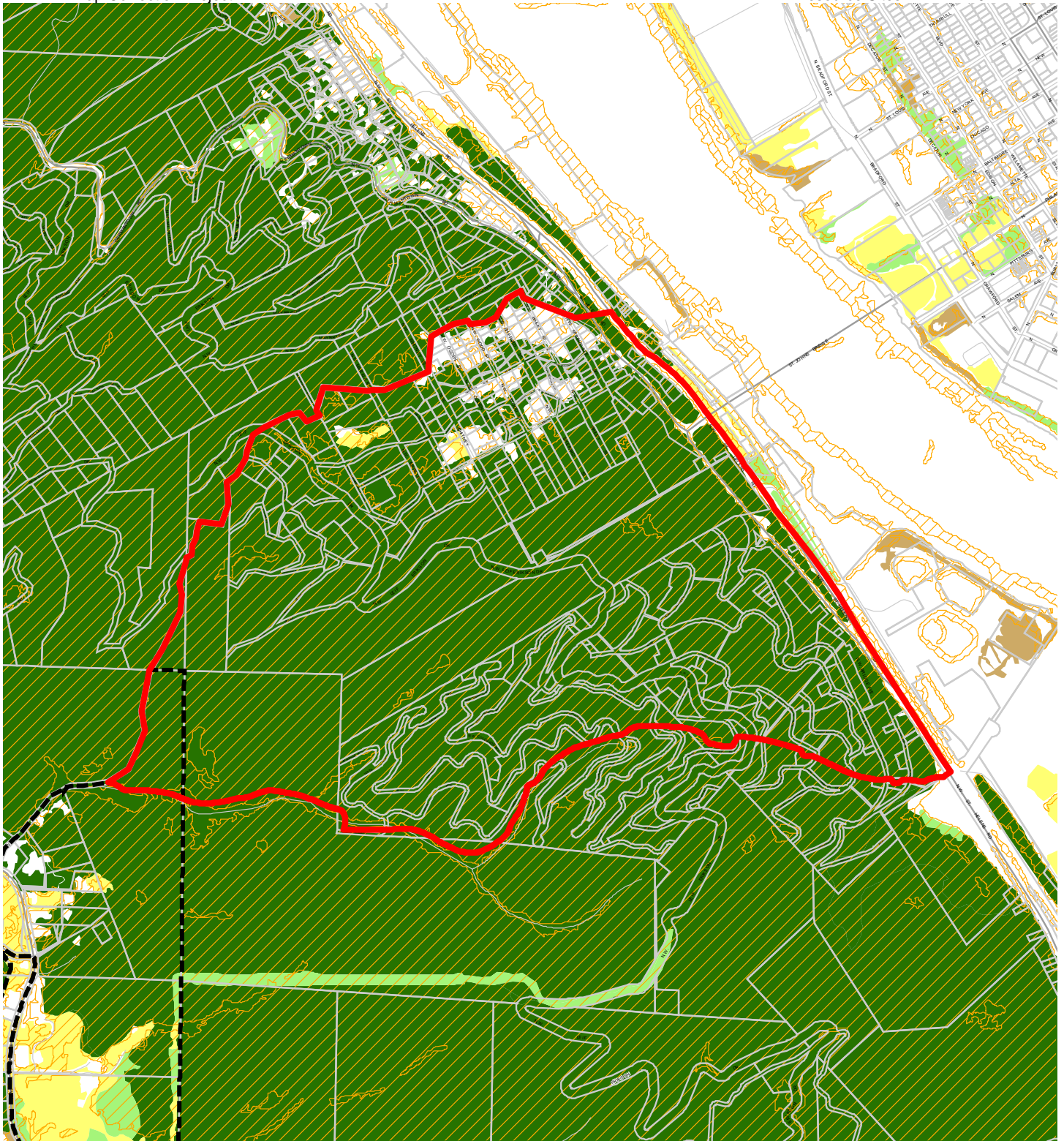
0 550 1,100 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



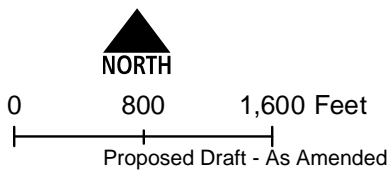
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP14

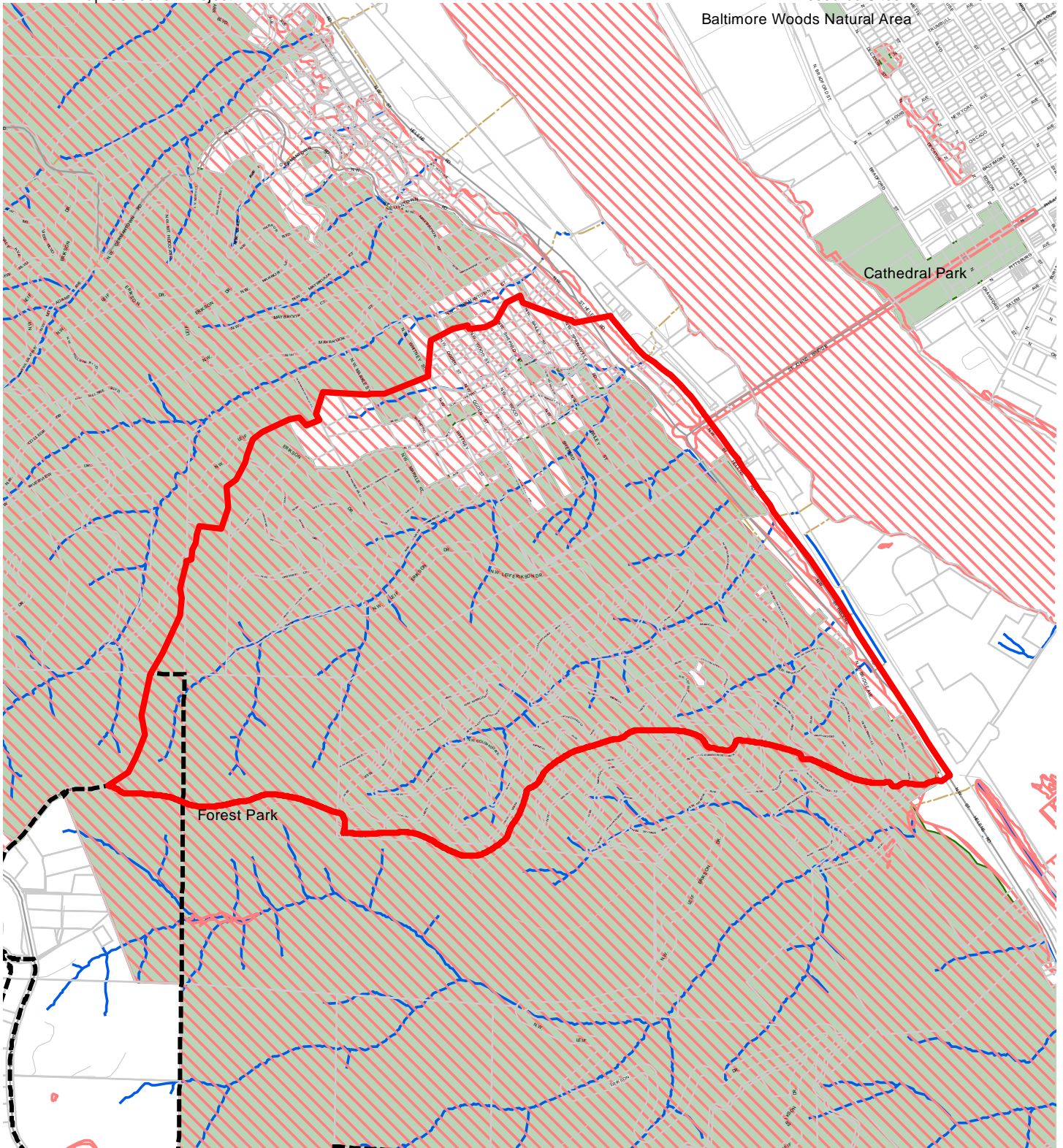
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

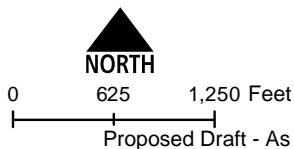


The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711. July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP14**

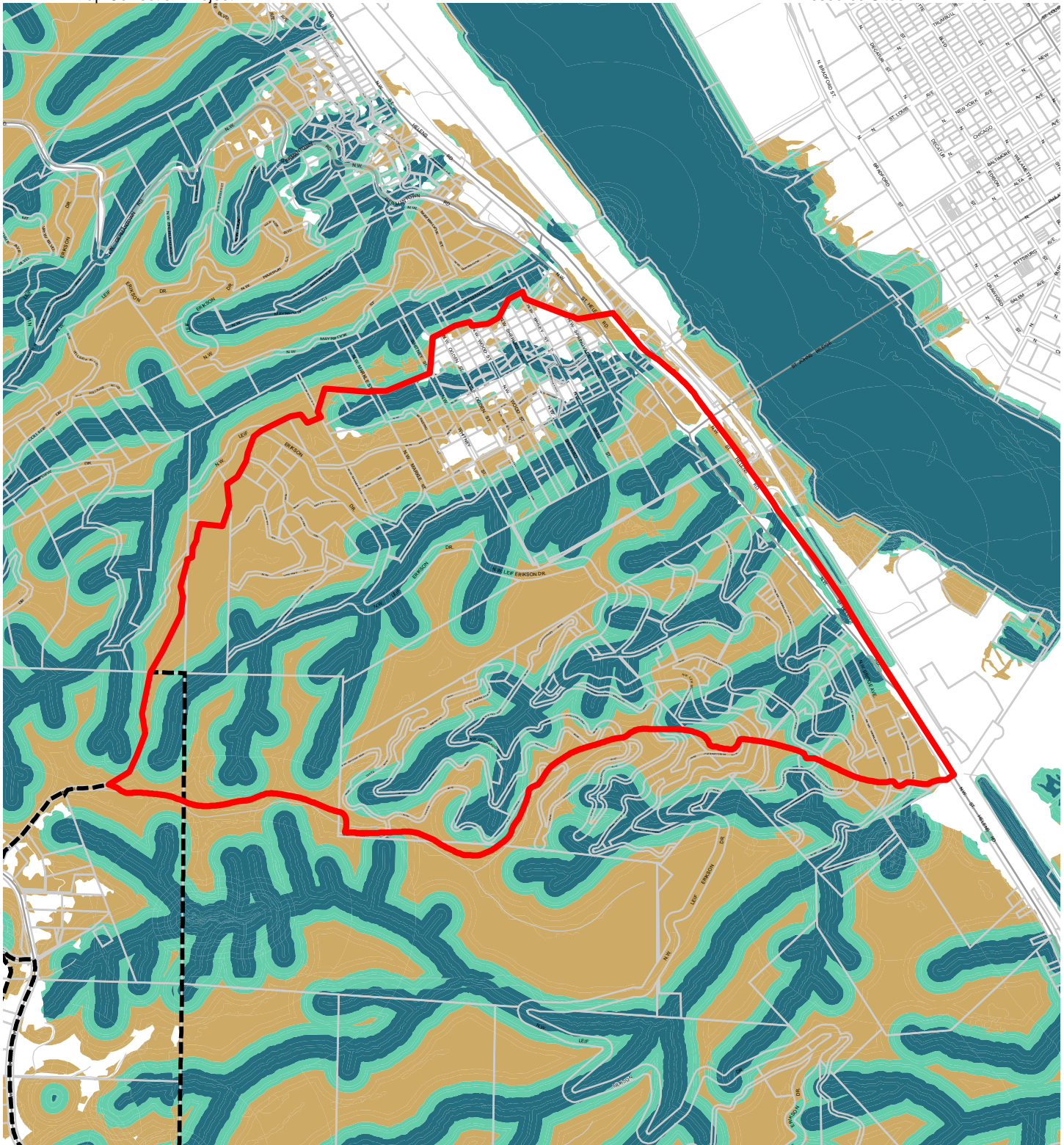
Updated: June 2021



- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

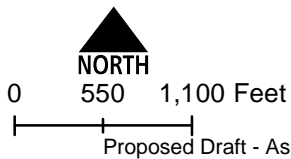
**Resource Site:
FP14**

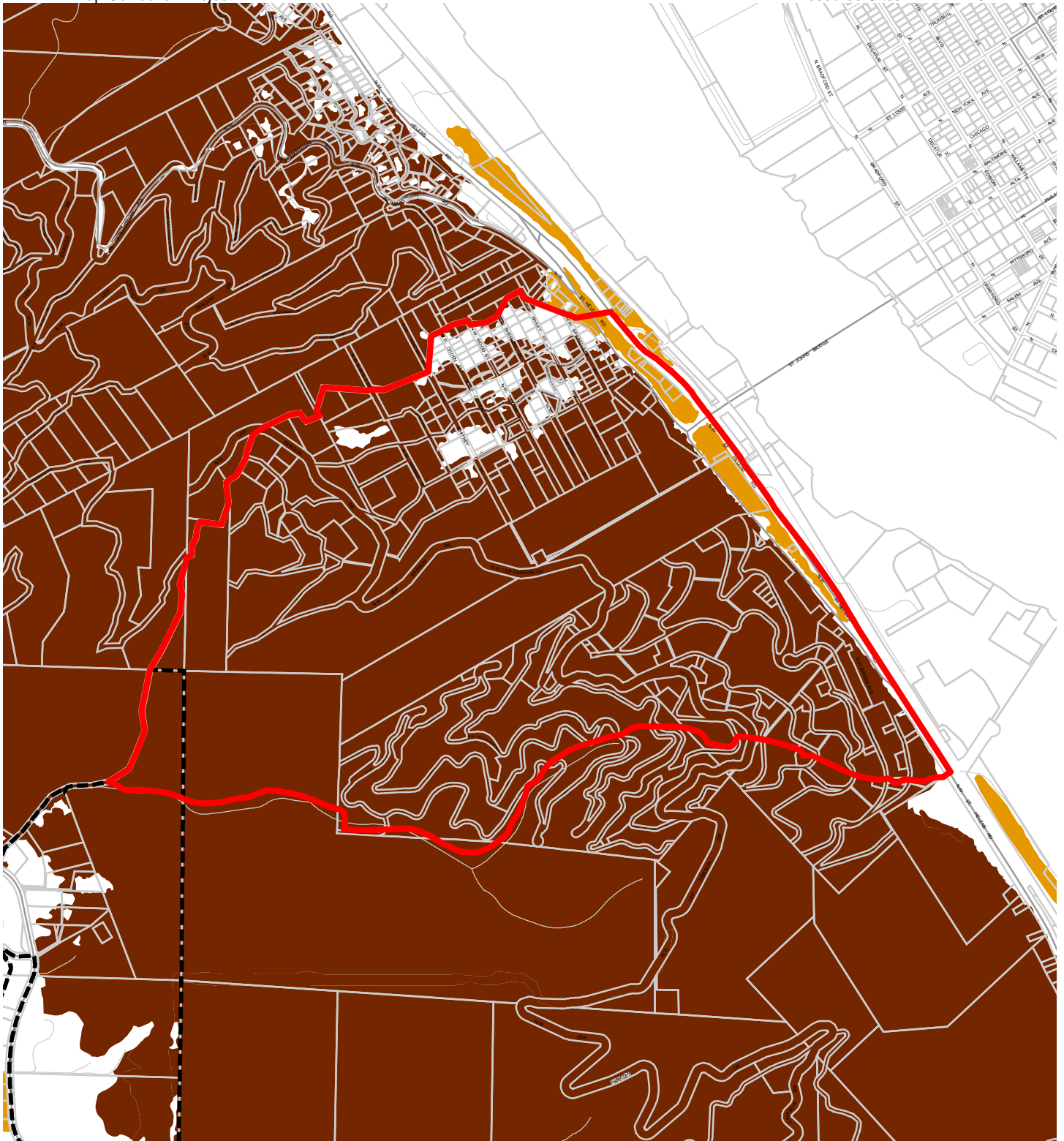
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.











**Map E: Wildlife
Habitat Classification
Resource Site:
FP14**

Updated: July 2021



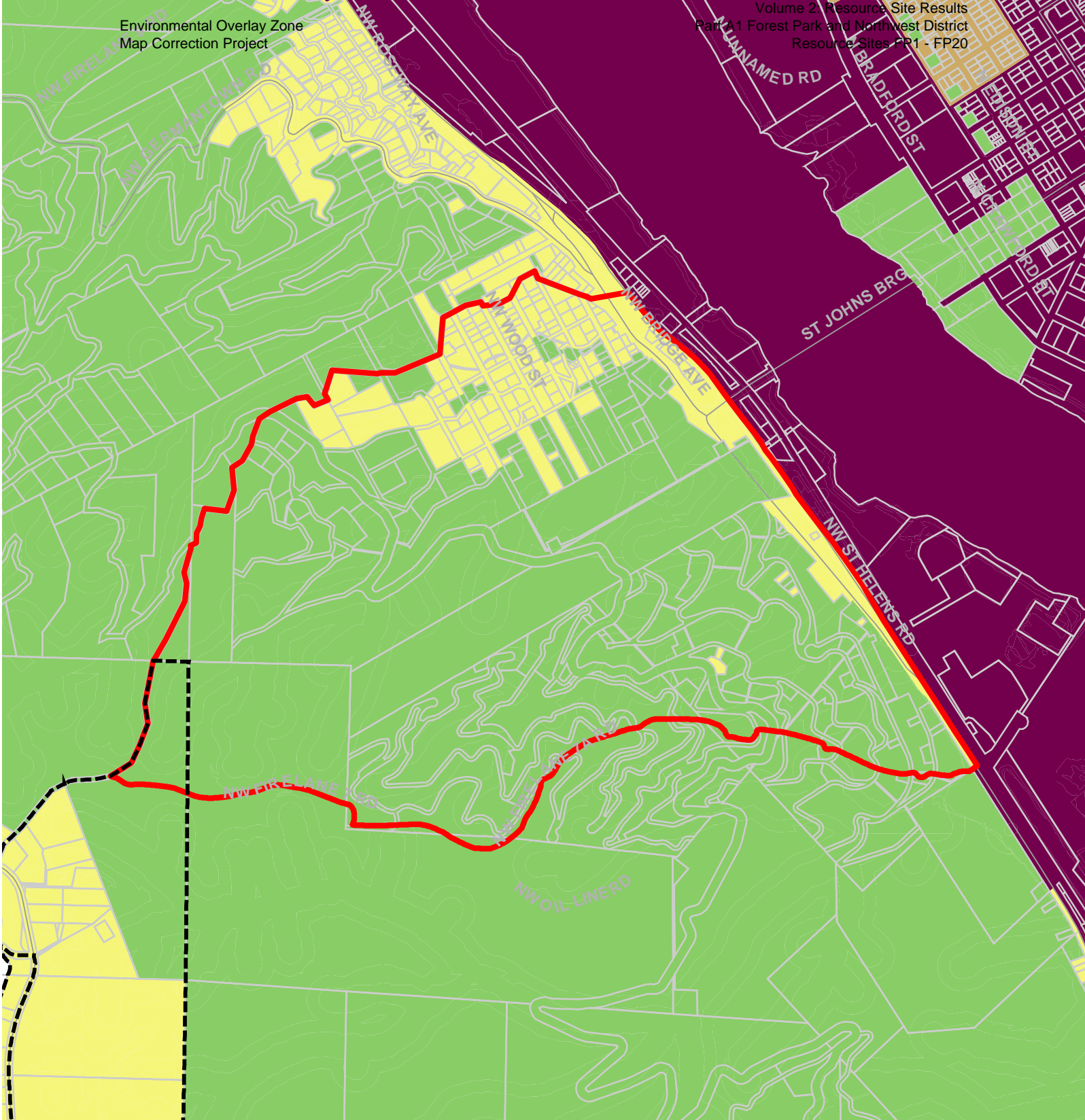
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

July 2021

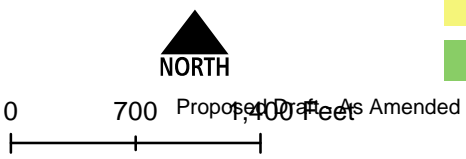


Map F: Urban Development Value (Title 13)
Resource Site: FP14

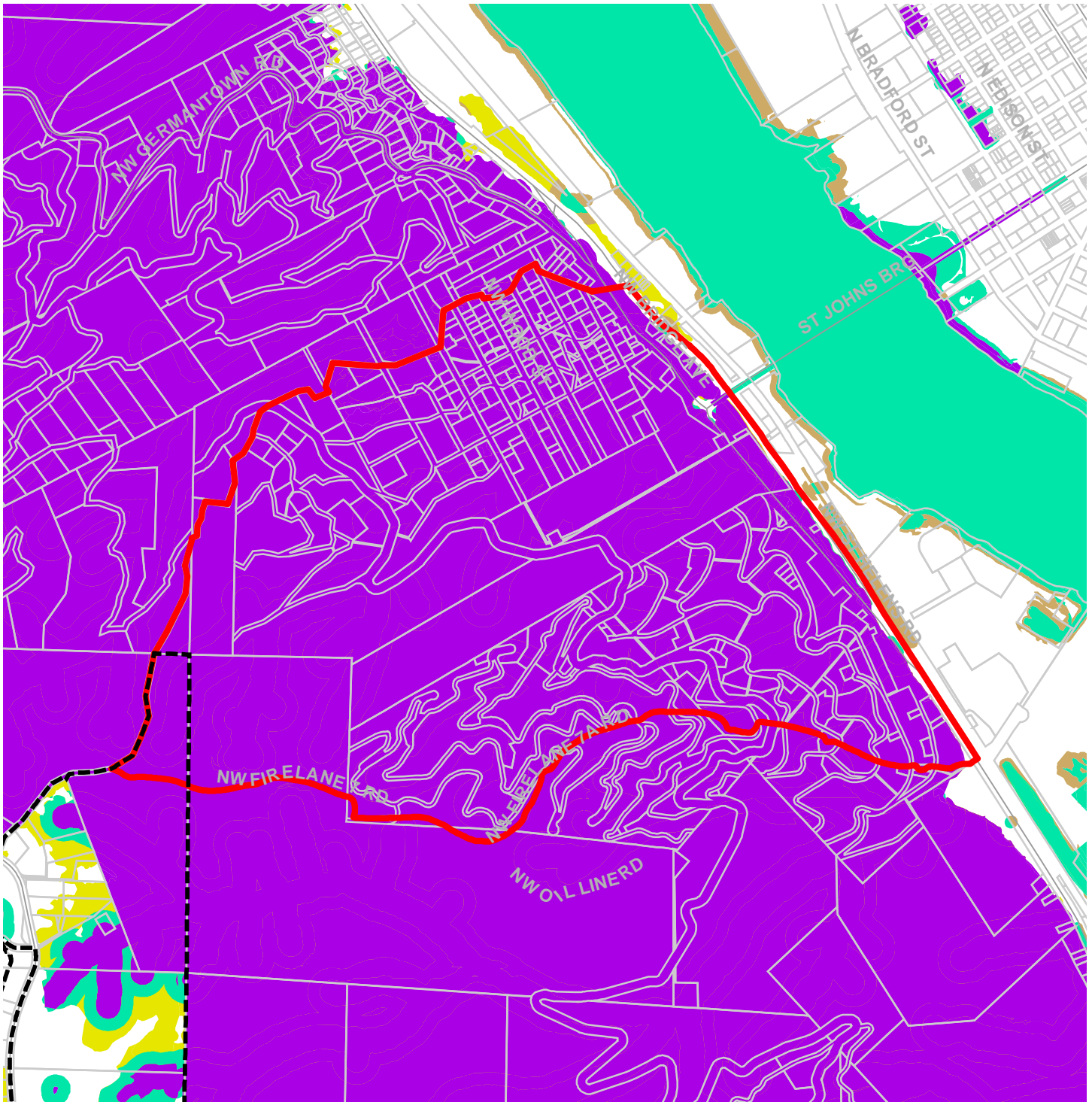
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



