



Multnomah Channel Headwaters

Target area ecological assessment
2019 Natural Areas Bond

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Prepared by:

Herrera Environmental Associates
Greta Presley, Senior Ecologist
Rayna Gleason, Ecologist

For:

Metro Parks and Nature
Curt Zonick, project manager

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Brian Evans

600 NE Grand Ave.

Portland, OR 97232-2736

503-797-1700

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LAND ACKNOWLEDGEMENT

All of the Metro region, Oregon and United States are tribal land. We recognize the Indigenous people, bands and tribes of our region who have cared for these lands since time immemorial. We owe a special acknowledgment to the bands, tribes and their descendants who ceded these lands in treaties with the United States.

TARGET AREA SUMMARY

Located within the northernmost target area of the Metro study, Multnomah Channel Headwaters Target Area (MCHTA) is a 10.2 square mile target area encompassing large swaths of upland forest, established scrub-shrub wetlands, and headwaters of numerous small streams that drain through steep hillsides into Multnomah Channel. Protection of these headwaters is essential to provide important water quality benefits to the historically degraded Multnomah Channel. Restoration within the floodplain of Multnomah Channel is recognized by the Oregon Conservation Strategy as an important Conservation Opportunity Area for Endangered Species Act (ESA) salmonids recovery in the Lower Columbia River (ODFW 2010).

Highway 30 divides the MCHTA into steep forested areas lying west of the highway and floodplain marsh and agricultural areas east of the highway. The highway poses a significant potential barrier to wildlife in much of the MCHTA from accessing the lowland resources associated with the Multnomah Channel and its floodplain. Connectivity to important natural landscapes and habitat anchors will be a critical factor in determining the long-term viability of future native populations.

Active logging occurs throughout much of the forested hillside, with large tracks of forest in different stages of development post-logging activities. Mature forests can be found surrounding rural residences and steep V-shaped valleys containing tributary streams to the Multnomah Channel. Preservation and restoration of riparian corridors play a key role in improving water quality as well as wildlife passage.

SECTION 1: BACKGROUND

What is a target area ecological assessment and how will it be used to make land protection and restoration decisions?

Target area ecological assessments gather information to support development of land acquisition priorities in the Protect and Restore Land program area of the 2019 Parks and Nature Bond Measure. This program area uses bond funds to protect (purchase) and connect greater Portland's special places, especially river and stream banks, headwaters, floodplains, wetlands, oak and prairie habitat, forests, and culturally significant sites, by purchasing land from willing sellers and restoring it to support plants, animals, and people. Target area ecological assessments primarily rely on a consistent set of region-wide data to describe the geography, historic and current land use and land cover patterns, natural resources, and the biodiversity conservation and restoration potential of each of the 24 target areas identified in the 2019 bond measure. Each target area ecological assessment provides summary tables, maps of regional and local ecological data, and description of the conservation opportunities and barriers as they apply to the goals and criteria defined in the bond measure.

Target area ecological assessments cover a study area rather than defining a target area boundary. The assessments and information we receive from community members and stakeholders plus Metro's internal analysis will be the basis for developing a refinement plan to be approved by the Metro Council through an open, public process. Developed by Metro staff, refinement plans define the actual target area boundary within which we will protect and restore land and the conservation objectives to be achieved with bond investments. Refinement plans, not target area ecological assessments, are the official basis for land protection and restoration decisions in each target area and across the region.

Metro intends to use a variety of methods to protect water quality and fish and wildlife habitat in the landscapes identified in the bond measure. These methods include but are not limited to buying fee title to land, acquisition of trail or conservation easements (such as over working agricultural lands or natural areas) and the purchase of development rights. Donations, bequests and grants will be sought to enable the program to protect and preserve additional land.

As with previous bond measures, Metro may use bond funds to acquire property and property interests from willing sellers only and must not exercise its power of eminent domain in the implementation of this measure.

SECTION 2: PROTECT AND RESTORE LAND PROGRAM AREA

Overview of the protect and restore land program area of the 2019 parks and nature bond measure (www.oregonmetro.gov/nature).

Metro will use bond funds to protect and connect greater Portland's special places, especially river and stream banks, headwaters, floodplains, wetlands, oak and prairie habitat, forests, and culturally significant sites, by purchasing land from willing sellers and restoring habitat quality on it to support plants, animals, and people. In addition to the criteria below, all projects must satisfy required bond program community engagement, racial equity and climate resiliency criteria set forth in Exhibit A of the Ballot Measure and presented below.