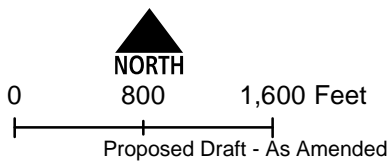
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP14

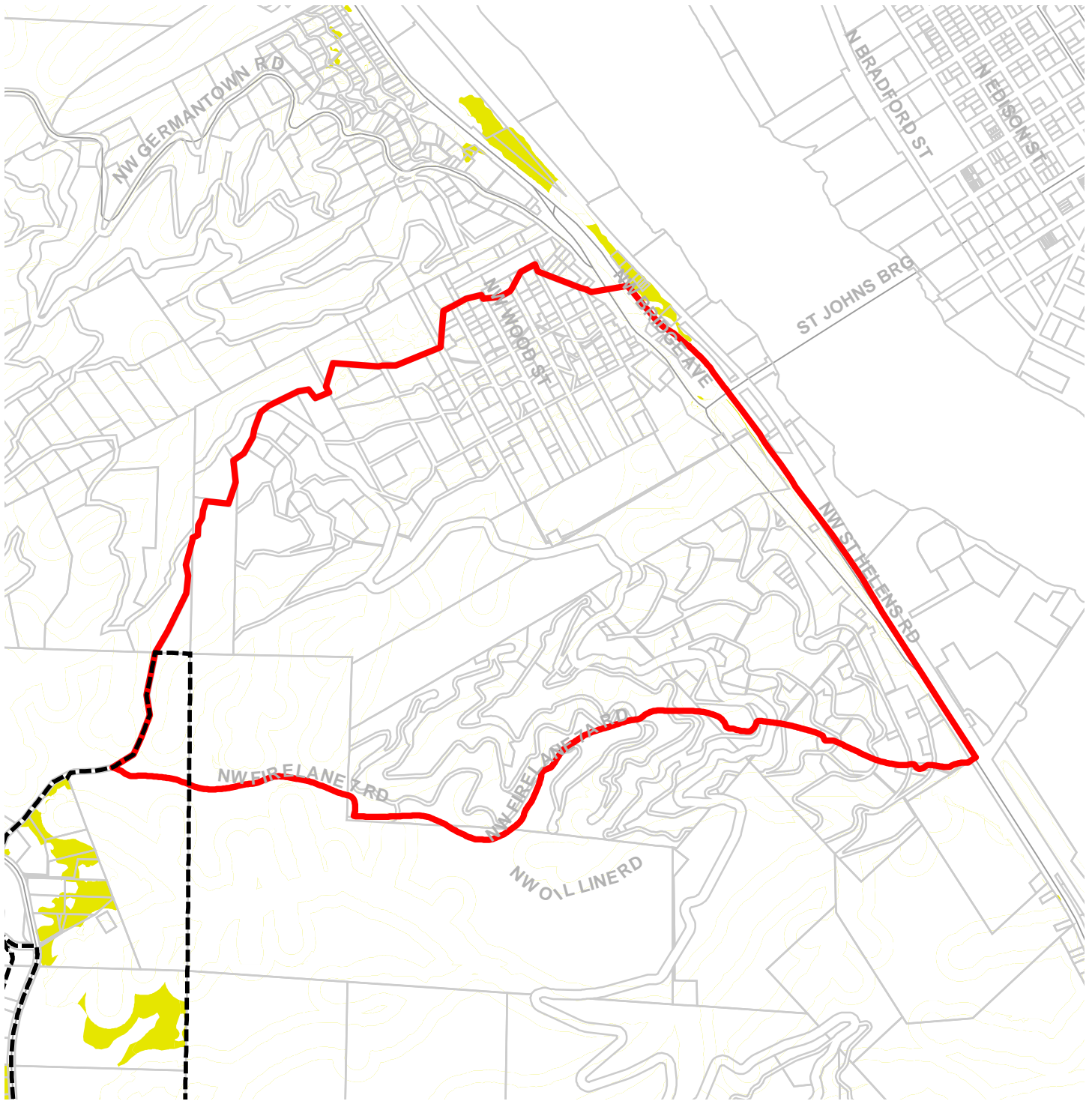
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



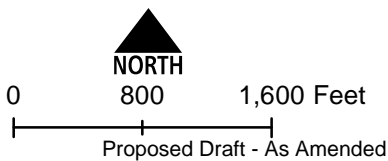
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Map H: Goal 5 Resources

Resource Site: FP14

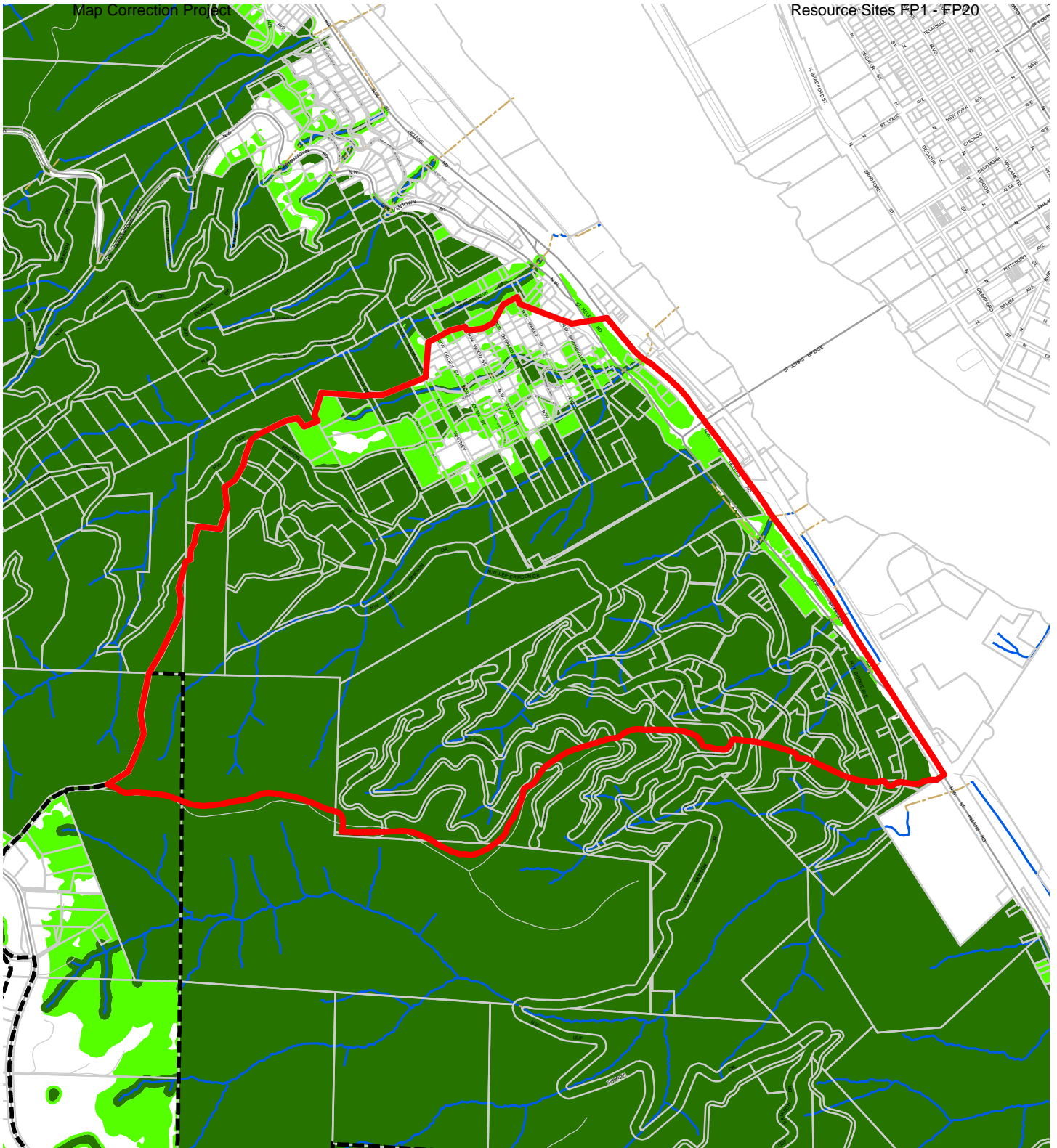
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



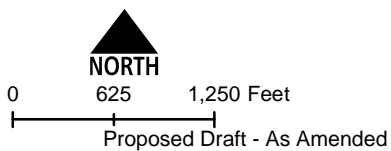
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Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP14

Updated: July 2021



-  Resource Sites
-  Open Stream Channel
-  Piped Stream Segment
-  Proposed Conservation Zone
-  Proposed Protection Zone
-  Urban Service Boundary
-  Taxlots



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July 2021

Natural Resource Description

Within resource site FP14 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: Forest Park (O, B, M, C, S, P, E)

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 FP14	
	Study Area
Stream (Miles)	5.7
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	412.3
Woodland (acres)	0.0
Shrubland (acres)	0.0
Herbaceous (acres)	1.4
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	413.7
* 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%.	

This site is dominated by a mid-aged conifer forest with some older Douglas fir approaching 200 years of age. This large forest stand is structurally diverse and offers variety within each canopy layer. Conifer-topping hardwood, hardwood with young conifer and mature hardwood also occur in small patches at elevations above 500 mean sea level. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. Non-native plants and industrial emissions have degraded the vitality of the plant community near Highway 30. Non-native plants have also escaped from the residential area near Springville Road.

This site provides high quality food and cover sources for wildlife in the area. Water is also available on a seasonal basis. State sensitive-special status bird species observed using this site are bald eagle, pileated woodpecker and the winter wren. Interspersion with surrounding forest enhances the site’s value as wildlife habitat. The St. Johns Bridge ramp and Highway 30 impede wildlife migration to the east and connection to the Willamette River.

Table B: Quality of Natural Resource Functions in Resource Site FP14				
Resource Site (acres) = 439				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	132.1	114.9	167.5	414.5
percent total inventory site area	30.1%	26.2%	38.1%	94.4%
Wildlife Habitat*				
acres	402.6	9.7	0.0	412.3
percent total inventory site area	91.7%	2.2%	0.0%	93.9%
Special Habitat Areas**				
acres	431.8			
percent total inventory site area	98.3%			
Combined Total*				
acres	404.7	8.9	0.9	414.5
percent total inventory site area	92.1%	2.0%	0.2%	94.4%
* 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 site FP14, 2.3% 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 FP14			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
439.2	12.7	10.0	2.3%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP14. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

All of the significant natural resources within resource site FP14 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required.

Natural Resources Protection 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 FP14, 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 or wetlands, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP15 Resource Site Name: Doane Creek Headwaters

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 95

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:

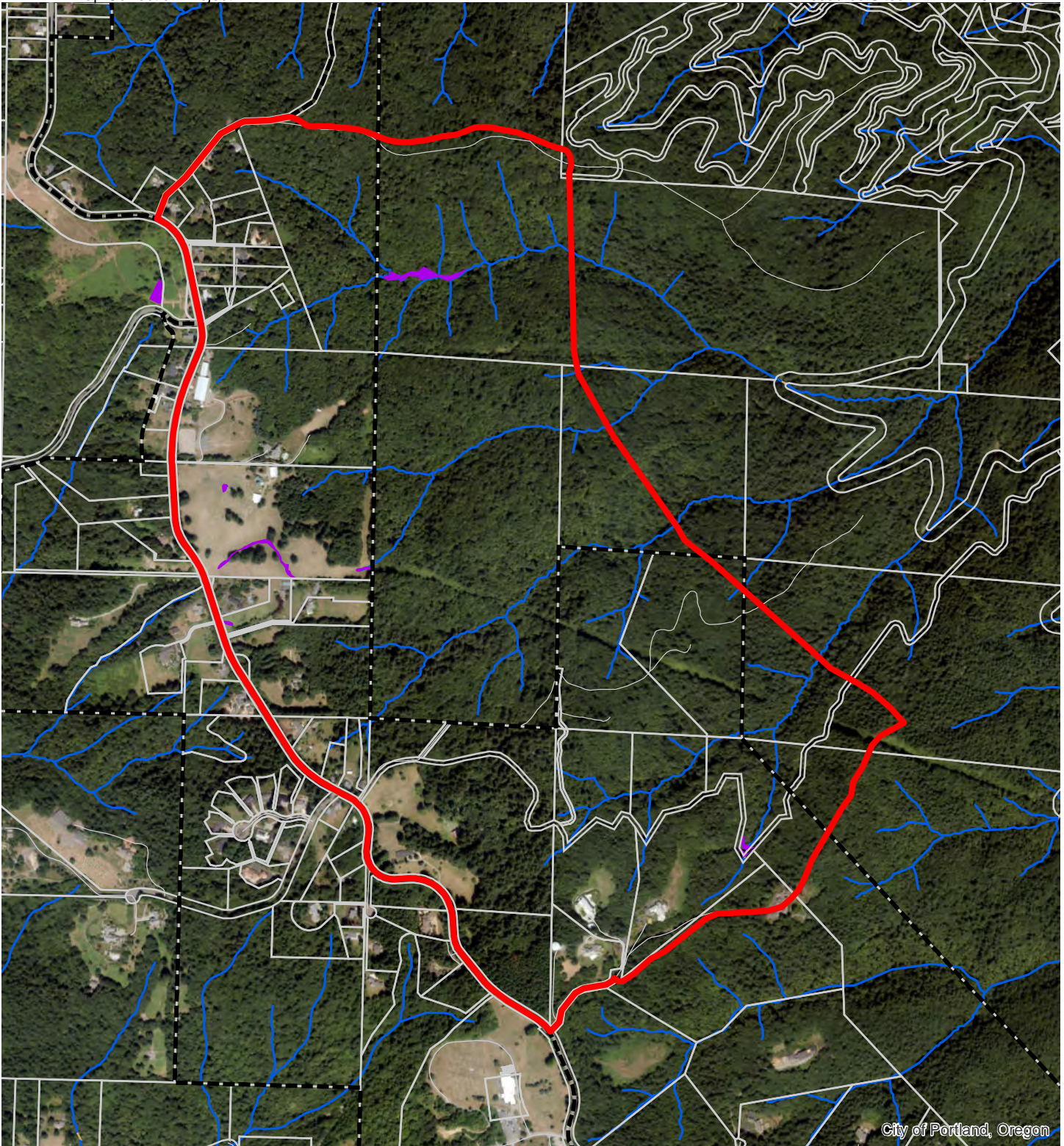
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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 FP15 includes the following:

Site (acres)	443.4
Base zones (acres)	
OS	244.5
RF	198.9



City of Portland, Oregon

Map A: Water Features
Resource Site: FP15

Updated: July 2021



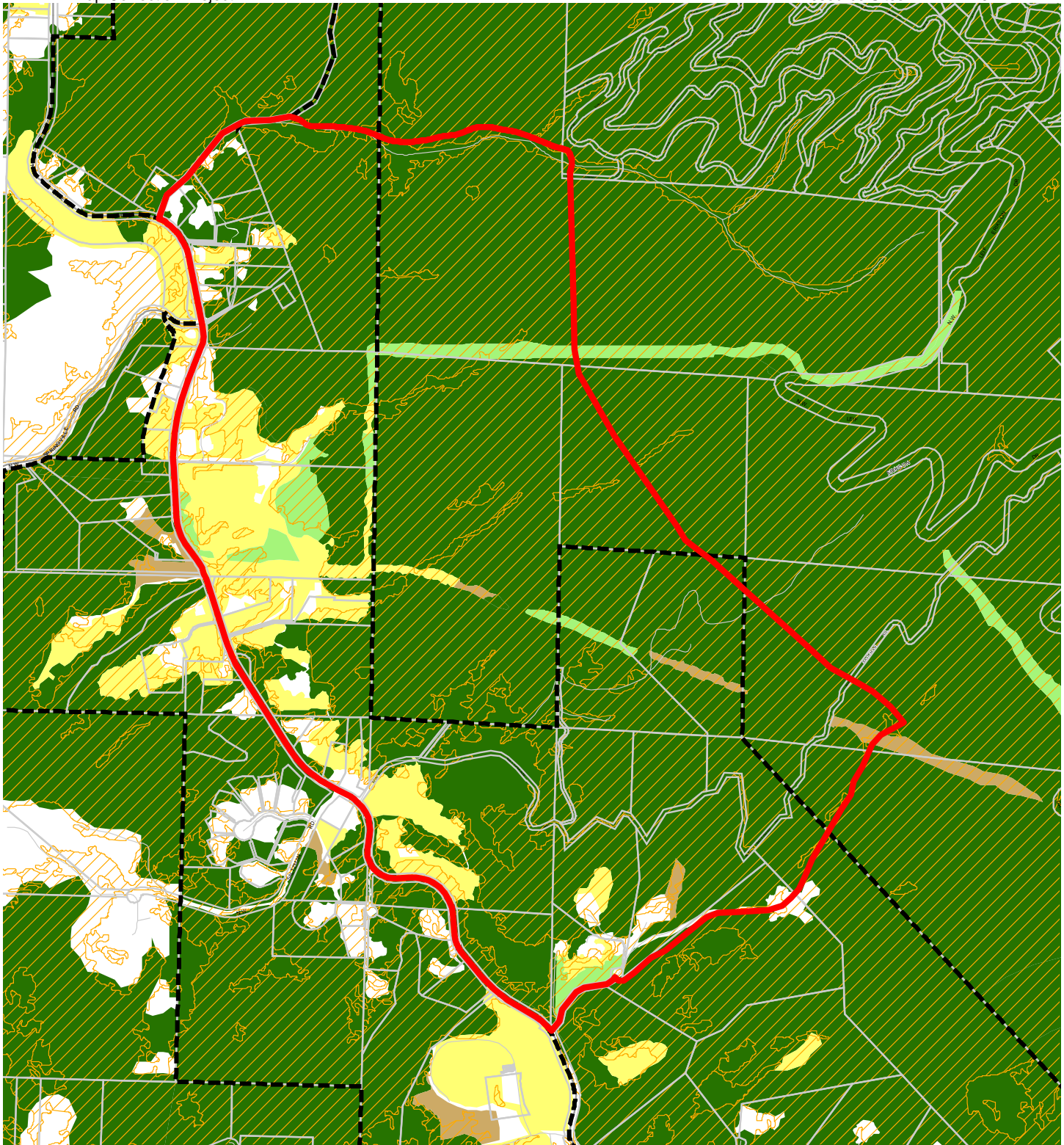
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Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



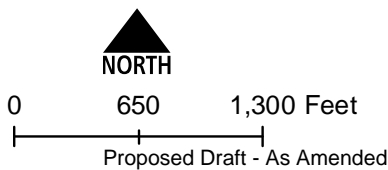
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July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP15

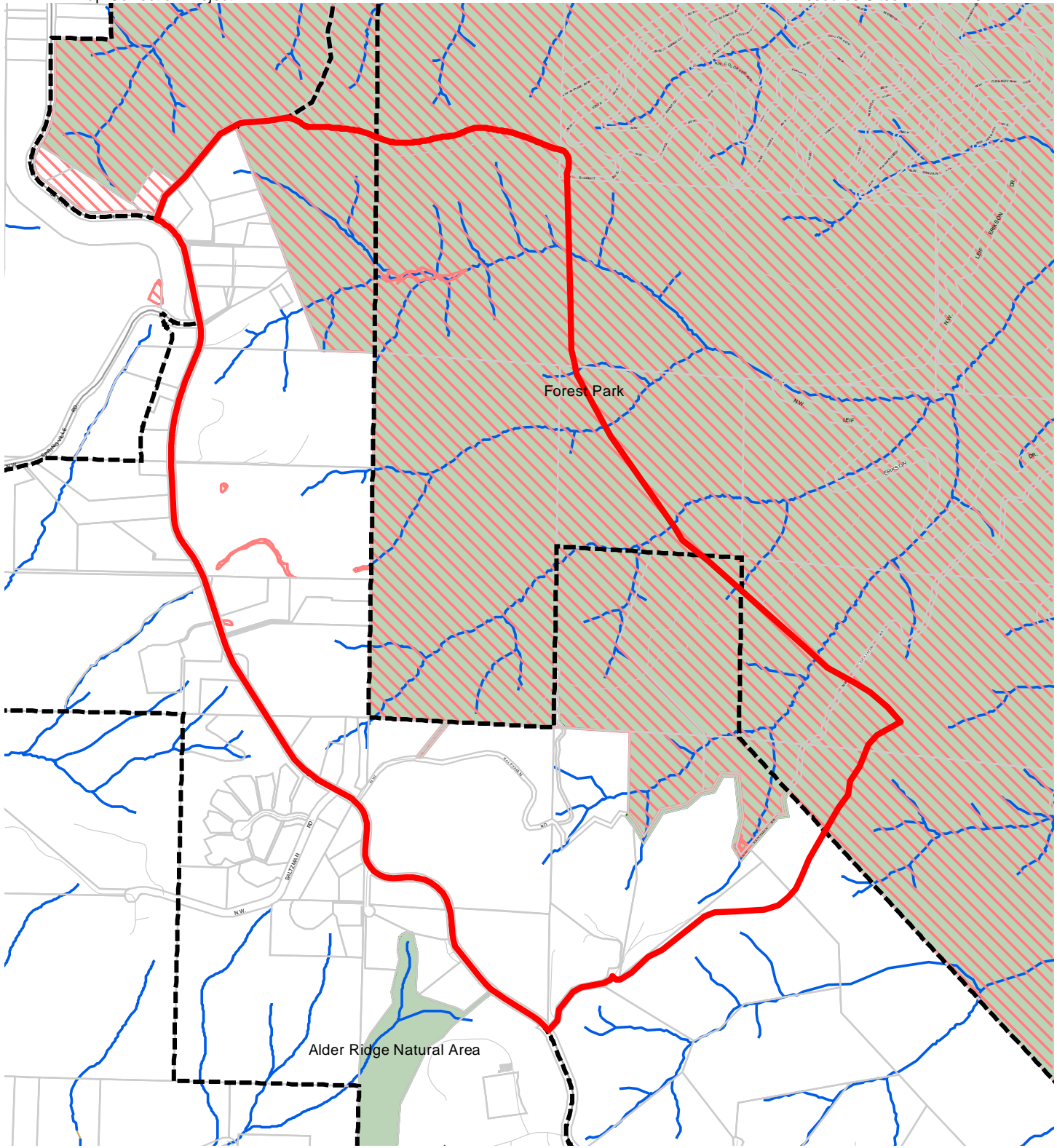
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