Program investments must satisfy at least one of the following criteria:

- Protect clean water for people, fish, and wildlife. Improve water quality, quantity; include protection of headwaters, wetlands, floodplains, riparian areas and preventing flooding in urban areas.
- Protect and restore culturally significant plant communities. Prioritize culturally significant plants in partnership with greater Portland Indigenous community.
- Protect, connect, and improve habitat for native fish and wildlife. Increase the focus on salmon, trout, steelhead, and lamprey.
- Restore and enhance habitat for wildlife prioritized in federal, state, and regional conservation plans and/or identified through community engagement.
- Acquire land to provide future potential access to nature for people, scenic views, and community gathering spaces. Prioritize land acquisition with the potential to increase access to

nature for communities of color, Indigenous communities, low-income and other historically marginalized communities.

- Demonstrate Metro’s commitment to protecting farmland and the agricultural economy in the greater Portland region by supporting the protection of natural resources on working lands.

COMMUNITY ENGAGEMENT AND RACIAL EQUITY CRITERIA

Investments in all program areas must satisfy all of the following community engagement and racial equity criteria.

- Meaningfully engage with communities of color, Indigenous communities, low-income and other historically marginalized communities in planning, development and selection of projects.
- Prioritize projects and needs identified by communities of color, Indigenous communities, low-income and other historically marginalized groups.
- Demonstrate accountability for tracking outcomes and reporting impacts, particularly as they relate to communities of color, Indigenous communities, low-income and other historically marginalized communities.
- Include strategies to prevent or mitigate displacement and/or gentrification resulting from bond investments.
- Set aspirational goals for workforce diversity and use of COBID contractors and work to reduce barriers to achieving these goals; demonstrate accountability by tracking outcomes and reporting impacts.

Note on community engagement and racial equity criteria: These criteria span all bond programs and are intended to acknowledge and address harms that institutions, like government, have perpetuated towards communities of color and Indigenous communities. Goals of community engagement are intertwined with advancing racial equity because Metro hopes its investments through this Bond Measure benefit those historically marginalized communities who have been most impacted and previously most excluded from decision making processes, by intentionally engaging with these community members and centering their voices and needs. As such, these criteria will be addressed through Metro’s overall refinement process and future decision-making rather than through ecological prioritization criteria for potential protect and restore land projects. Specific conservation opportunities within the target area will not be ranked based on these criteria as they will be for program criteria (above) and climate resilience (below). They are included here for context about the multi-layered goals of the bond measure and to present a comprehensive introduction.

CLIMATE RESILIENCE CRITERIA

All projects must identify at least one climate resilience criteria relevant to the Protect and Restore program that the project will satisfy:

- Protection, connection and restoration of habitat to ensure strong populations of native plants, fish and wildlife can adapt to a changing climate.

- Protection and restoration of floodplains, headwaters, streams and wetlands to increase their capacity to handle stormwater to protect vulnerable communities from flooding.
- Investments in developed areas that increase tree canopy to reduce heat island effects.
- Use of low-impact development practices and green infrastructure in capital project design and development. (Note: not directly relevant for the protect and restore land program and won't be addressed later in the document as part of prioritization.)
- Investments in segments of the regional trail system that expand active transportation opportunities for commuting, recreation and other trips. (Note: not directly relevant for the protect and restore land program and won't be addressed later in the document as part of prioritization.)

Note on climate resiliency and the data in this ecological assessment: The 2019 bond measure prioritizes increasing the climate resilience of our region's natural systems. Climate resilience refers to the ability of a system to withstand or recover from changes induced by a changing climate. Although we are unaware of meaningful and specific climate resilience data available at a target area scale, data tied to the most promising strategies to increase resilience are woven throughout this assessment. Those strategies are in turn directly linked to specific anticipated climate changes and their likely impacts on plants, animals, water bodies and people.

Computer models of our region's future climate are remarkably consistent. Summer will be longer, hotter and drier. Winter will bring fewer, but stronger storms, with more rain and less snow in the mountains. Unexpected changes are a near certainty. In response, some plants and animals will experience range shifts and the need to move to adapt, generally moving uphill, northwards, or to cooler, wetter microsites. Floods will become more intense, summer stream flow will shrink and stream temperatures will rise, affecting all aquatic organisms, but especially those requiring cold water, like salmon and steelhead. Wildfire is likely to become more common, affecting habitat, damaging property and encouraging invasive species.