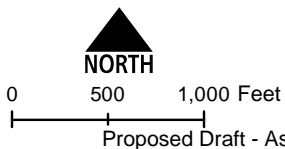


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July 2021










**Map C: Special
Habitat Areas**
**Resource Site:
FP15**

Updated: June 2021

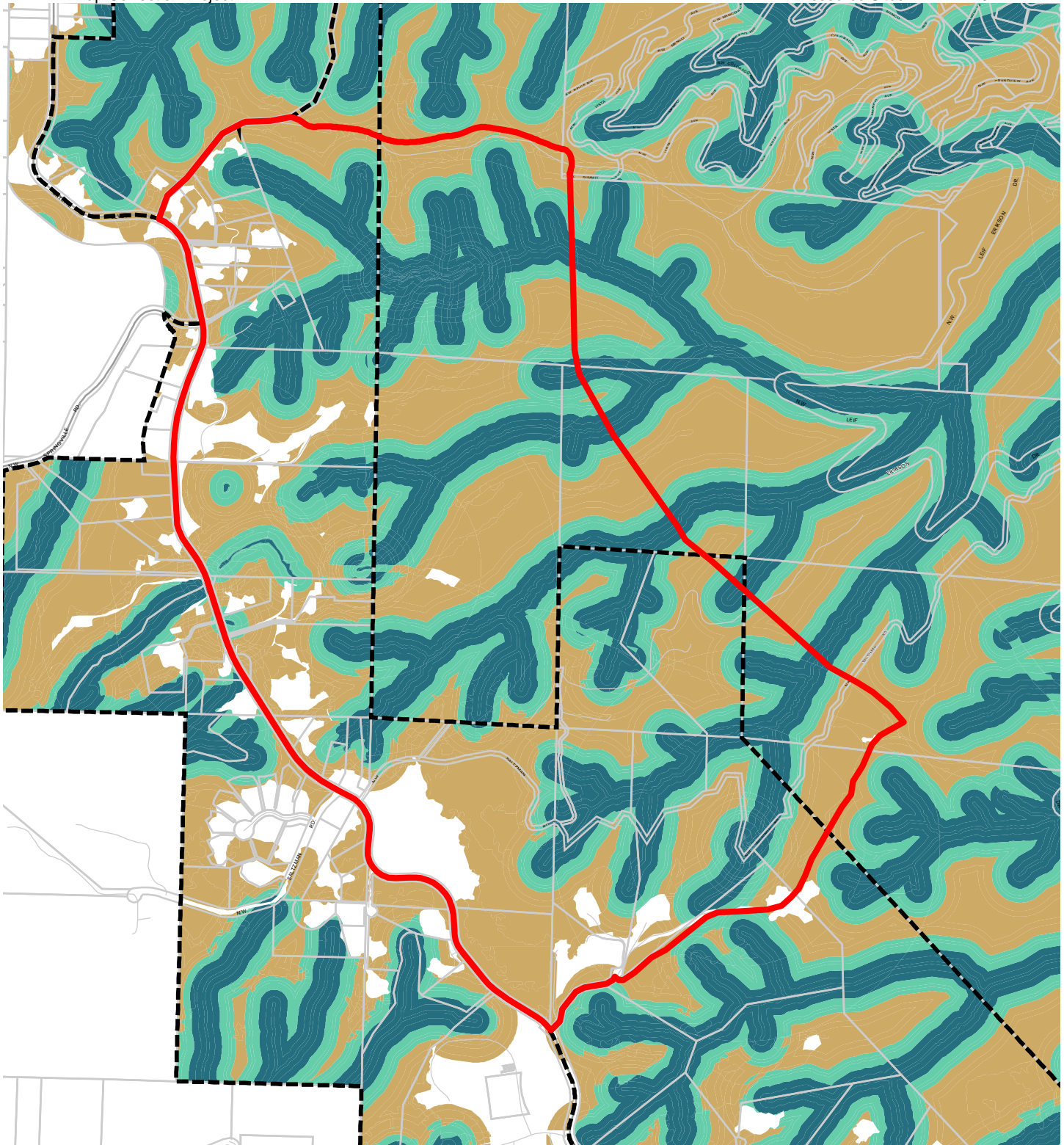


Proposed Draft - As Amended

-  Resource Sites
-  Special Habitat Areas (SHAs)
-  Open Stream Channel
-  Piped Stream Segment
-  Parks
-  Schools
-  Urban Service Boundary
-  Taxlots









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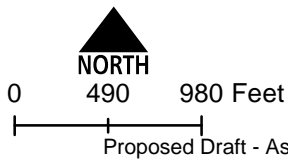


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP15**

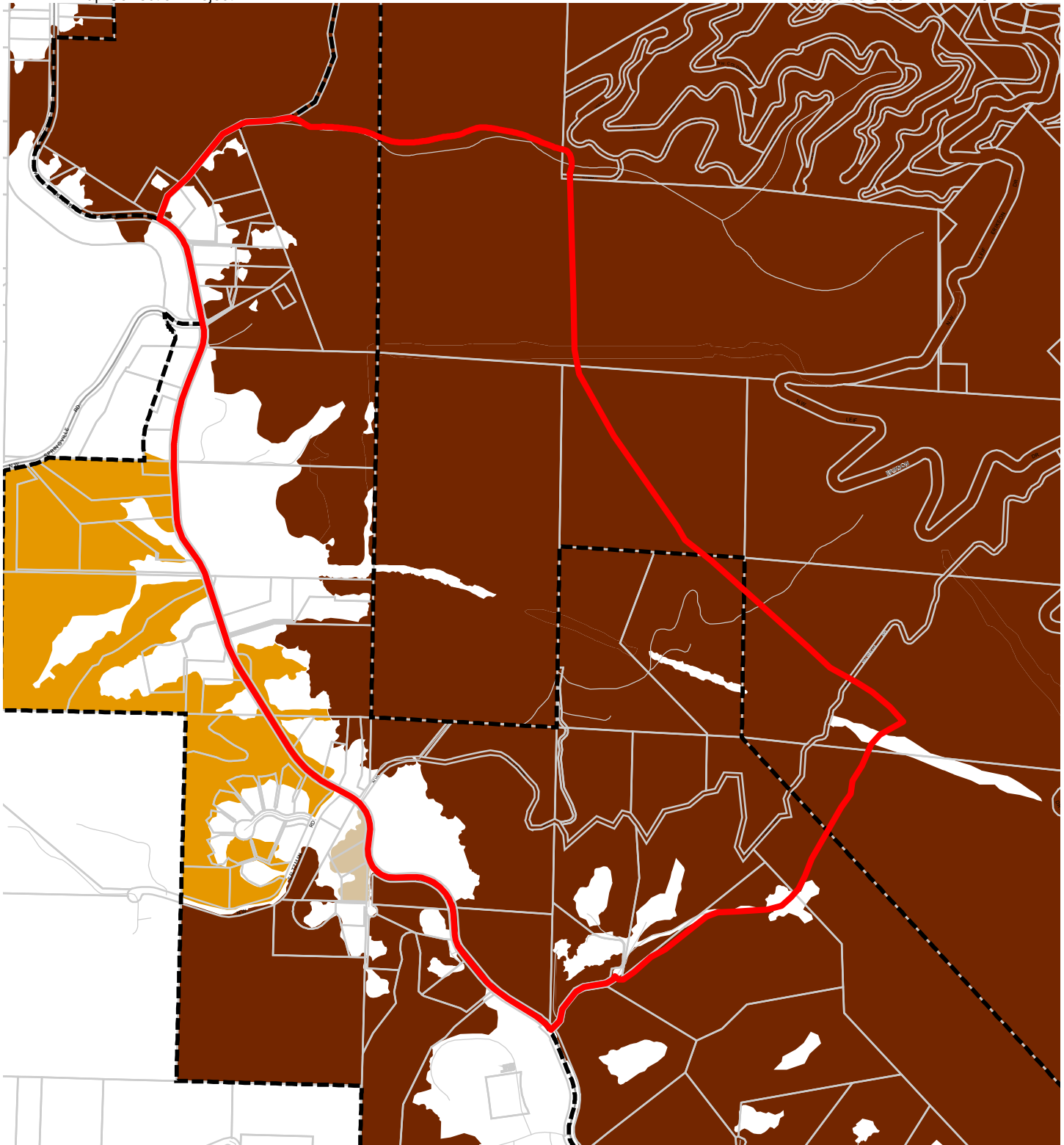
Updated: July 2021

-  Resource Sites
-  Urban Service Boundary
-  Class I (high rank)
-  Class II (medium rank)
-  Class III (low rank)
-  Taxlots



Proposed Draft - As Amended

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**Map E: Wildlife
Habitat Classification
Resource Site:
FP15**

Updated: July 2021



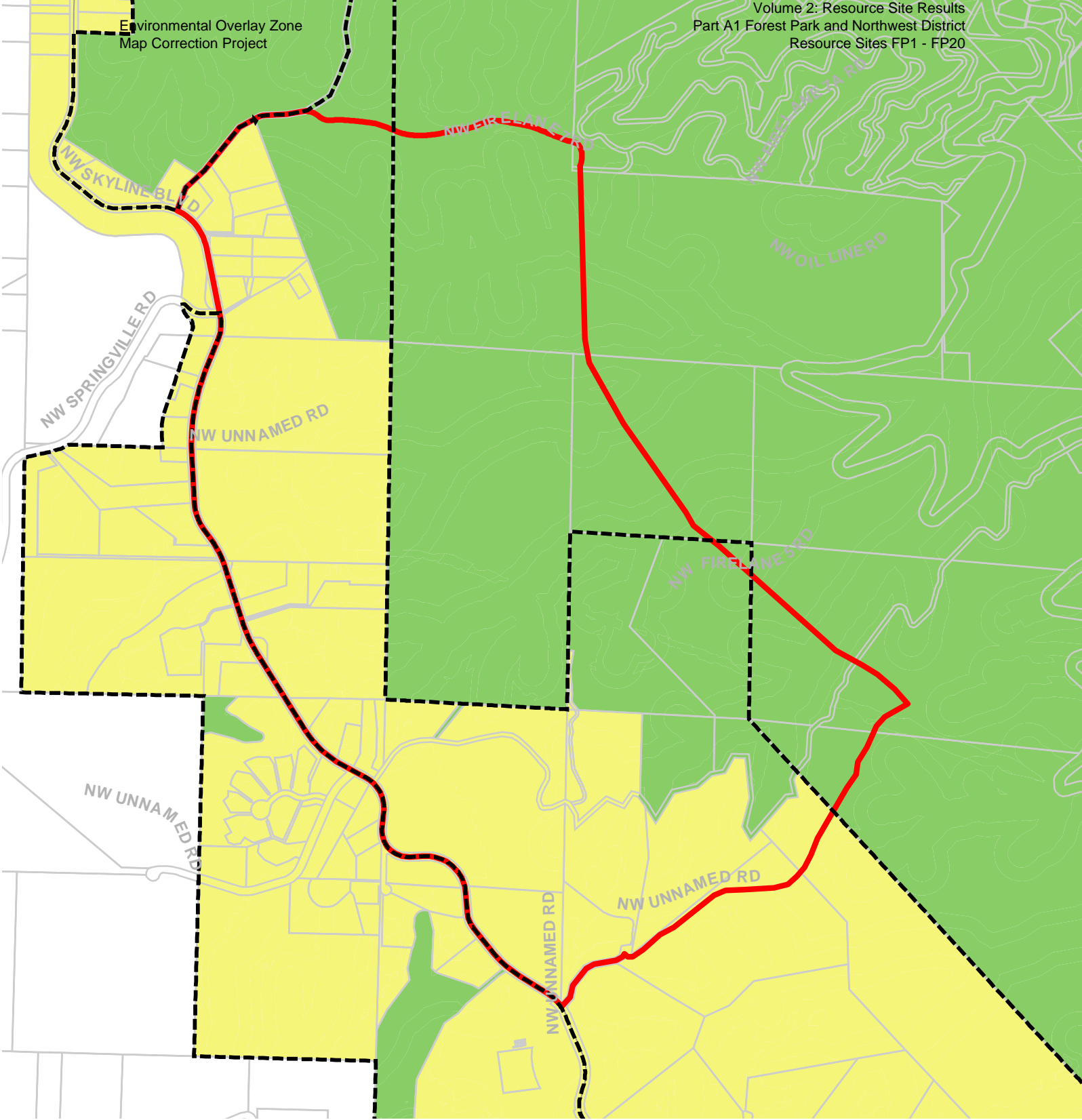
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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Map F: Urban Development Value (Title 13)
Resource Site: FP15

-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks

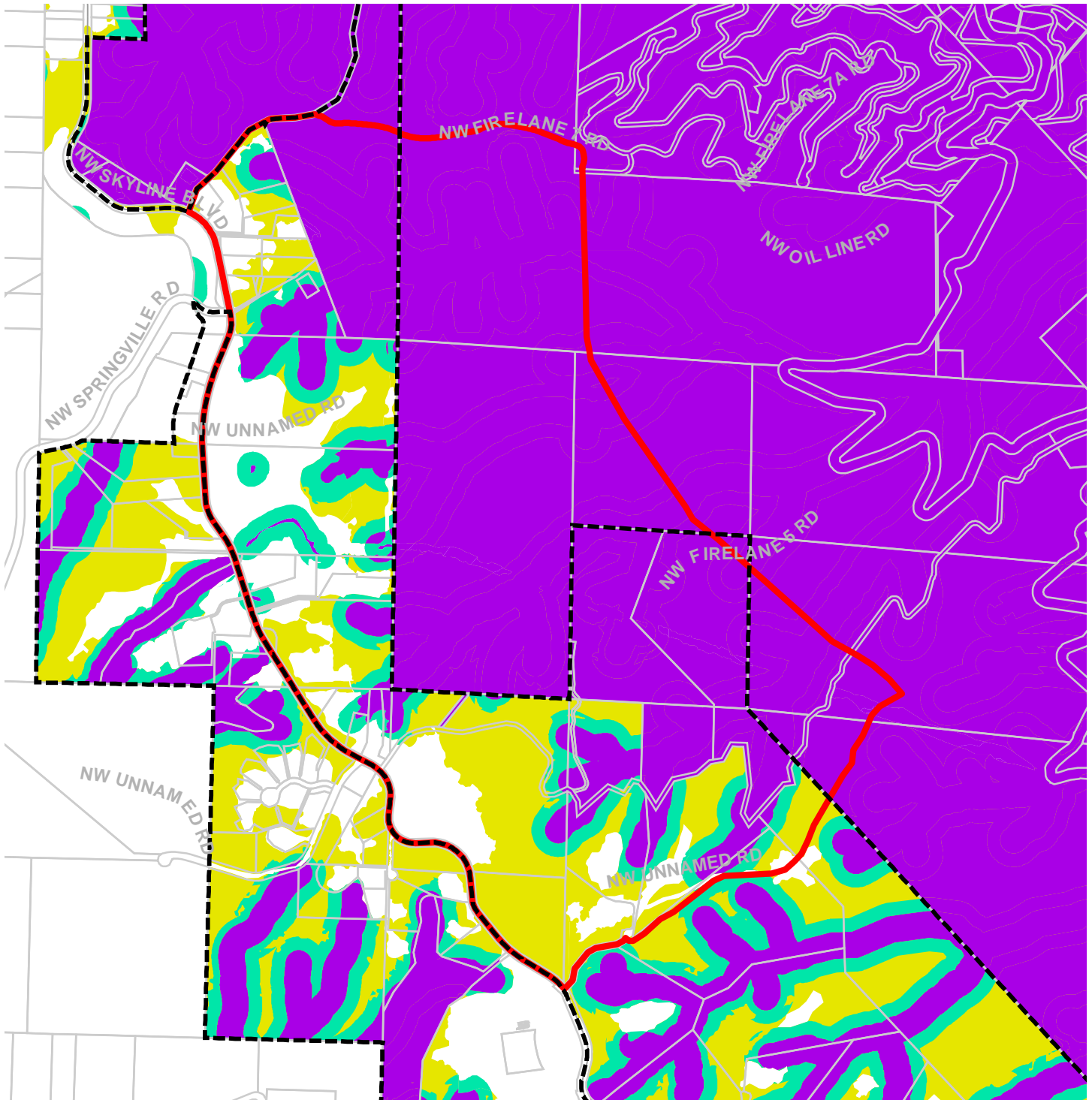
Updated: July 2021



0 625 Proposed Staff As Amended 1,250 Feet



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Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP15

Updated: July 2021

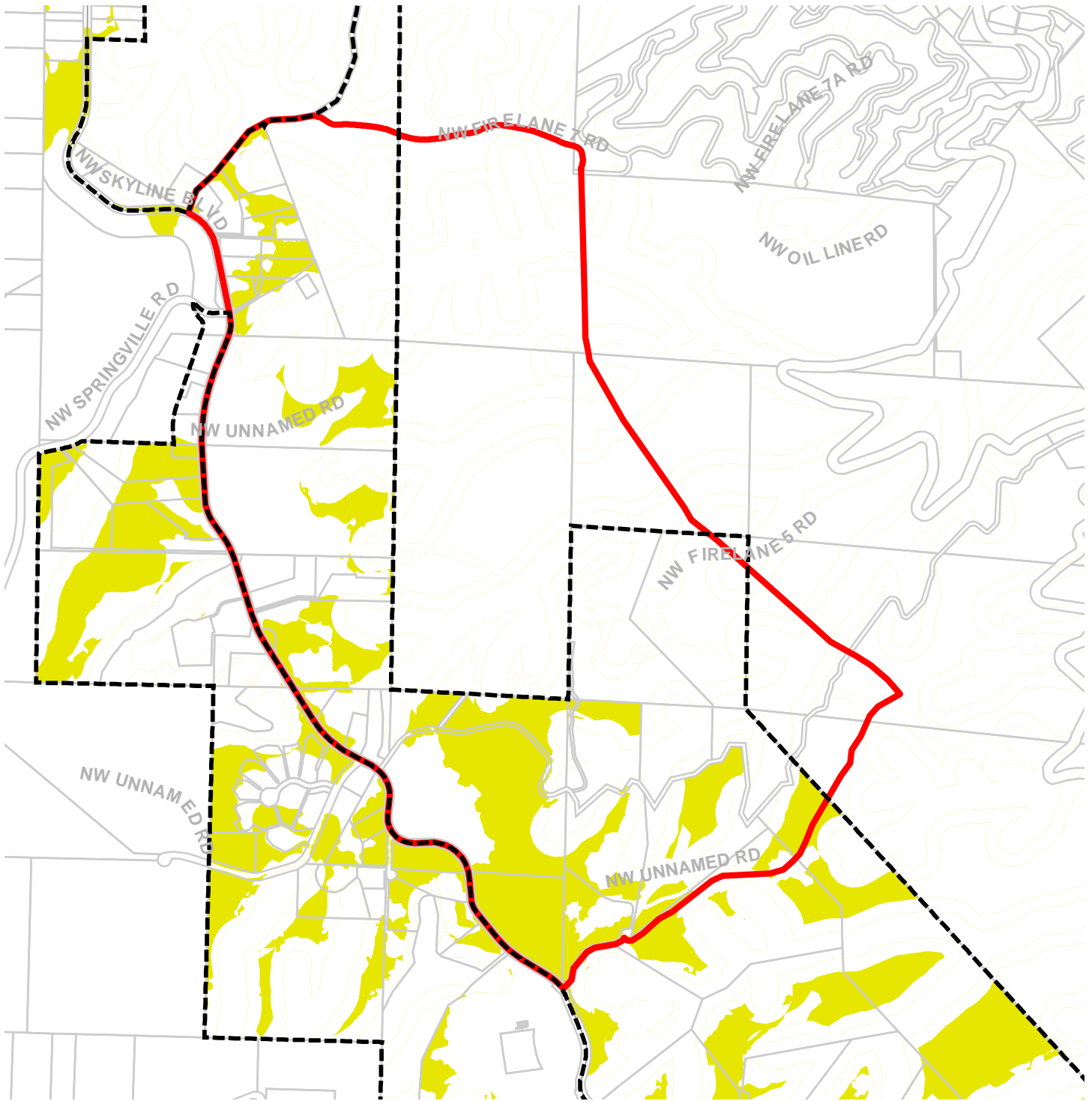


Proposed Draft - As Amended

-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



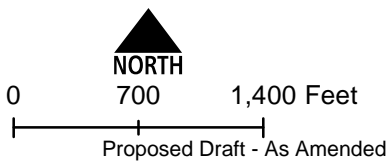
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Map H: Goal 5 Resources

Resource Site: FP15

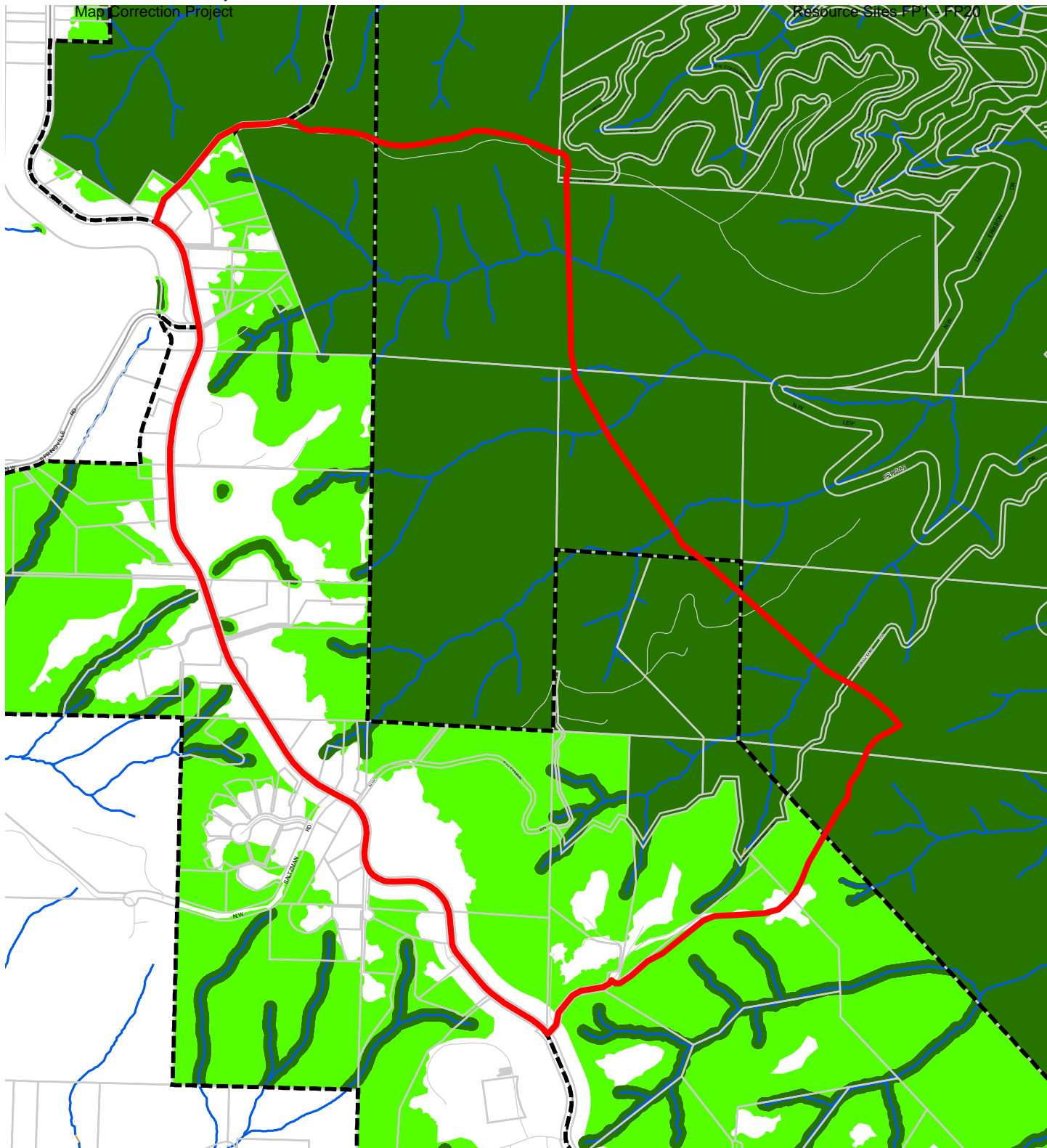
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



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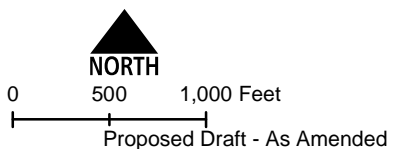


Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP15

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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 July 2021

Natural Resource Description

Within resource site FP15 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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 FP15	
	Study Area
Stream (Miles)	5.1
Wetlands (acres)	1.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	365.2
Woodland (acres)	13.7
Shrubland (acres)	2.6
Herbaceous (acres)	43.7
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	359.9
* 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 site forms the upper Doane Creek watershed. Most of the basin of this year-round creek is protected by forest cover composed of three principle vegetation types: mid-aged conifer, conifer-topping hardwood and hardwood with young conifer. Interspersed with these forest stages are small stands of mature hardwood. A linear shrub stand follows the power line rights-of-way. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. Large areas of cleared residential, pasture and cropland are located along Skyline Boulevard. Nonnative plants along these disturbance margins have begun to spread into the forest.

This site provides medium to high quality food and cover for resident and migratory wildlife. The stream headwaters serve a critical function in sustaining water quality for sensitive amphibian species such as the red-legged frog which inhabits the watershed. Bird species identified at this site include pileated woodpecker, red-tailed hawk and winter wren. The site’s interspersion with surrounding forest allows for free migration of wildlife and increases its value as habitat. Skyline Boulevard and adjacent development limit migratory opportunities to the west. Significant portions of the western edge of the site along Skyline Boulevard have been cleared and maintained as pastureland or expansive lawns.

Table B: Quality of Natural Resource Functions in Resource Site FP15				
Resource Site (acres) = 443				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	117.7	108.7	179.8	406.2
percent total inventory site area	26.5%	24.5%	40.5%	91.6%
Wildlife Habitat*				
acres	367.9	4.1	0.0	372.0
percent total inventory site area	83.0%	0.9%	0.0%	83.9%
Special Habitat Areas**				
acres	244.0			
percent total inventory site area	55.0%			
Combined Total⁺				
acres	368.4	12.4	26.0	406.8
percent total inventory site area	83.1%	2.8%	5.9%	91.7%
* 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 site FP15, 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 FP15			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
443.4	9.8	1.5	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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP15. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP15 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP15, 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*.

Natural Resources Protection 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 FP15, 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 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP16 **Resource Site Name:** Doane Creek Watershed

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 94

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.

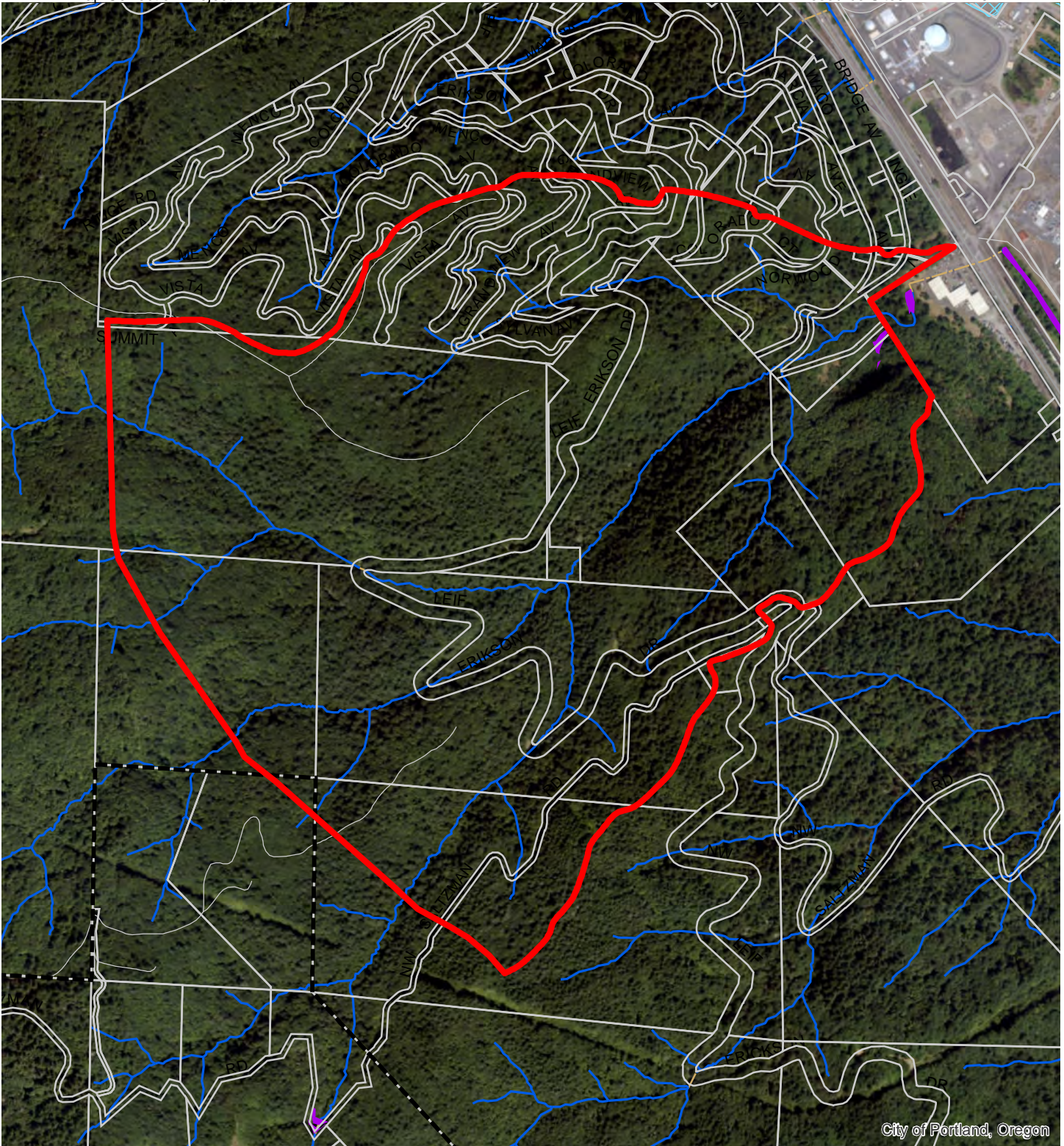
Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site FP16 includes the following:

Site (acres) 337.3

Base zones (acres)

 OS 337.3

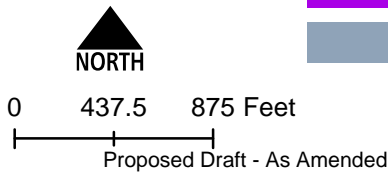


City of Portland, Oregon

Map A: Water Features

Resource Site: FP16

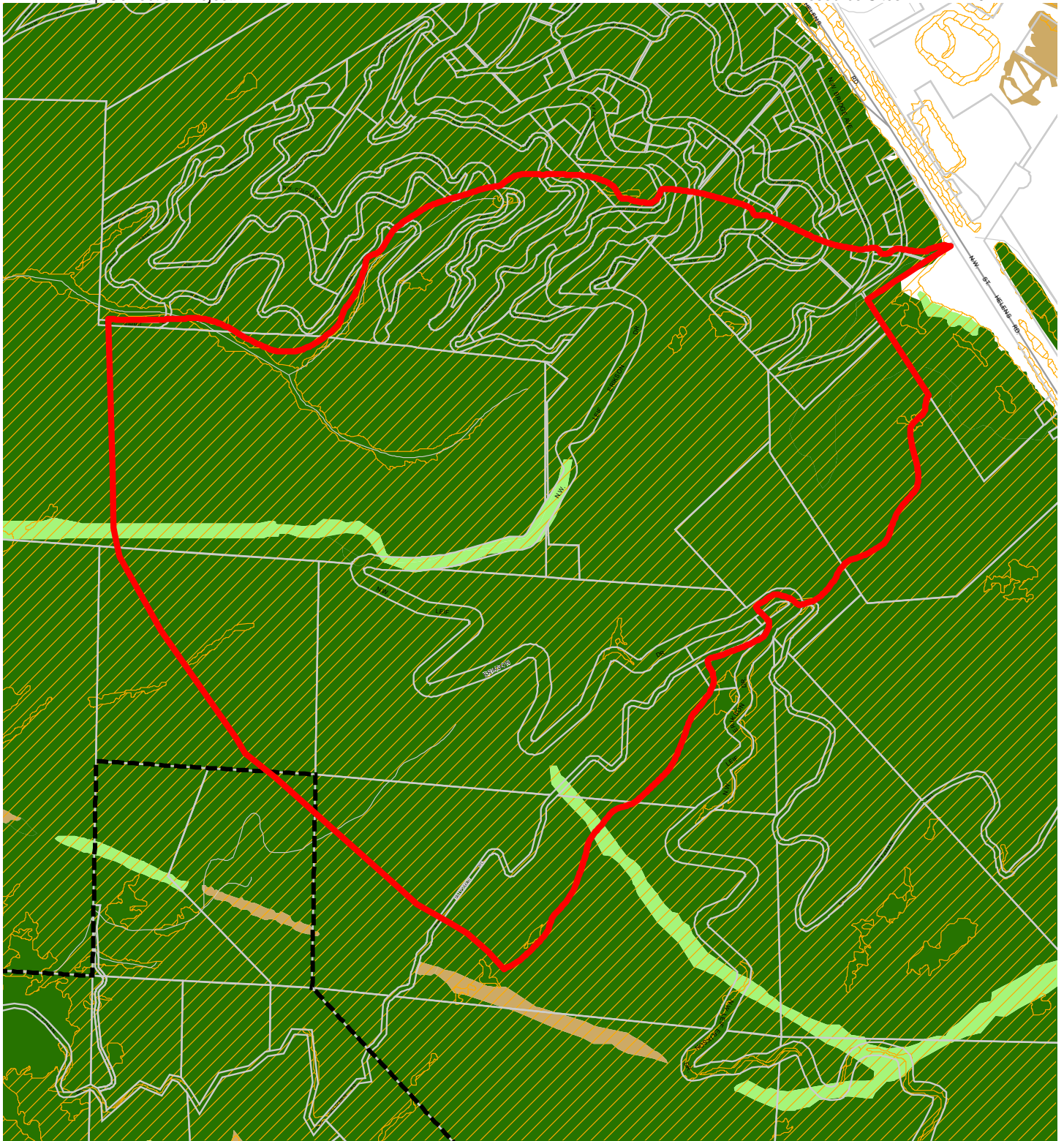
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



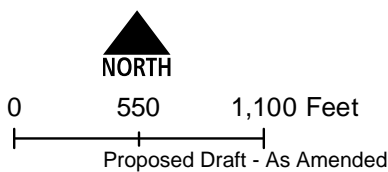
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Map B: Vegetation and Steep Slopes

Resource Site: FP16

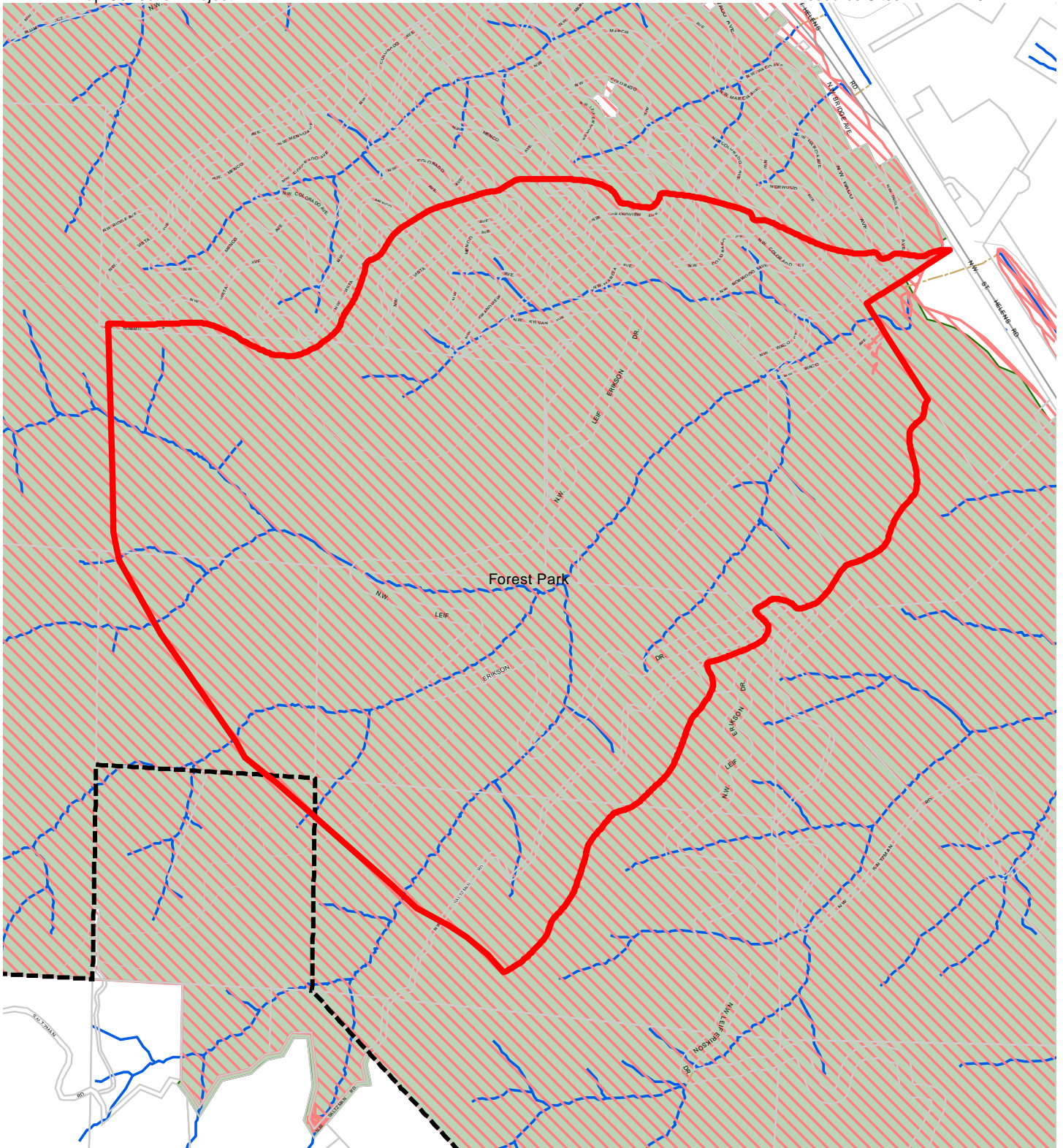
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

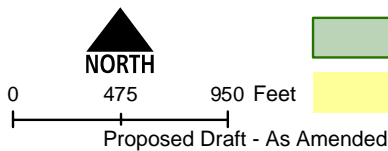








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**Map C: Special
Habitat Areas**
**Resource Site:
FP16**

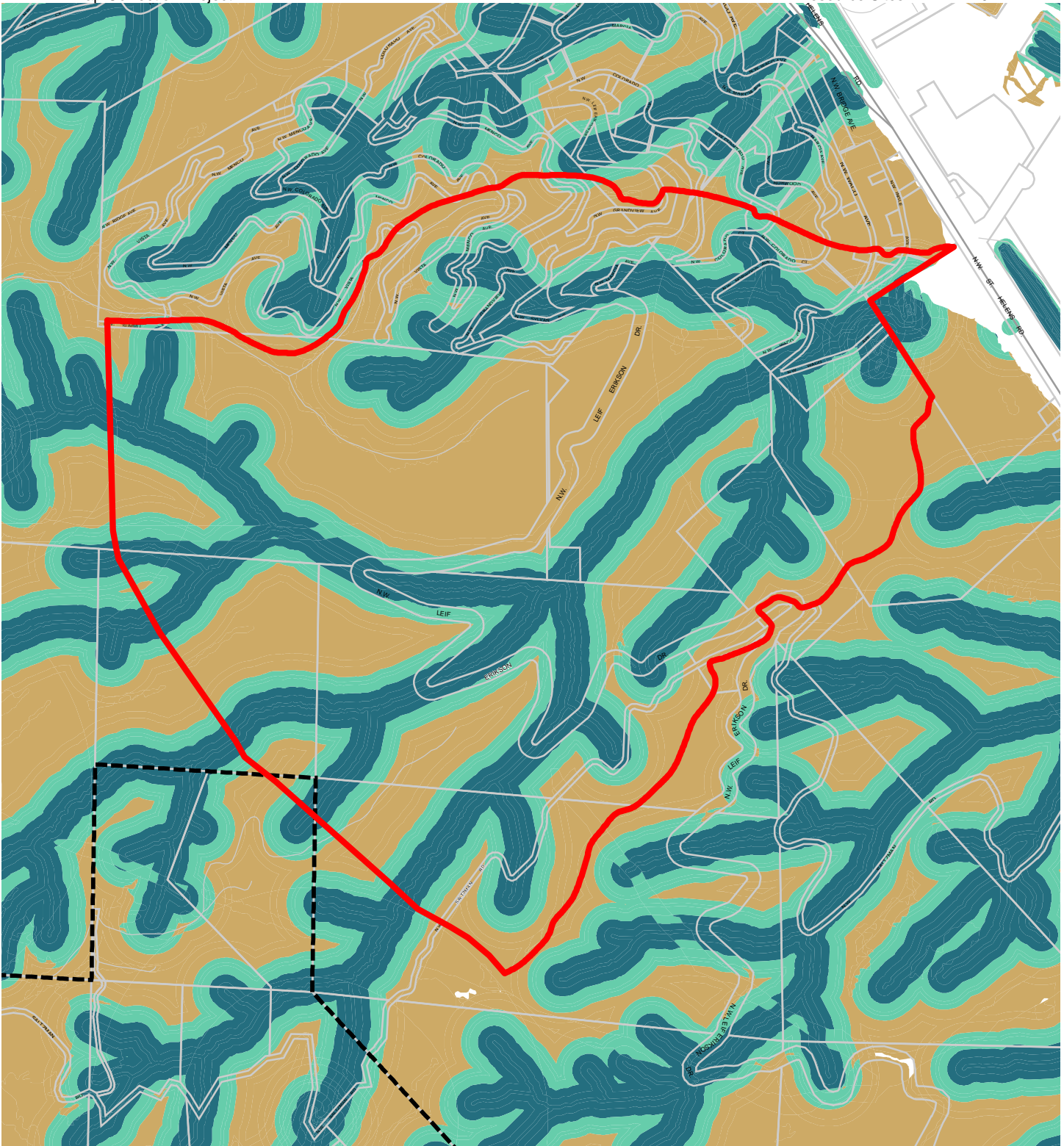
Updated: June 2021



-  Resource Sites
-  Special Habitat Areas (SHAs)
-  Open Stream Channel
-  Piped Stream Segment
-  Parks
-  Schools
-  Urban Service Boundary
-  Taxlots



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**Map D: Riparian
Corridors Habitat
Classification**

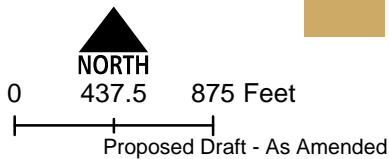
**Resource Site:
FP16**

Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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**Map E: Wildlife
Habitat Classification
Resource Site:
FP16**

Updated: July 2021

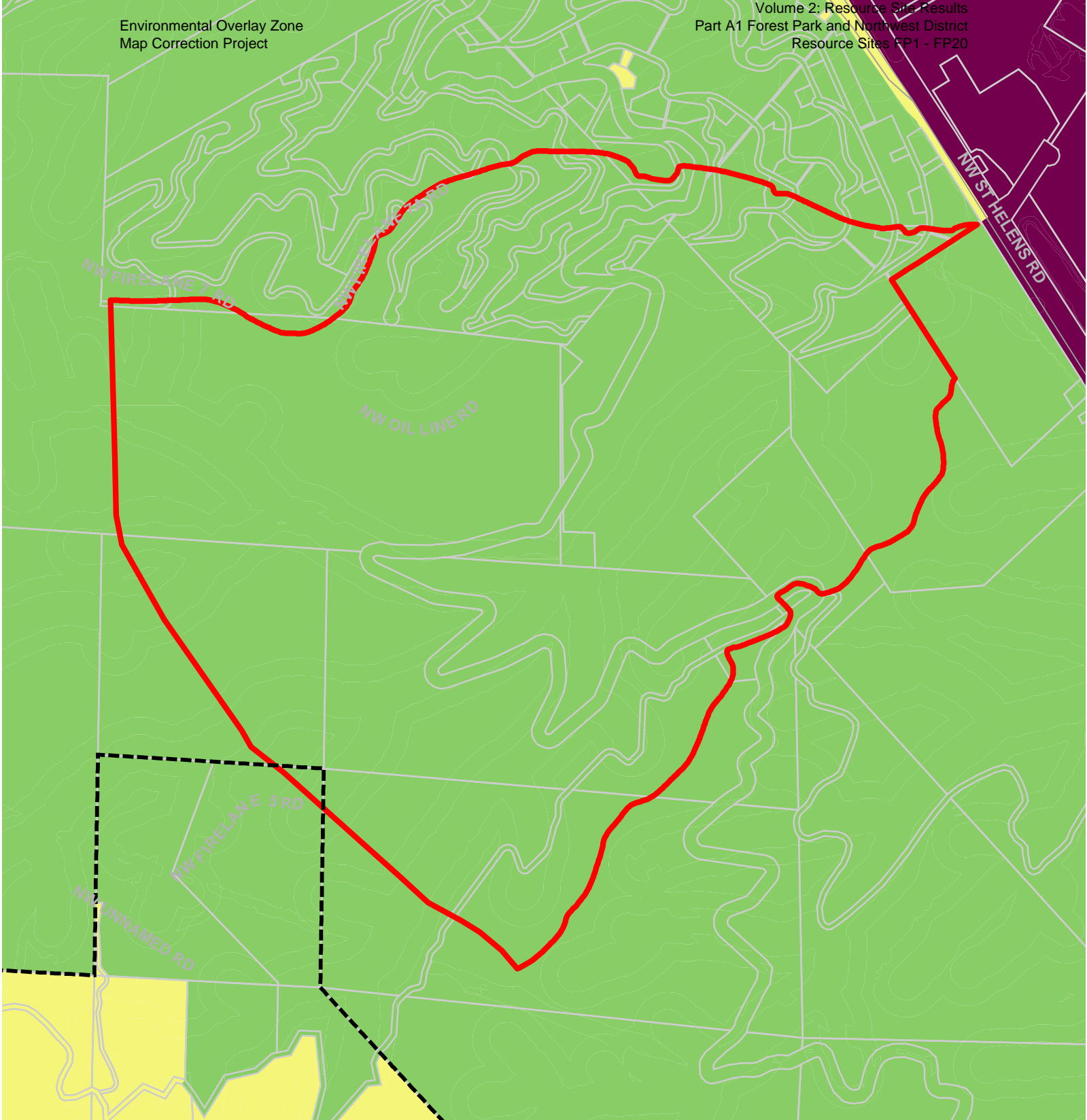


Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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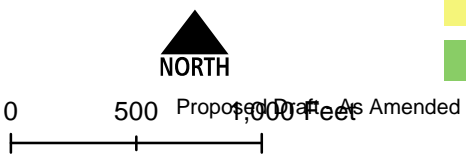