The over-arching strategies for increasing the resilience of natural areas and natural systems to these climate-caused stresses are creating and managing for healthy anchor habitats in all habitat types to support robust plant and animal populations, improving overall habitat connectivity to allow plants and animals to move in response to changing conditions; and, improving the ability of streams to absorb and store high flows and provide cold-water refugia by protecting, connecting and restoring headwaters, wetlands, riparian areas, floodplains and stream habitats. Data reflecting these issues is the heart of this document.

REGIONAL CONTEXT, 24 TARGET AREAS SPAN OUR REGION

In this program area, Metro will use bond funds to protect (purchase) and connect greater Portland's special places, especially river and stream banks, headwaters, floodplains, wetlands, oak and prairie habitat, forests and culturally significant sites, by purchasing land from willing sellers in 24 regional geographies, or "target areas."

The 24 target areas, approved by the Metro Council and voters following intensive community outreach, combine to address the priorities identified during bond scoping and integrate federal,

state, regional and local conservation priorities as shared by community members and stakeholders. Broad goals for each target area are established in the bond resolution. The draft study area boundaries for the 24 target areas described here (map r1 – Regional Target Areas) were ultimately developed by Metro Parks and Nature science staff to best capture opportunities to accomplish the broad goals established by the Metro Council. Nineteen of 24 target areas continue conservation begun in earlier bond measures, although many have new elements in the current measure. Most of the modification of existing target areas aims to protect and improve regional habitat connectivity, a priority that was consistently raised during outreach. Five target areas are entirely new.

Although the target areas themselves have already been selected and approved by the Metro Council and the voters, a region-wide view of the target areas in the context of regional and target area specific ecological and land-use data can help with finalizing target area boundaries, as well as prioritizing conservation priorities within a given target area.

In Section 3, the geography of the target area is presented within the context of the region to provide framing for the target area being discussed. A series of maps are then presented reflecting over 60 data sets relevant to the regional context and informing the target area specific discussion in this assessment, and ultimately the associated refinement plan.

SECTION 3: TARGET AREA DESCRIPTION

Target area description and goals from bond measure

No single parcel, site or target area can achieve every objective of the bond. Each of the 24 target areas approved by the Metro Council and the voters (map r1) offers opportunities to achieve a unique combination of the criteria. There is much more worthy land in each target area than can be acquired during this bond measure and the refinement process helps Metro focus on the most important and highest leverage investments that can best build meaningful landscape-scale conservation areas during this bond and into the future.

Description of the MCHTA and its goals have been taken directly from the bond measure resolution. Bond Resolution No. 19-4988 describes the MCHTA as follows:

“West of Highway 30 and north of Metro’s Burlington Creek Forest Natural Area, this target area consists of large, forested parcels that protect headwater streams flowing into Multnomah Channel and the Multnomah Channel Marsh Natural Area. Investment in this target area provides an opportunity to expand large forest preserves north of Forest Park, promotes creation of old-growth forests and protects water quality and wildlife habitat. This target area also provides opportunities to improve access to nature for people close to urbanized areas.”

TARGET AREA GENERAL DESCRIPTION AND GEOGRAPHY

In this section, we are answering the questions, “what defines this target area and what makes it special?” setting up the deeper question, “what are the conservation opportunities this geography best serves in the context of the language of the bond and building on history and other regional efforts?” During refinement conversations we will be asking people a slightly broader set of

questions, such as what makes the target area special to them, and what we might have missed with our approach.

Located within the northernmost target area of the Metro study, MCHTA is a 10.2 square mile area encompassing large swaths of upland forest, established scrub-shrub wetlands, and headwaters of numerous small streams that drain through steep hillsides into Multnomah Channel. The forest is predominantly made up of naturally occurring and planted Douglas-fir trees (*Pseudotsuga menziesii*), while Western Redcedar (*Thuja plicata*) and Western Hemlock (*Tsuga heterophylla*) are common along the steep creek drainages. Native understory still dominates, but in clear cut areas (easements cleared for Bonneville Power and Associate lines and fallow fields) invasive species are taking hold such as Himalayan Blackberry (*Rubus armeniacus*), Scotch Broom (*Cytisus scoparius*) and Common Teasel (*Dipsacus fullonum*).