Map F: Urban Development Value (Title 13)
Resource Site: FP16

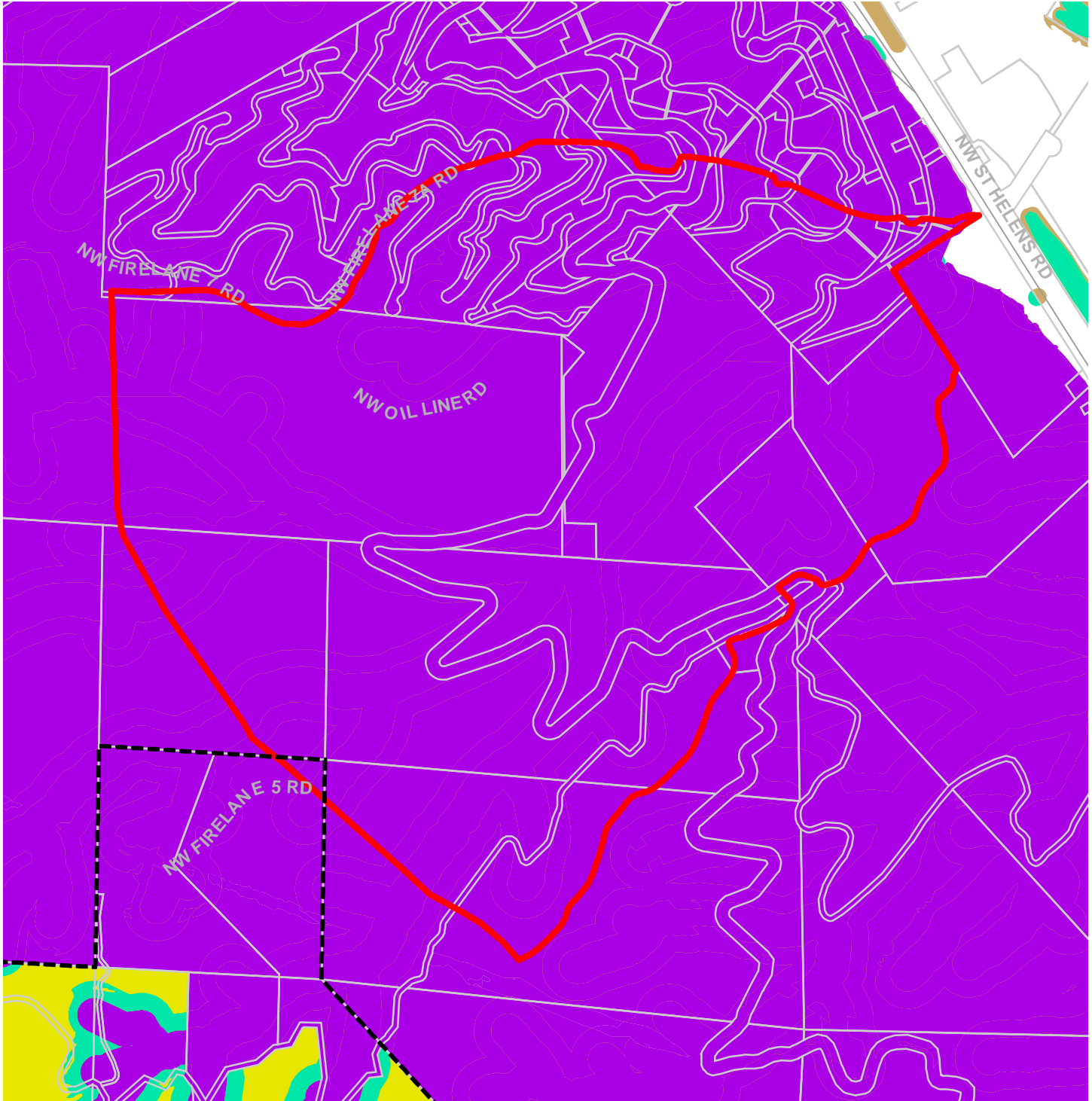
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



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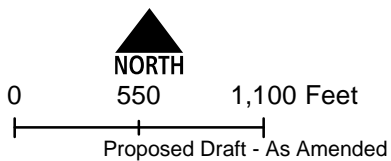


Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

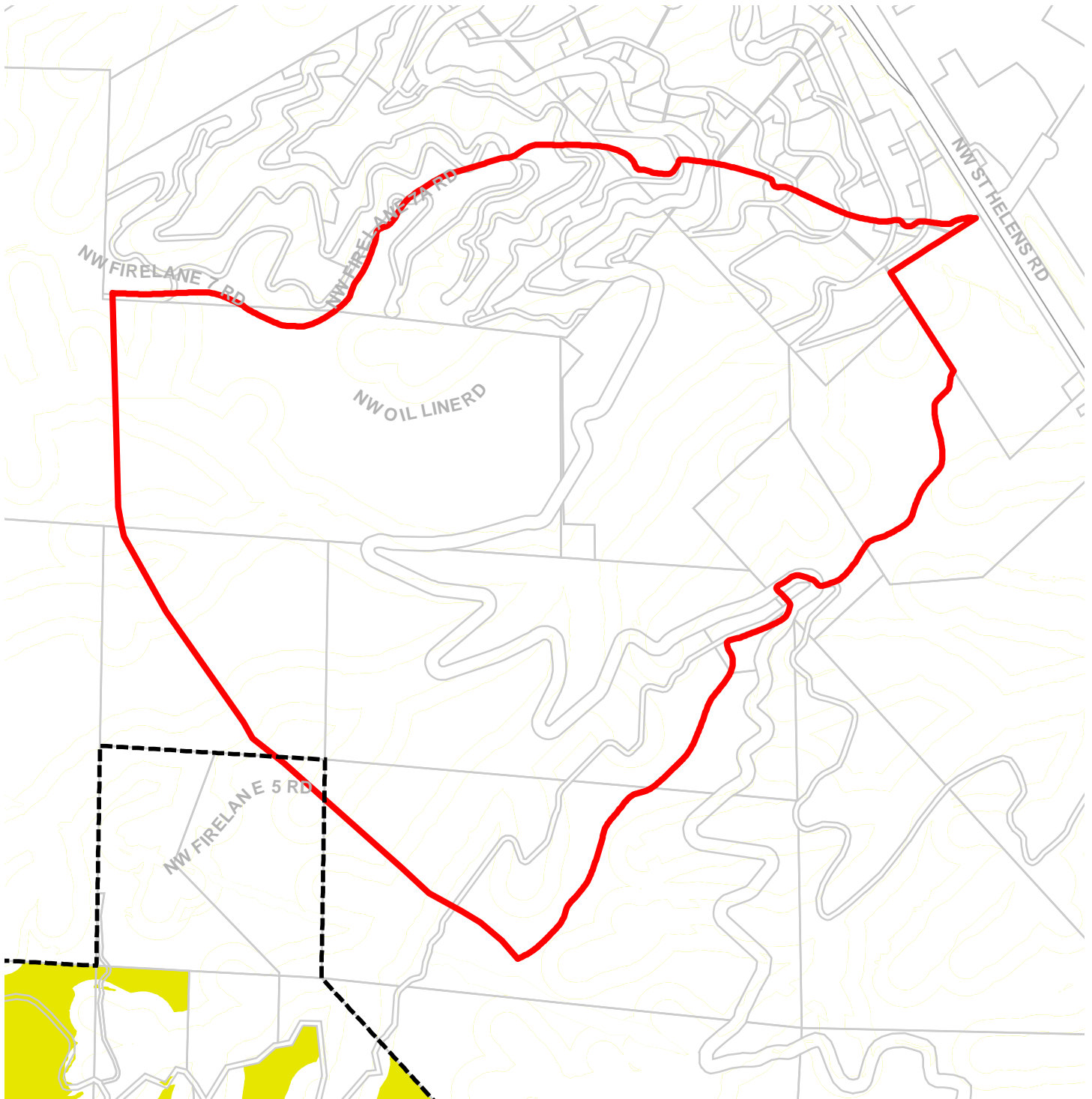
Resource Site: FP16

Updated: July 2021

- Urban Service Boundary
- Resource Sites
- HCA High Value
- HCA Moderate Value
- HCA Low Value
- Goal 5 Significant Natural Resources



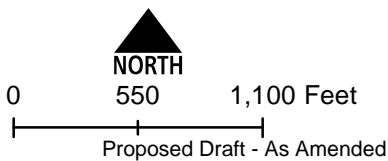
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Map H: Goal 5 Resources

Resource Site: FP16

Updated: July 2021

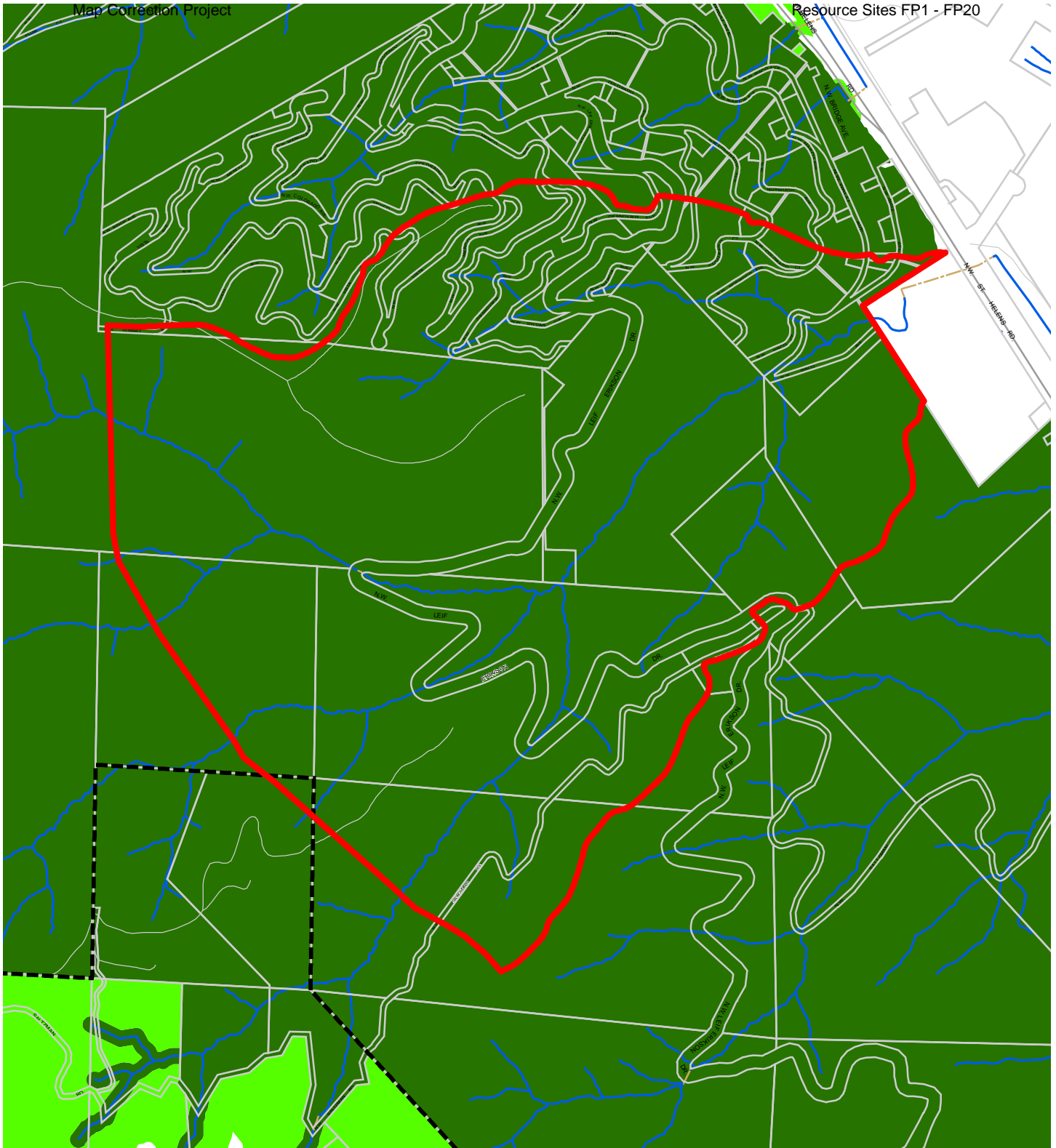


-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



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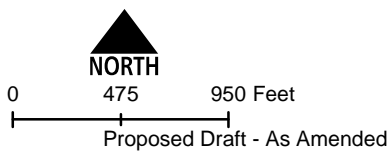


Map I: DRAFT Proposed Environmental Overlay Zones

**Resource Site:
FP16**

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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July 2021

Natural Resource Description

Within resource site FP16 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: Forest Park (O, B, M, C, S, P, E); wetlands (W)

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 FP16	
	Study Area
Stream (Miles)	4.3
Wetlands (acres)	0.1
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	330.5
Woodland (acres)	6.7
Shrubland (acres)	0.0
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	332.3
* 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 site forms the lower reach of the Doane Creek watershed. Most of the basin of this year-round creek is in forest cover and elevated from the noises and traffic in the industrial area along Highway 30. At the bottom of the basin, however, the streambed and the natural hillside terrain have been highly disturbed by past mining activities. A small palustrine wetland has formed adjacent to Doane Creek in an abandoned quarry excavation. The wetland provides secluded habitat for a variety of songbirds and waterfowl.

This site has a diverse riparian habitat and climax conifer species are well established in the uplands. Substantial downed woody material has accumulated in the streambed and on the forest floor. *Conifer-topping hardwood* and *mid-aged conifer* are the most common vegetation types at the site, though small patches of hardwood with young conifer, mature hardwood and shrub are also present. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Snags, downed logs and woody debris found at the site are critical structural and functional components of the watershed ecosystem. Invasive species such as holly, ivy, laurel and western clematis threaten the plant community.

The site provides high quality food, water and cover habitat for wildlife. Fauna using this site include black bear, porcupines, pileated woodpecker, pygmy owl, red-tailed hawk and a variety of songbirds. Red legged frogs use stream habitat above the quarry. The abandoned, fenced-off quarry site and Highway 30 impair wildlife migration through the forest and between the forest and the Willamette River; however, streamside game trails are common above the quarry.

Table B: Quality of Natural Resource Functions in Resource Site FP16				
Resource Site (acres) = 337				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	99.0	90.1	148.2	337.3
percent total inventory site area	29.3%	26.7%	43.9%	100.0%
Wildlife Habitat*				
acres	337.3	0.0	0.0	337.3
percent total inventory site area	100.0%	0.0%	0.0%	100.0%
Special Habitat Areas**				
acres	337.2			
percent total inventory site area	100.0%			
Combined Total⁺				
acres	337.3	0.0	0.0	337.3
percent total inventory site area	100.0%	0.0%	0.0%	100.0%
* 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 site FP16, 0.4% 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 FP16			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
344.2	1.4	1.3	0.4%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP16. Natural resources should be protected within HCA as follows:

1. *Strictly limit or limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit or limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit or limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or limiting conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting or limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

All of the significant natural resources within resource site FP16 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required.

Natural Resources Protection 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 FP16, 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, and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetlands, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Note – There is no Resource Site FP17 or Resource Site FP18. The resource site numbering in the Ezone Map Correction Project skips from FP16 to FP19. FP17 and FP18 apply to two previously adopted resource sites in the Northwest Hills Natural Areas Protection Plan, site numbers 92 and 93, that remain regulated by that plan and are not updated by the Ezone Map Correction Project.

Resource Site No.: FP19 Resource Site Name: Willbridge Uplands

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 91

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.

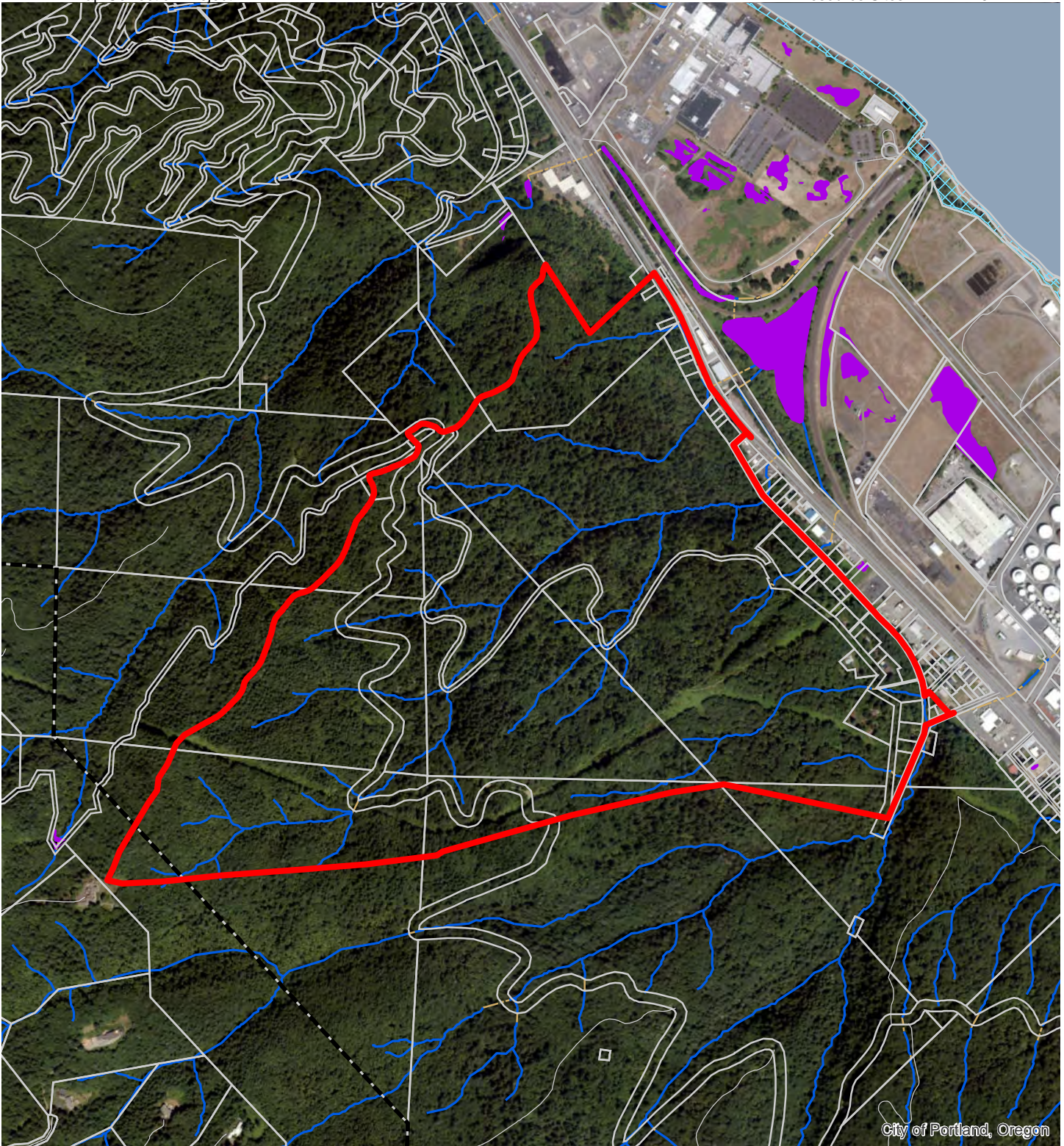
Implementation of the results is found in Volume 1, Part B, updates to zoning maps and zoning code.

Resource site FP19 includes the following:

Site (acres) 344.4

Base zones (acres)

IH	0.0
OS	329.1
R10	4.8
R2.5	7.5
RF	3.0



City of Portland, Oregon

Map A: Water Features

Resource Site: FP19

Updated: July 2021



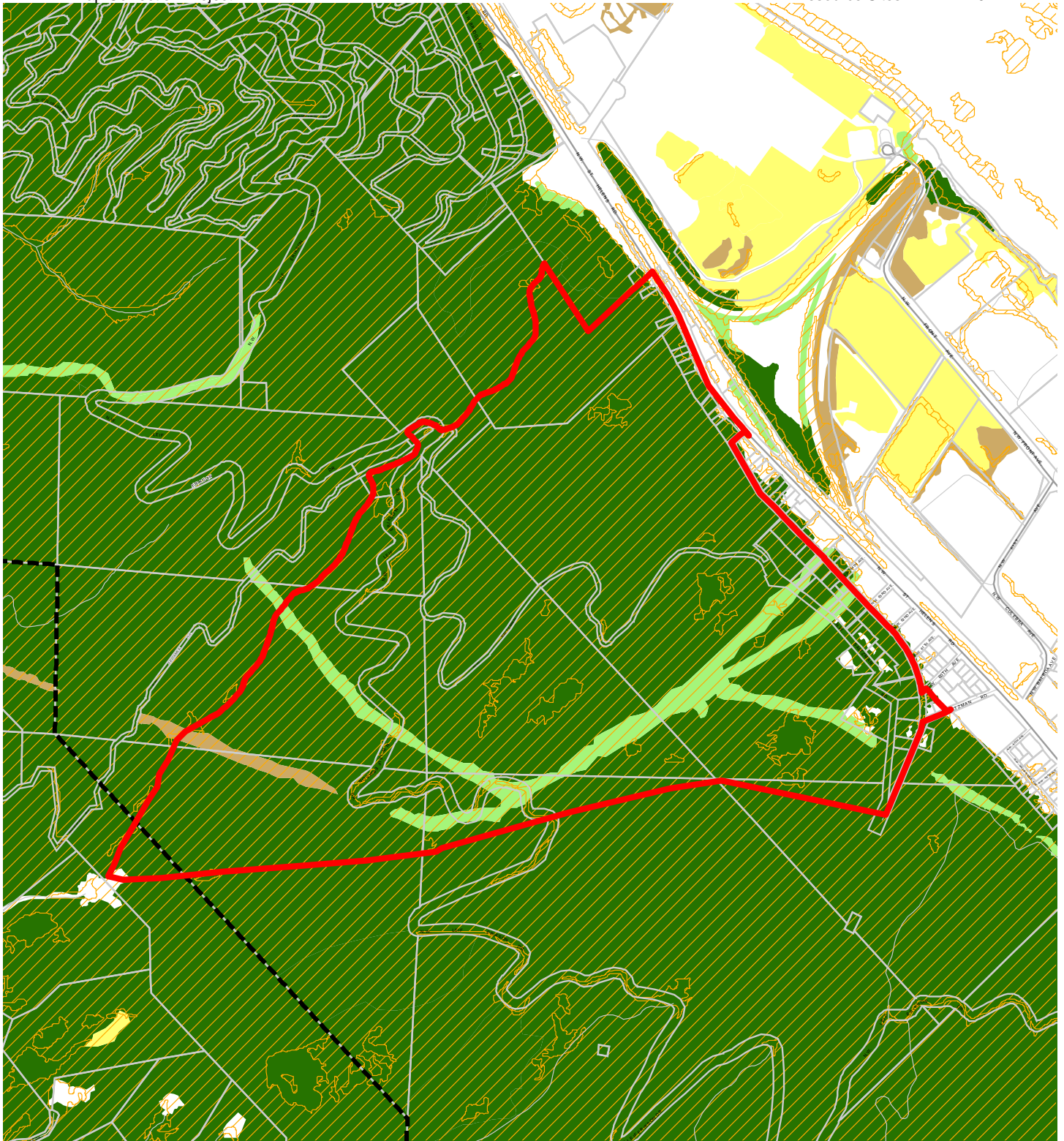
0 500 1,000 Feet

Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



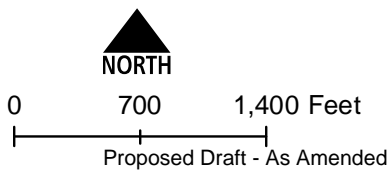
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP19

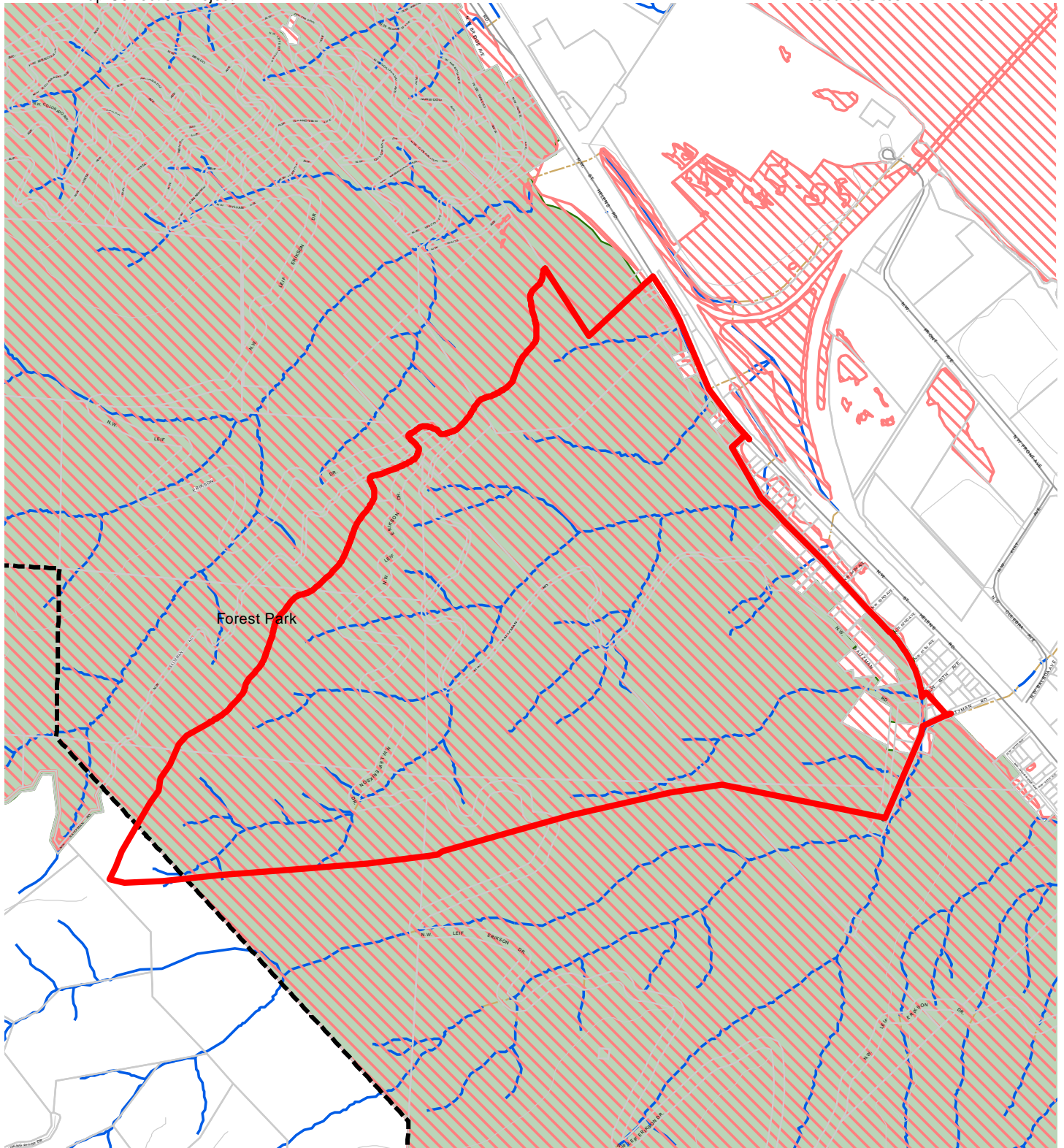
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous

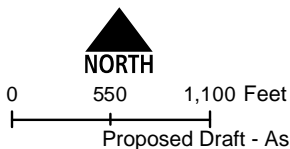


The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021



**Map C: Special
Habitat Areas**
**Resource Site:
FP19**

Updated: June 2021

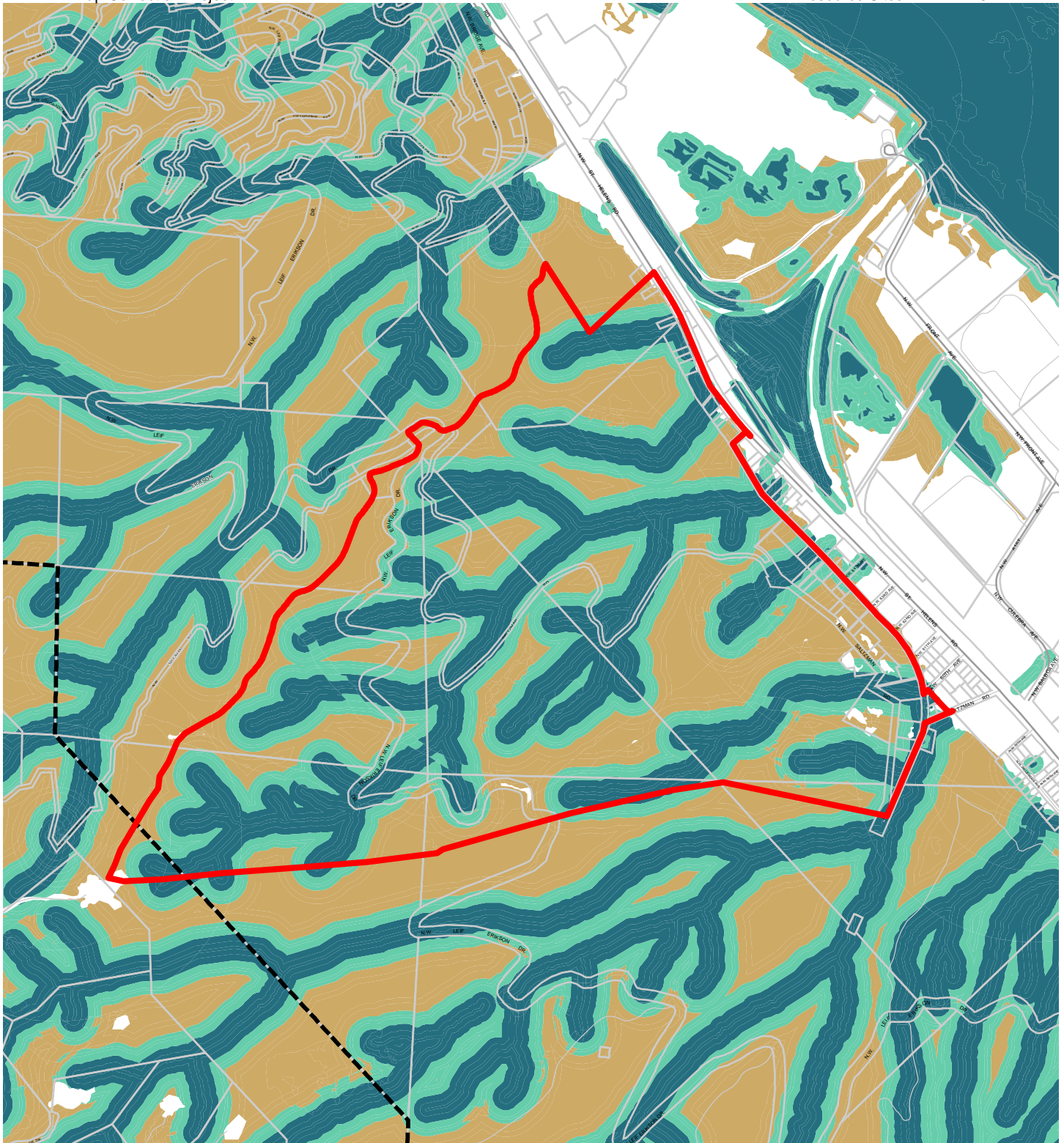


Proposed Draft - As Amended

- Resource Sites
- Special Habitat Areas (SHAs)
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools
- Urban Service Boundary
- Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021

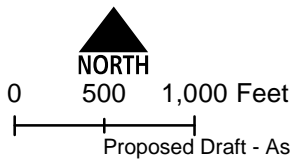


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP19**

Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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July 2021









**Map E: Wildlife
Habitat Classification
Resource Site:
FP19**

Updated: July 2021



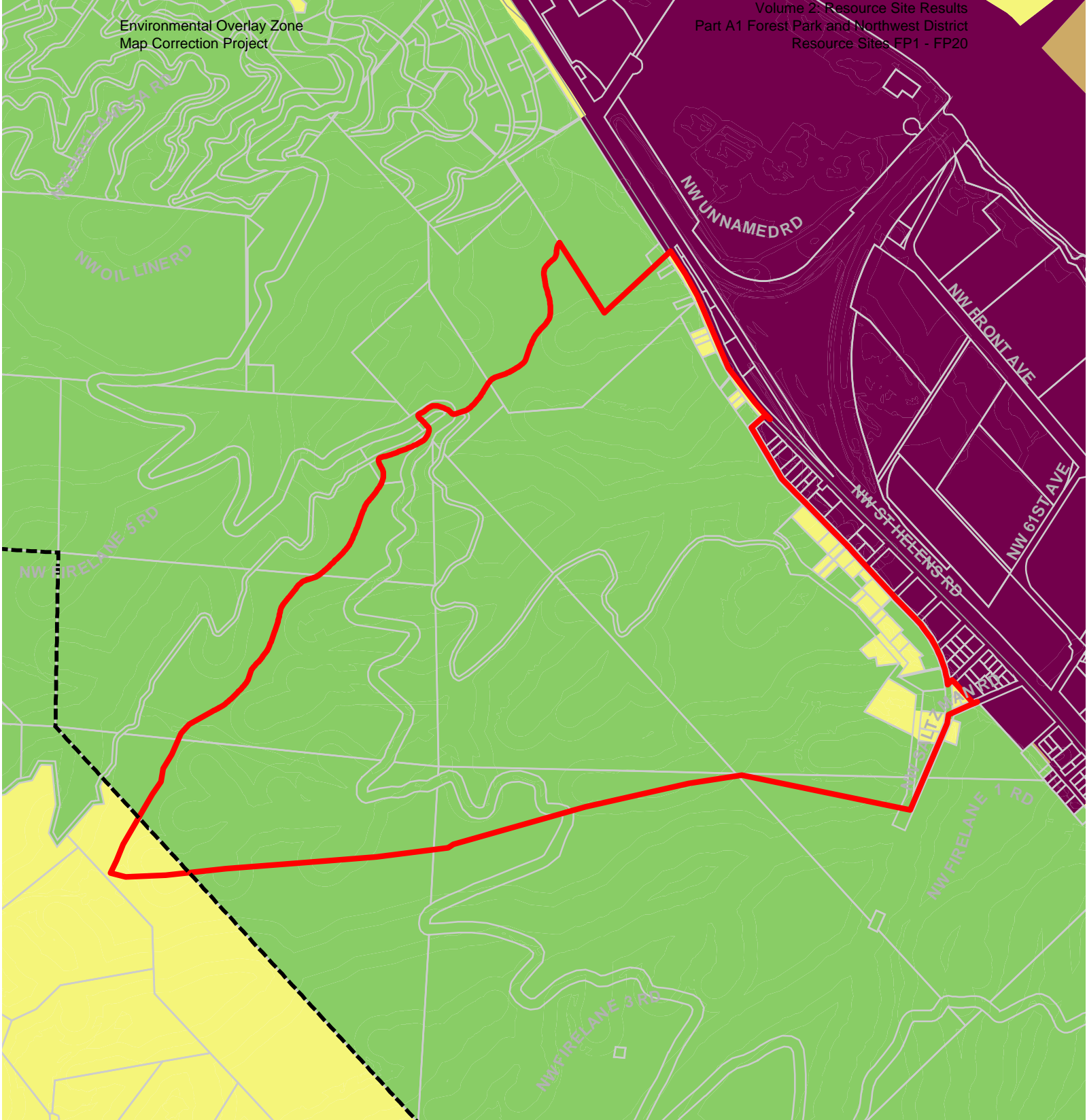
Proposed Draft - As Amended

-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

July 2021

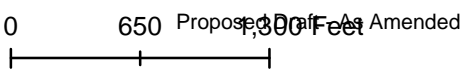


Map F: Urban Development Value (Title 13)
Resource Site: FP19

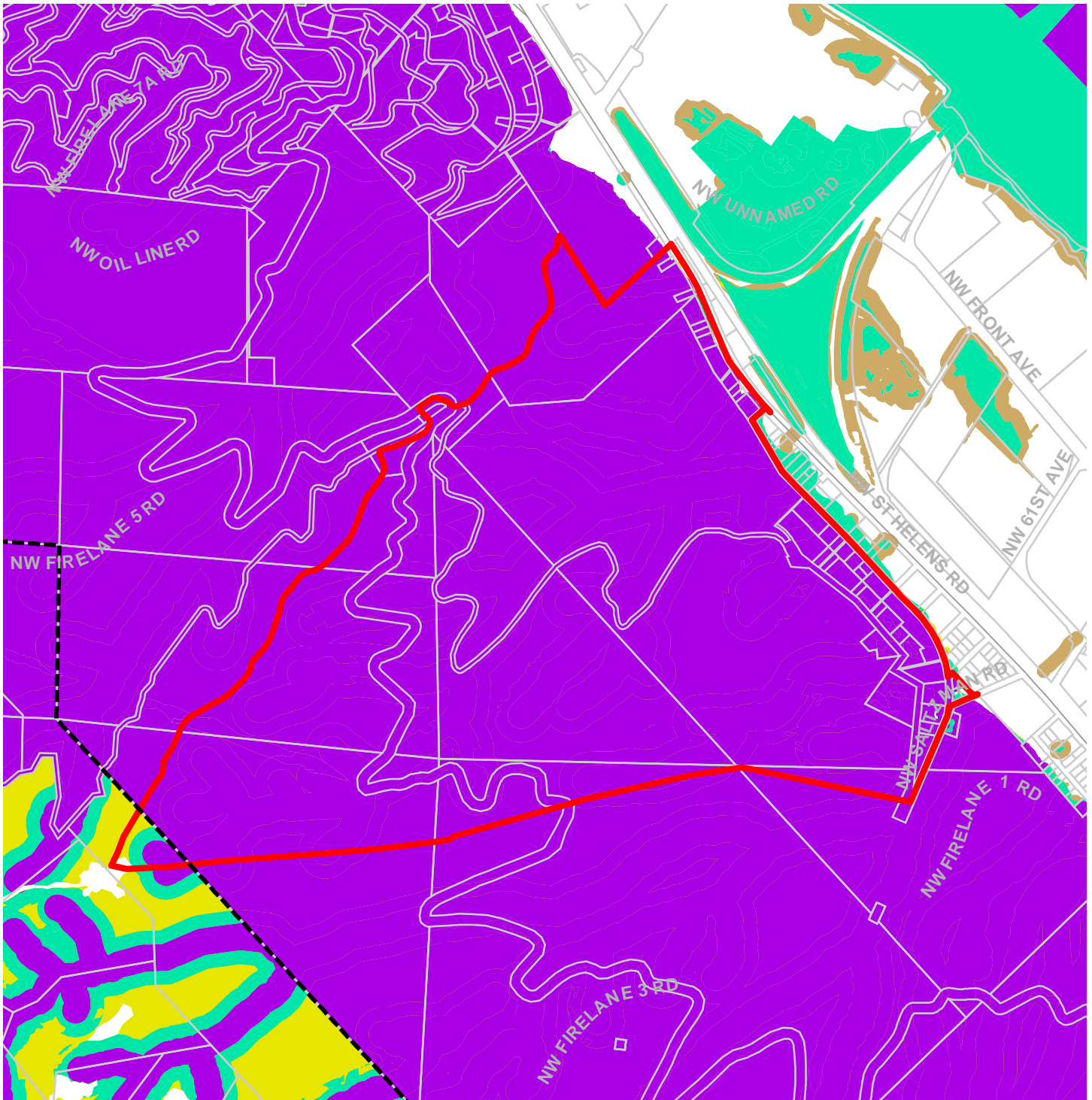
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



Updated: July 2021



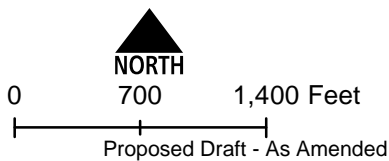
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, and aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.









Map G: Title 13 Habitat Conservation Areas (HCA) and Goal 5 Areas

Resource Site: FP19

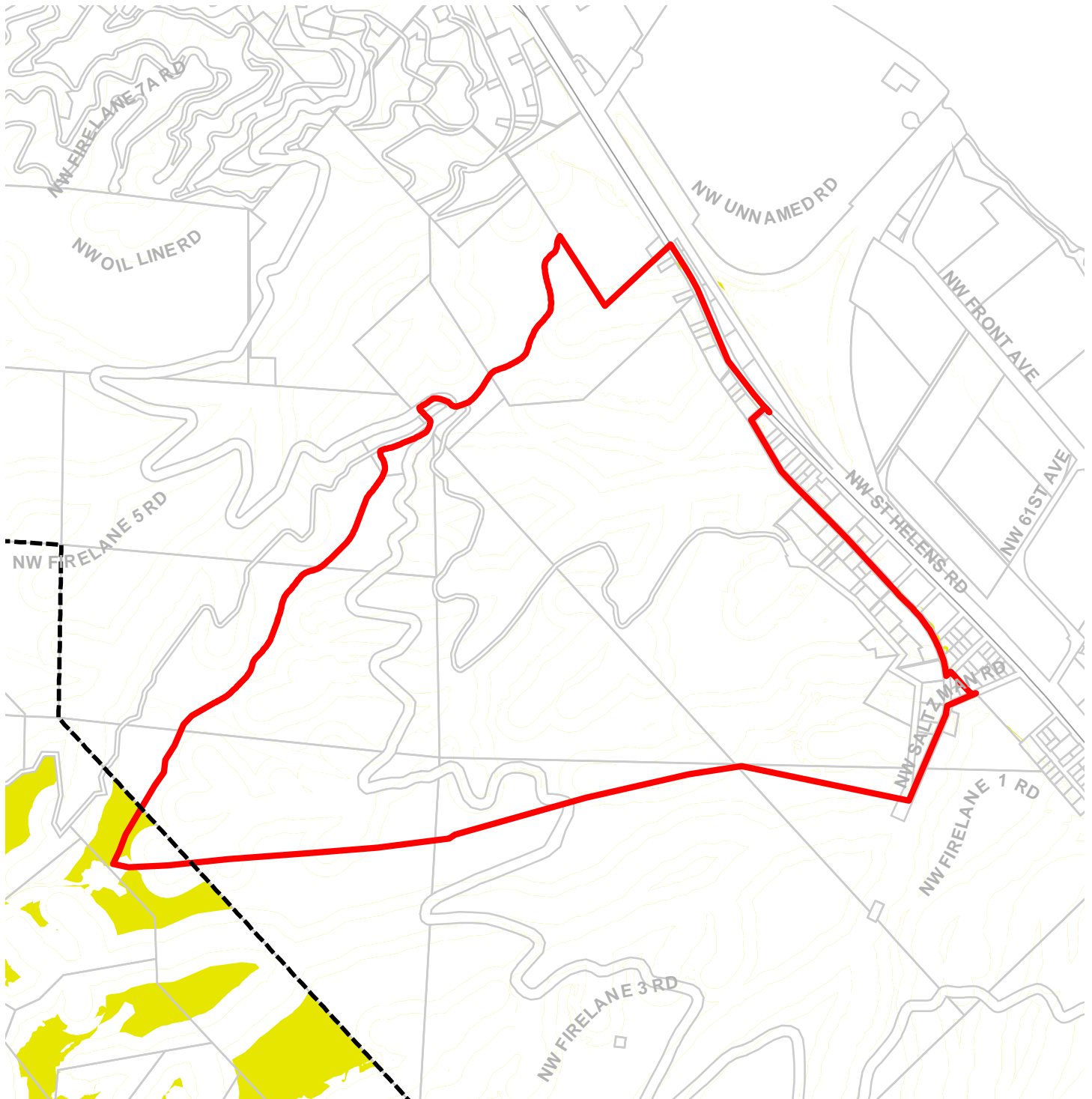
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  HCA High Value
-  HCA Moderate Value
-  HCA Low Value
-  Goal 5 Significant Natural Resources



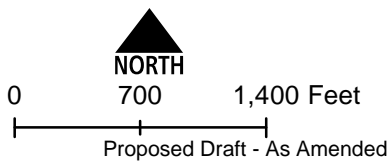
The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.