The 1996 Metro Natural Areas Bond Program (Resolution No. 96-2357) included a Multnomah Channel Target Area, which focused on both acquisition of 500 acres of the Multnomah Channel Marsh east of Highway 30 and the shoreline of Sauvie Island across the narrow channel. The formal description for the 2006 MCHTA was:

“Multnomah Channel is a narrow channel of the Willamette River which flows on the west side of Sauvie Island to the Columbia River. All migrating salmon use the channel to enter the Willamette River rather than entering from the Columbia River. The lowland area along the channel is composed of floodplain/river terrace wetlands which were common along metropolitan-area rivers prior to settlement. The area provides important habitat for a variety of wildlife. The target area has connections or proximity to other existing open spaces including the Forest Park Ancient Forest, Wapato State Park and Howell Territorial Park. The area is characterized by an ash, willow, and cottonwood forest, with some meadows and pasture. Seasonal and perennial ponds are found throughout the area. The area is below 50 feet elevation and is inundated by the channel.

Approximately 60% of the site is estimated to be wetland, although no specific delineation has been completed. The wetland habitat attracts a large concentration of migratory waterfowl, including tundra and trumpeter swans. The shoreline has a number of small coves which provide cover for a variety of wildlife. The wetlands are fed from both perennial and intermittent streams in the adjacent Tualatin hills. Portions of this watershed have been logged in the past. A few homes and farm buildings are located in the area. The homes are all adjacent to Highway 30. A rail line parallels Highway 30 along the length of the target area. One grade crossing provides site access. This access is located just north of the Burlington Bottoms wetland.

The target area also has a rich historical and cultural background. It was an important and heavily used area for Native Americans for collection of Wapato, a major food source. Fort Williams, which was located on Sauvie Island, was one of the first fur trading sites in the region.”

2006 Willamette River Greenway Target Area

The 2006 Natural Areas bond measure (Resolution No. 07-3859) defines the Willamette River Greenway target area as the lands along the greenway between Wilsonville and Multnomah Channel. The 2006 Natural Areas Bond measure stated:

Acquisition and connections between existing public holdings along the greenway from Wilsonville to the Multnomah Channel will protect fish and wildlife habitat, water quality, scenic resources and improve public access to the river.

Key themes discussed in the 2006 Bond that pertain to the current MCHTA are:

- Seek connections between big-forested blocks—Tryon, west facing slope on Macadam, Forest Park.
- Headwaters are at least as important as confluences.
- Burlington Bottoms gap should be purchased
- Multnomah Channel is fish refugia.
- Scappoose Bay Watershed Council is potential partner.
- Consider regional flyway: Jackson Bottoms-Wapato-Sauvie
- Lack of public access to river from Downtown PDX to Columbia

Habitat Protection discussed:

- Wetlands along west bank mostly secured except for a few in-holdings. May not be additional willing sellers (ODFW)
- Large numbers of western pond turtles at Burlington wetlands (ODFW). Lots of ivy and very noisy.
- Lots of bottomland habitat north of County line, some already protected by DSL.
- ODFW believes it would not hurt to make another run at the in-between properties along channel.

The MCHTA expands on the 1995 MCTA and 2006 WRGTA to include the upslope forested areas in the eastern Tualatin Mountains that contribute hydrology to the floodplain areas (map t1). Although no designated “equity focal areas” are shown on map r2 – Equity Focal Areas, the Multnomah Channel floodplain area clearly was important for Native American use. Rocky bluffs and steep terrain over the majority of the MCHTA generally precluded much European settlement disturbance, except for logging activities.

The MCHTA lies outside of the current urban growth boundary (UGB). Most of the MCHTA is zoned as Commercial Forest with smaller areas of Rural Residential and Multiple Use Agriculture.

Active logging occurs throughout the Commercial Forest zone, with large tracks of forest in different stages of development post-logging activities. Mature forests can be found surrounding rural residences and steep V-shaped valleys containing tributary streams to the Multnomah Channel. Native species such as Doug-fir, Big-leaf Maple (*Acer macrophyllum*), and Red Alder (*Alnus rubra*) dominate these areas.

Highway 30 divides the MCHTA into steep forested areas, approximately 85% of the MCHTA lying west of the highway, and floodplain marsh and agricultural areas, approximately 15% of the MCHTA east of the highway. As such, the highway poses a significant potential barrier to wildlife in much of the MCHTA from accessing the lowland resources associated with the Multnomah Channel and its floodplain. Connectivity to important natural landscapes and habitat anchors will be a

critical factor in determining the long-term viability of future native populations. Biotic connectivity is discussed in more detail in Section 3.11.