Map H: Goal 5 Resources

Resource Site: FP19

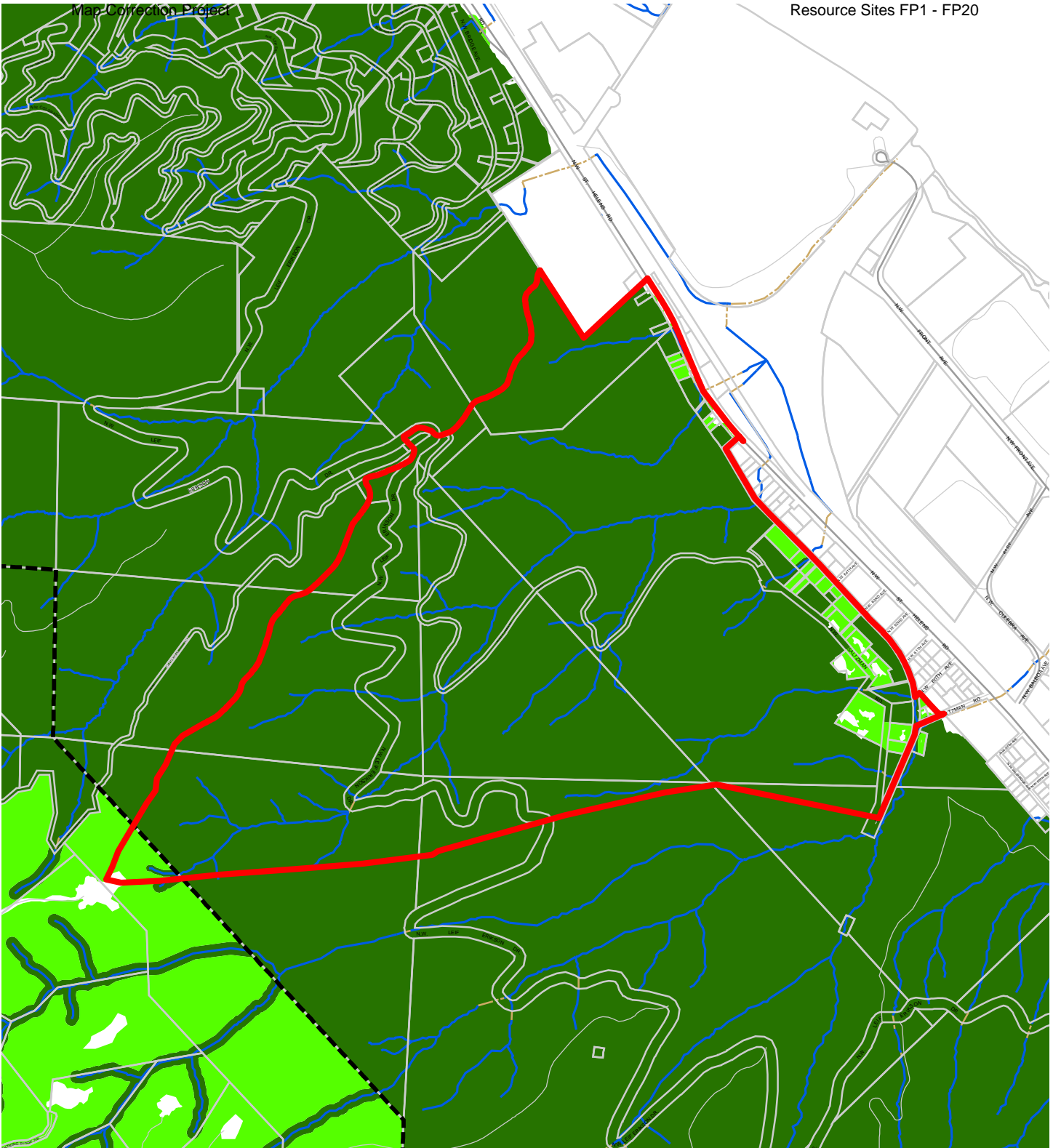
Updated: July 2021



-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.

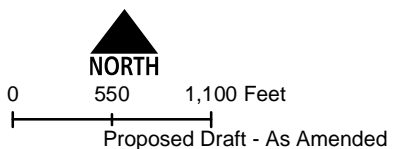


Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP19

Updated: July 2021

- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



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Natural Resource Description

Within resource site FP19 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: Forest Park (O, B, M, C, S, P, E)

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 FP19	
	Study Area
Stream (Miles)	5.5
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	316.7
Woodland (acres)	22.3
Shrubland (acres)	2.6
Herbaceous (acres)	0.0
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	331.4
* 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 site is made up of one large (215 acres) and two small (<50 acres) intermittent stream basins with diverse riparian habitat. Substantial instream wood has accumulated in the streambed and on the riparian forest floor, creating complex habitat important to forest-dwelling species. *Conifer-topping hardwood* covers most of the basin. A large stand of mid-aged conifer is located near the center of the site; small stands of mature hardwood, hardwood with young conifer and shrub are also present. Large western hemlock and Douglas fir trees are prevalent at this site. Forest cover protects watershed resources and provides open space, scenic and recreational resources. Western wahoo occurs along the lower stream banks. Invasive species including ivy, holly, laurel and clematis are proliferating near Highway 30 and along the pipeline corridor that crosses the resource site from east to west.

The site provides high quality food, water and cover habitat for wildlife. Birds using this site include pileated woodpecker, turkey vulture, red-tailed hawk and a variety of songbirds. Extensive coyote runs were also identified at this site, as it serves as a coyote feeding and breeding area. The site's primary stream supports a healthy population of macroinvertebrates. Highway 30 impairs wildlife migration between the forest and the Willamette River.

Table B: Quality of Natural Resource Functions in Resource Site FP19				
Resource Site (acres) = 344				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	123.5	107.8	110.6	342.0
percent total inventory site area	35.9%	31.3%	32.1%	99.3%
Wildlife Habitat*				
acres	338.9	0.0	0.0	338.9
percent total inventory site area	98.4%	0.0%	0.0%	98.4%
Special Habitat Areas**				
acres	339.5			
percent total inventory site area	98.6%			
Combined Total⁺				
acres	338.9	1.5	1.7	342.2
percent total inventory site area	98.4%	0.4%	0.5%	99.3%
* 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 site FP19, 1.8% 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 FP19			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
372.9	12.2	6.7	1.8%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP19. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

All of the significant natural resources within resource site FP19 are designated Habitat Conservation Areas under Metro Title 13; therefore, no resource site-specific ESEE is required.

Natural Resources Protection 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 FP19, 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 and land within 25 feet of stream top-of-bank or wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of stream top-of-bank or wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet from stream top-of-bank or wetland, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
4. Allow conflicting uses within all other areas containing significant natural resources.

Resource Site No.: FP20 **Resource Site Name:** Saltzman Creek

Previous Plan: Northwest Hills Natural Areas Protection Plan

Previous Resource Site No.: 90

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:

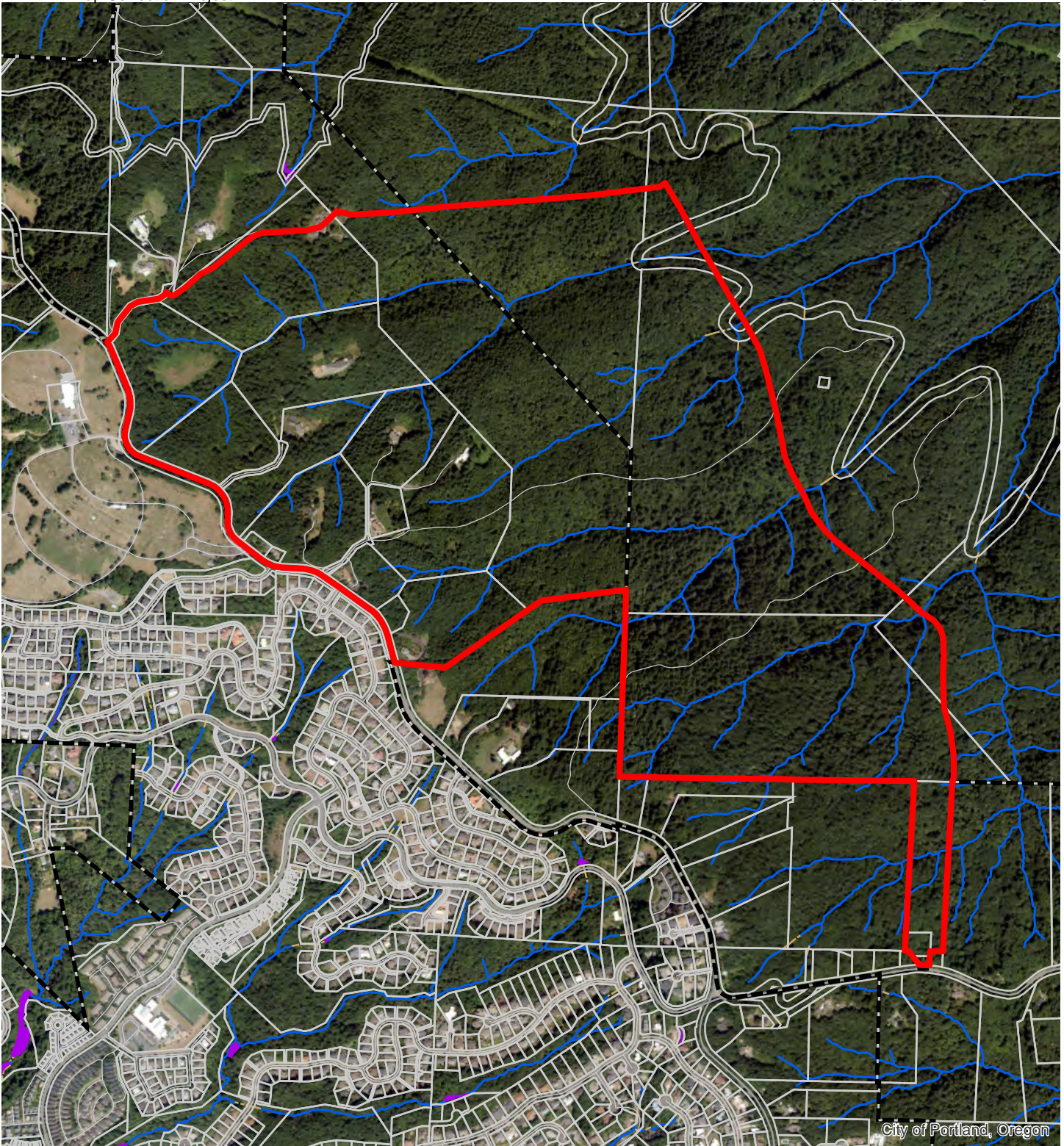
- A. Water Features – rivers, streams, wetlands and flood areas
- B. Land Features – forest, woodland, shrubland and herbaceous vegetation, steep slopes
- C. Special Habitat Areas
- D. Riparian Corridor Classifications
- E. Wildlife Habitat Classifications
- F. Urban Development Value
- G. Metro Title 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.

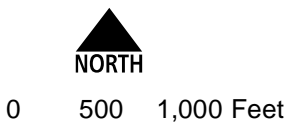
Resource site FP20 includes the following:

Site (acres)	410.7
Base zones (acres)	
OS	205.8
RF	204.9



Map A: Water Features
Resource Site: FP20

Updated: July 2021

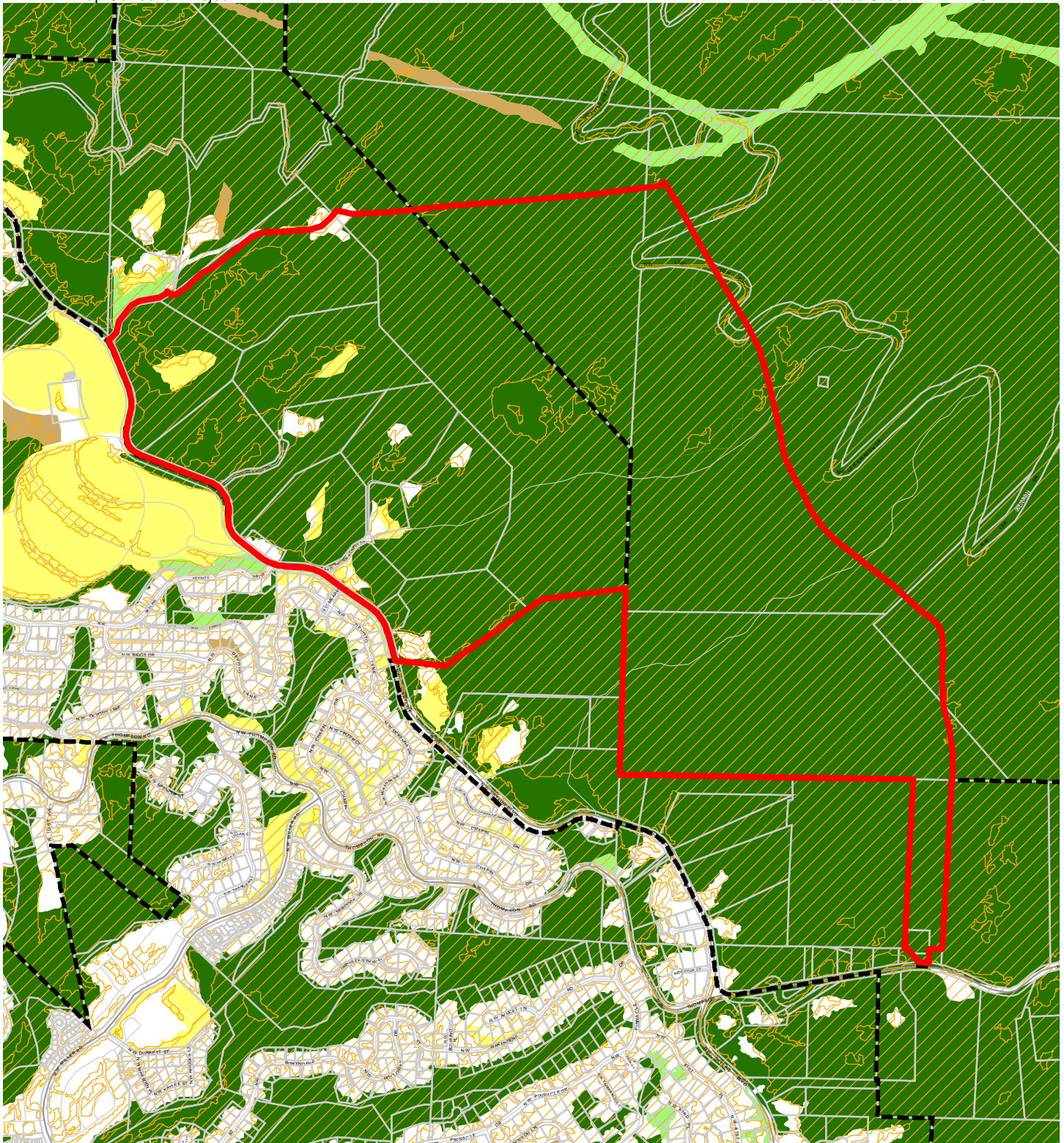


Proposed Draft - As Amended

- Resource Sites
- Urban Service Boundary
- Taxlots
- Wetlands
- Rivers
- Open stream channel
- Piped Stream Segment
- Flood Area



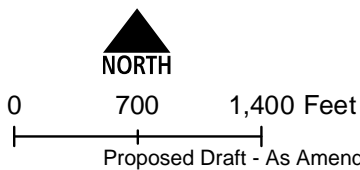
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July 2021



Map B: Vegetation and Steep Slopes

Resource Site: FP20

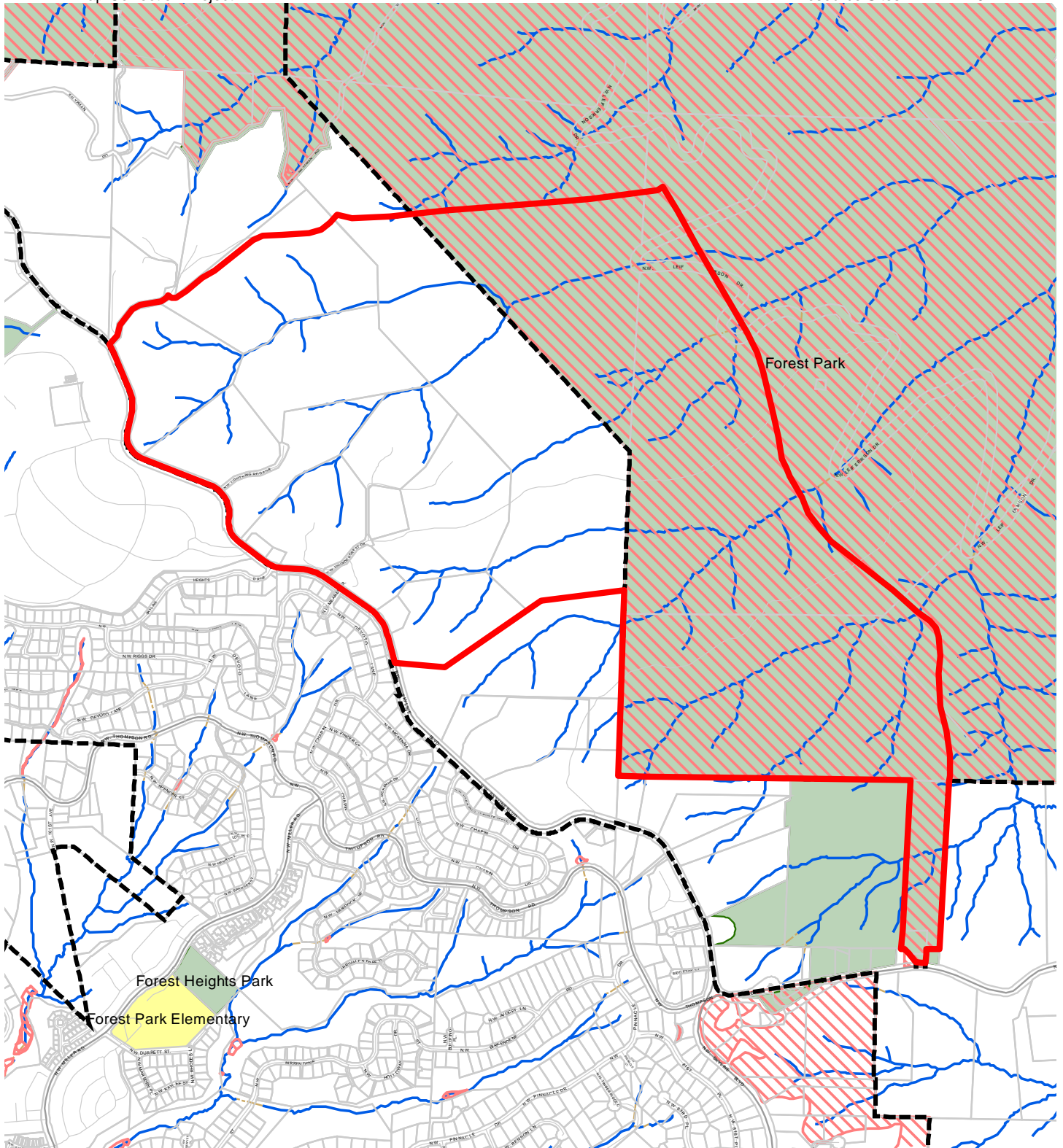
Updated: July 2021



- Resource Sites
- Urban Service Boundary
- Taxlots
- Slopes >25%
- Forest
- Woodland
- Shrubland
- Herbaceous



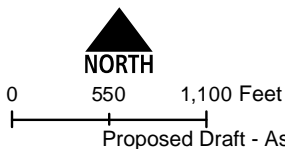
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**Map C: Special
Habitat Areas**

**Resource Site:
FP20**

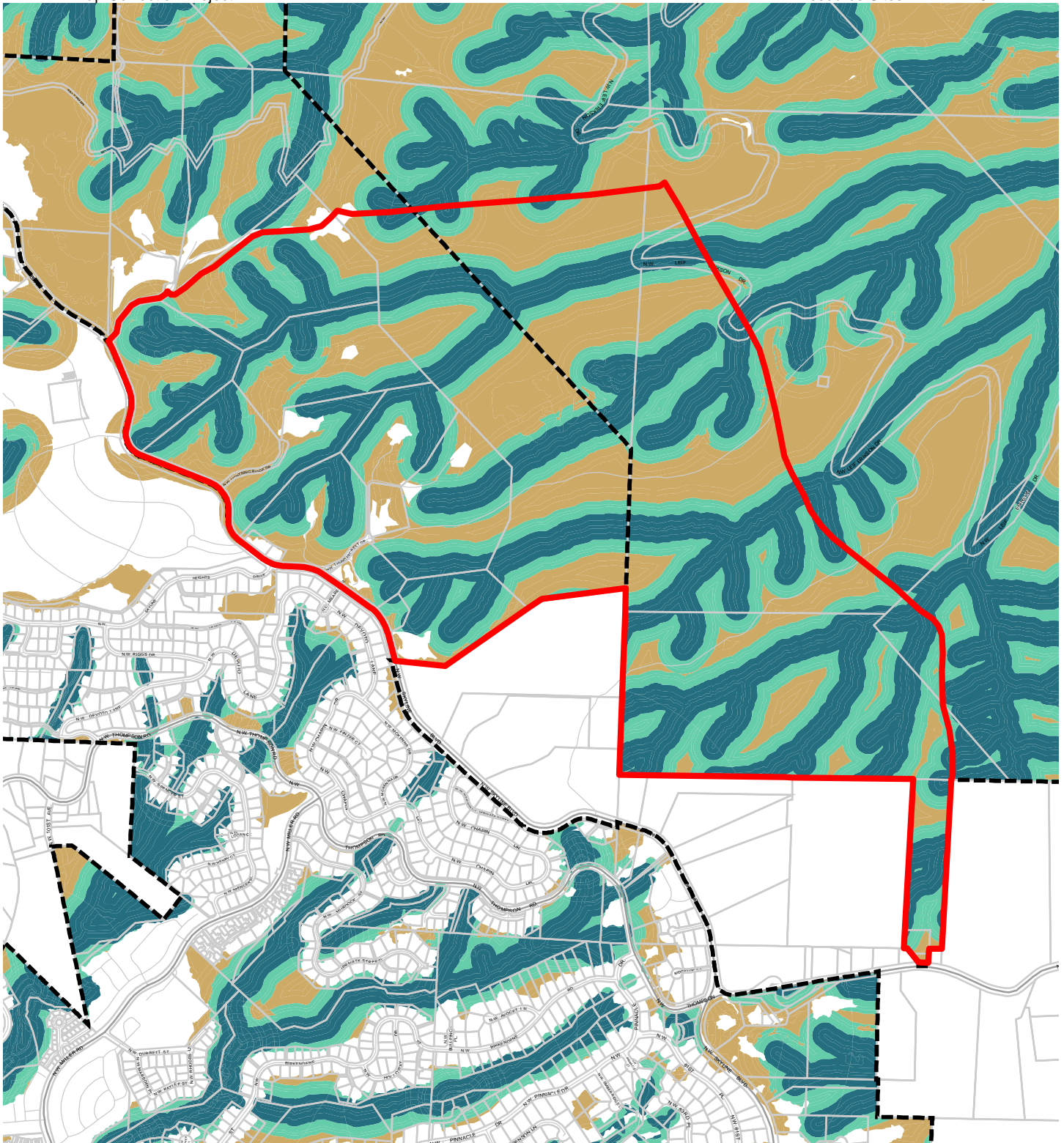
Updated: June 2021



- Resource Sites
- Urban Service Boundary
- Special Habitat Areas (SHAs)
- Taxlots
- Open Stream Channel
- Piped Stream Segment
- Parks
- Schools



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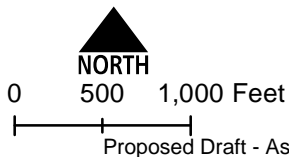


**Map D: Riparian
Corridors Habitat
Classification**

**Resource Site:
FP20**

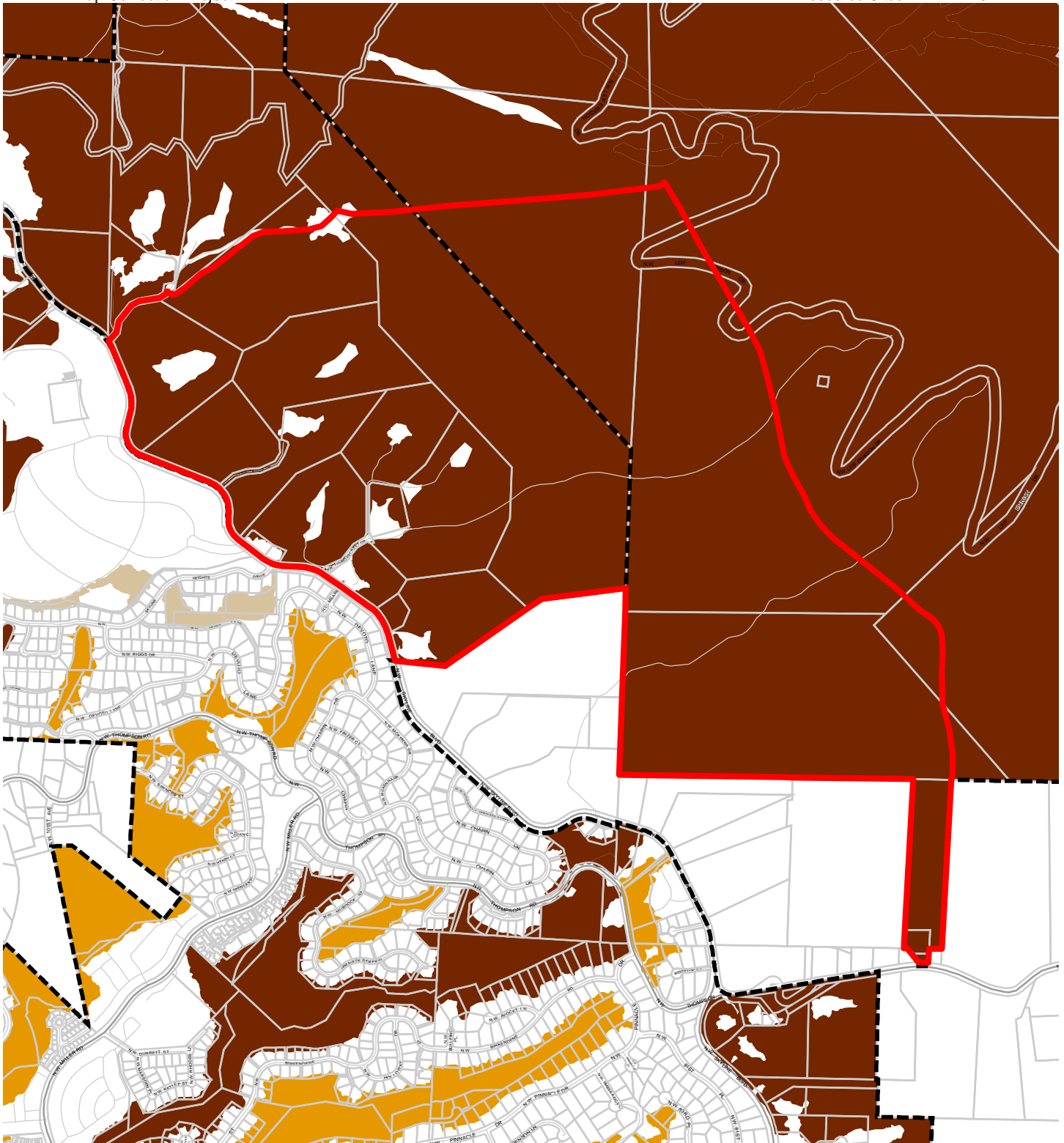
Updated: July 2021

- Resource Sites
- Urban Service Boundary
- Class I (high rank)
- Taxlots
- Class II (medium rank)
- Class III (low rank)



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July 2021









**Map E: Wildlife
Habitat Classification
Resource Site:
FP20**

Updated: July 2021



Proposed Draft - As Amended

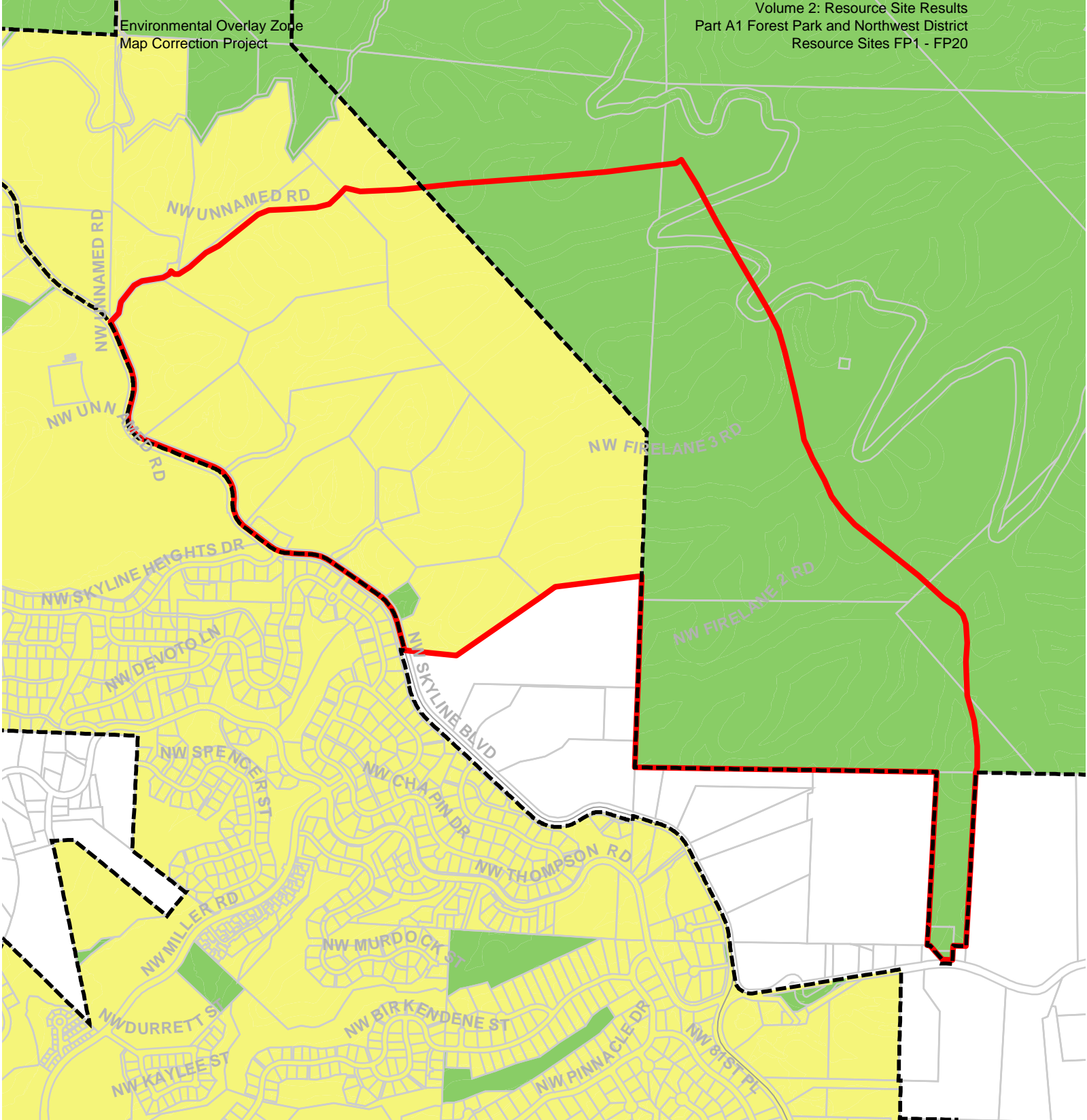
-  Resource Sites
-  Class A (high rank)
-  Class B (medium rank)
-  Class C (low rank)
-  Urban Service Boundary
-  Taxlots



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Environmental Overlay Zone
 Map Correction Project

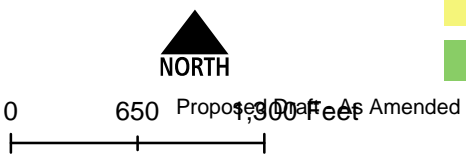


Map F: Urban Development Value (Title 13)
Resource Site: FP20

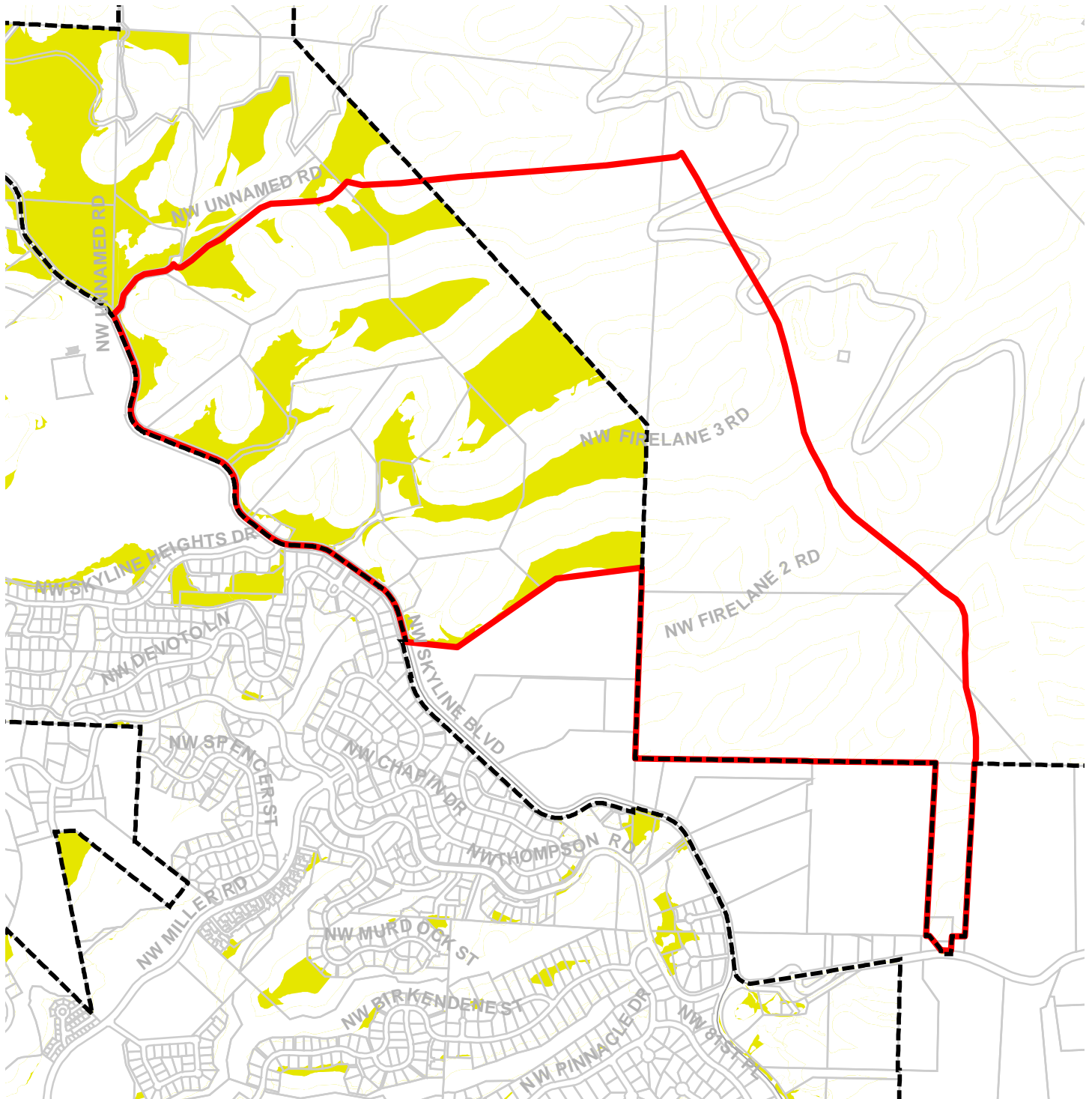
-  Urban Service Boundary
-  Resource Sites
-  High Development Value
-  Medium Development Value
-  Low Development Value
-  Parks



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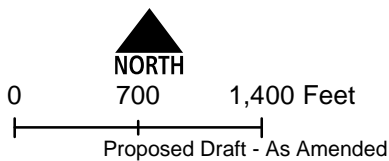


Map H: Goal 5 Resources

Resource Site: FP20

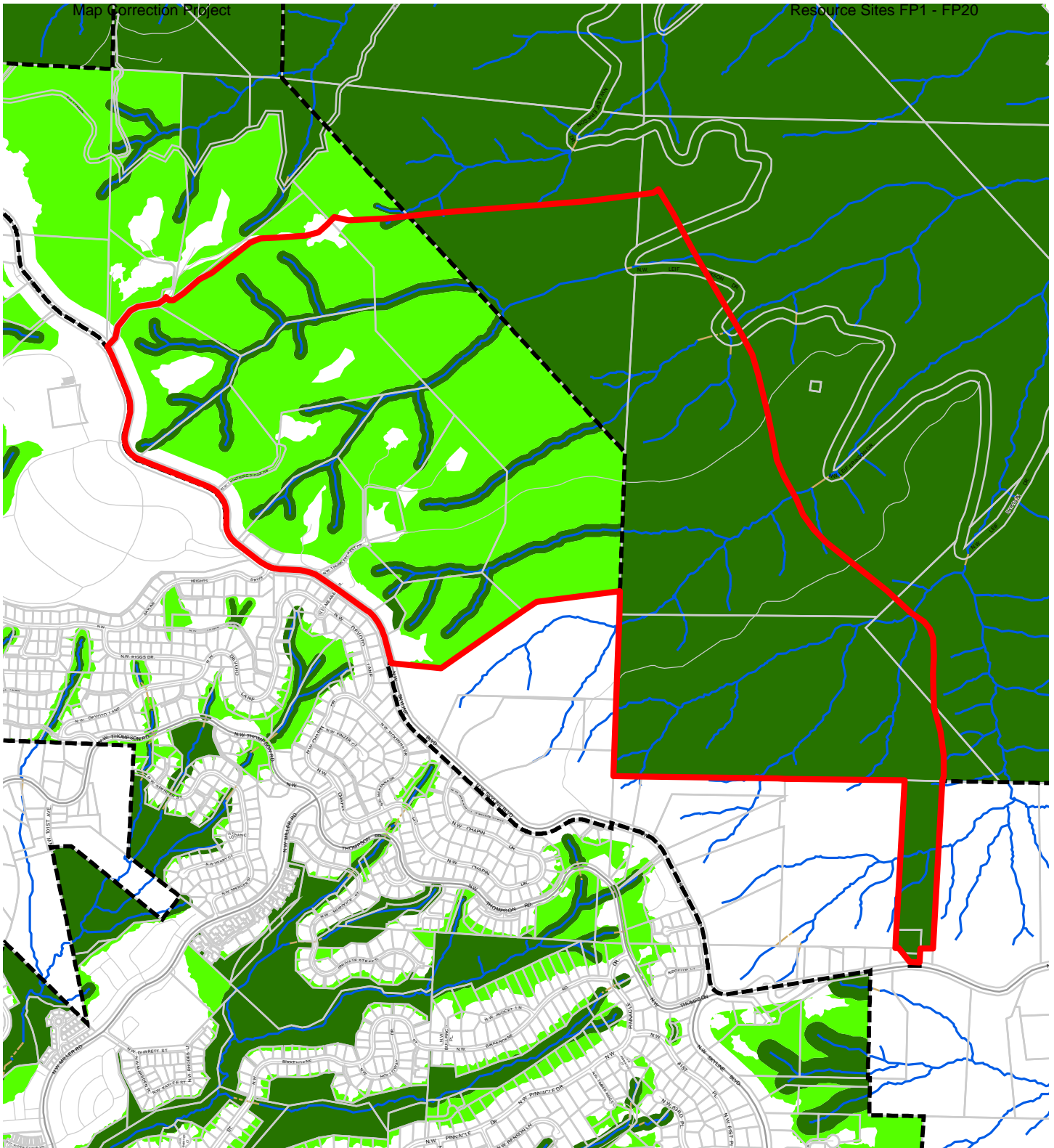
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-  Urban Service Boundary
-  Resource Sites
-  Goal 5 Significant Natural Resources



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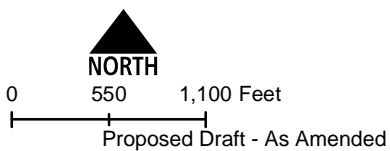
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Map I: DRAFT Proposed Environmental Overlay Zones

Resource Site: FP20

Updated: July 2021



- Resource Sites
- Open Stream Channel
- Piped Stream Segment
- Proposed Conservation Zone
- Proposed Protection Zone
- Urban Service Boundary
- Taxlots



The information on the map was derived from digital databases. Care was taken in the creation of this map but it is provided "as is". The City of Portland ensures meaningful access to city programs, services, and activities to comply with Civil Rights Title VI and ADA Title II laws and reasonably provides: translation, interpretation, modifications, accommodations, alternative formats, auxiliary aids and services. To request these services, contact 503-823-7700, City TTY 503-823-6868, Relay Service: 711.
July 2021

Natural Resource Description

Within resource site FP20 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: Forest Park (O, B, M, C, S, P, E)

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 FP20	
	Study Area
Stream (Miles)	6.5
Wetlands (acres)	0.0
Vegetated Areas >= 1/2 acre (acres)	
Forest (acres)	397.9
Woodland (acres)	0.0
Shrubland (acres)	0.0
Herbaceous (acres)	4.7
Flood Area*	
Vegetated (acres)	0.0
Non-vegetated (acres)	0.0
Steep Slopes (acres)**	385.9
* 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%.	

The four primary drainages that pass through this site form the headwaters of Saltzman Creek. The vegetative cover is predominantly second growth western hemlock forest with mid-aged conifer to the south and hardwood with young conifer in the central and northern portions of the site. Interspersed with these two larger forest stands are patches of conifer-topping hardwood and shrub vegetation stages. Forest cover protects watershed resources, serves as habitat for wildlife and provides open space, scenic and recreational resources. Downed logs and woody debris found at the site are critical structural and functional components of the watershed.

This site provides medium to high quality food and cover habitat for wildlife. The Saltzman Creek headwaters provide an important upland water source to the wildlife that use it in Forest Park, and they provide an important cold water input to native fish and wildlife that use the Willamette River in the summer when water temperature impacts water quality. Bird species sited in the area include pileated woodpecker, Cooper’s hawk, Oregon junco and kinglets. Interspersion with surrounding habitat allows for free migration of wildlife; several game trails cross the site at lower elevations.

Table B: Quality of Natural Resource Functions in Resource Site FP20				
Resource Site (acres) = 411				
	Class 1/A	Class 2/B	Class 3/C	Total
Riparian Corridors*				
acres	154.2	128.3	119.3	401.8
percent total inventory site area	37.5%	31.2%	29.1%	97.8%
Wildlife Habitat*				
acres	397.9	0.0	0.0	397.9
percent total inventory site area	96.9%	0.0%	0.0%	96.9%
Special Habitat Areas**				
acres	205.8			
percent total inventory site area	50.1%			
Combined Total*				
acres	397.9	0.2	3.6	401.8
percent total inventory site area	96.9%	0.1%	0.9%	97.8%
* 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 site FP20, 0.7% 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 FP20			
Total area (acres)	Total impervious Area (acres)	Total unmanaged impervious area* (acres)	Percent of resource site that is effectively impervious
410.7	4.0	2.9	0.7%

*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.

Metro Title 13 and Oregon Goal 5 Compliance

The following information supplements evaluation of natural resource protections presented in Volume 4 and supports compliance with Metro Title 13 and Oregon Plan Goal 5.

Title 13 Habitat Conservation Areas

Map G presents the Habitat Conservation Areas (HCA) within the resources site FP20. Natural resources should be protected within HCA as follows:

1. *Strictly limit* or *limit* conflicting uses within Class I/High Rank Riparian Areas in all Urban Development Areas.
2. *Strictly limit* or *limit* conflicting uses within Class II/Medium Rank Riparian Areas within Moderate and Low Value Urban Development Area as well as parks and open spaces.
3. *Strictly limit* or *limit* conflicting uses within Class A/High or B/Medium Rank Wildlife Habitat within parks and open spaces.
4. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class III/Low Rank Riparian Areas in all Urban Development Areas.
5. *Allow* conflicting uses or conducted a local Goal 5 ESEE for Class A/High, Class B/Medium or Class C/Low Rank Wildlife Habitat in all Urban Development Area, except parks and open space.

Strictly limiting or *limiting* conflicting uses in HCA will protect and conserve existing streams and wetlands to maintain significant natural resource functions including: 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 fish and wildlife habitat. *Strictly limiting* or *limiting* conflicting uses in HCA will allow for additional urban development that is sensitive to the natural resource features and requires mitigation for unavoidable negative impacts to features and functions. The recommendation will also contribute towards meeting other regulatory requirements including the Metro Title 3, Water Quality and Flood Management; Oregon Goal 6, Air, Water and Land Resources Quality; Oregon Goal 7, Areas Subject to Natural Hazards; the Clean Water Act; and the Endangered Species Act.

Goal 5 Significant Natural Resources

Resources site FP20 contains natural resource features that are not a Title 13 HCA and are therefore subject to Statewide Planning Goal 5 OAR 660-023-0110. 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 natural resources. In addition to the General ESEE analysis, the following resource site-specific consequences are considered.

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 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.

The analysis of economic, social, environmental and energy consequences provided in Volume 4 is confirmed for resource site FP20, 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*.

Natural Resources Protection 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 FP20, 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 50 feet of stream top-of-bank or 25 feet of wetlands.
2. Within public parks, apply a protection overlay zone ('p' zone) to land between 25 and 50 feet of wetlands, and within areas of forest, woodland, shrubland or herbaceous vegetation that are contiguous to but more than 50 feet from stream top-of-bank or wetlands.
3. Outside public parks, apply a conservation overlay zone ('c' zone) to land between 25 and 50 feet of wetlands, and within areas of forest or woodland vegetation that are contiguous to but more than 50 feet from stream top-of-bank.
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, as well as other zoning code chapters, and the official zoning maps showing the existing and proposed conservation, protection and scenic overlay zones.

Volume 2 – Resource Site Inventory and ESEE Decisions

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

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

A summary of the 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