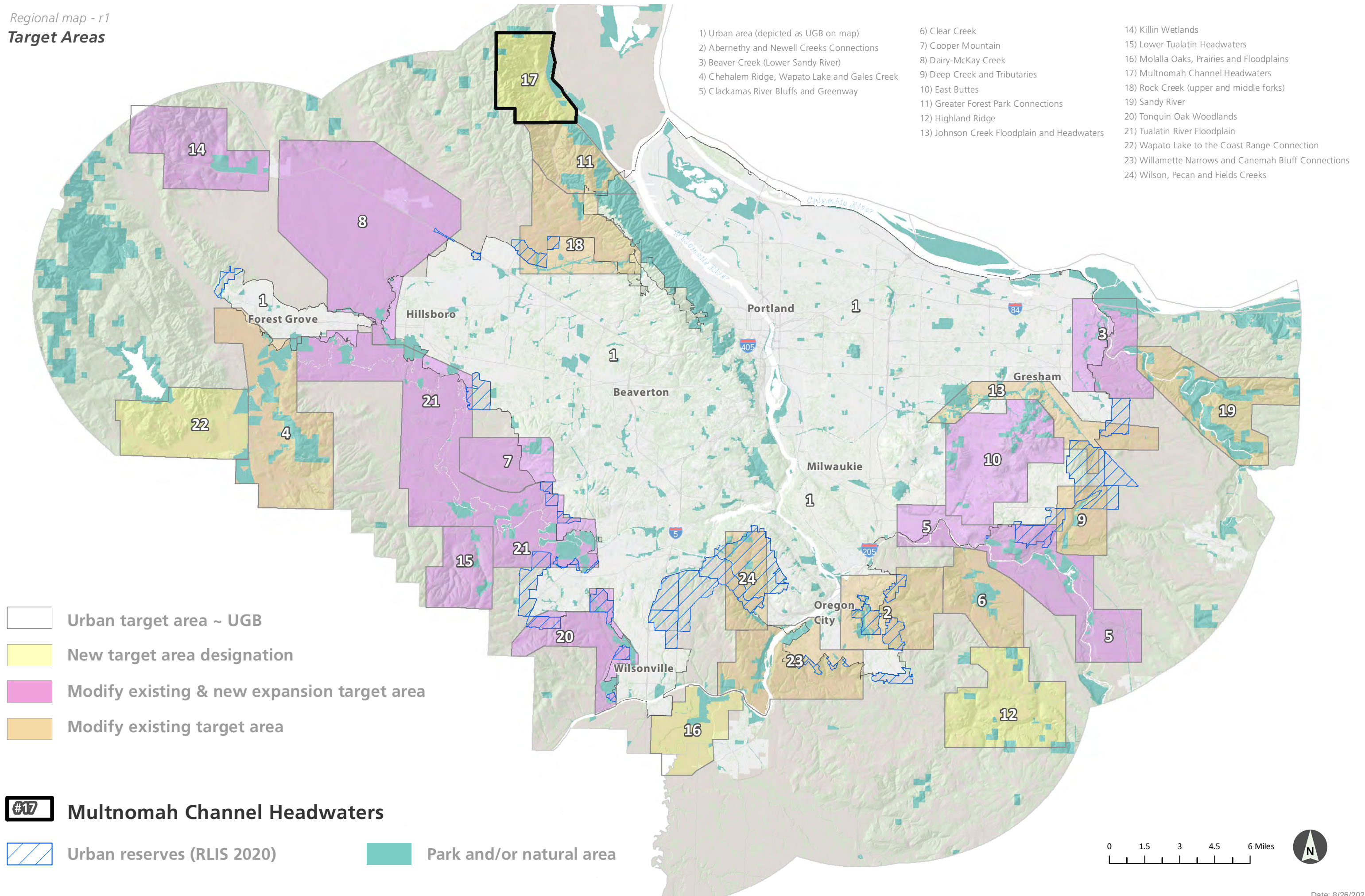
Metro has previously invested voter-approved bond funds to protect several parcels along the Multnomah Channel floodplain, such as Multnomah Marsh North and South. Below the MCHTA, Metro has invested in four creeks within the upland forest: Burlington Creek, Ennis Creek, McCarthy Creek and North Abbey Creek. Parcels were acquired to increase the trail network north of Forest Park and to help protect the existing ecosystem.

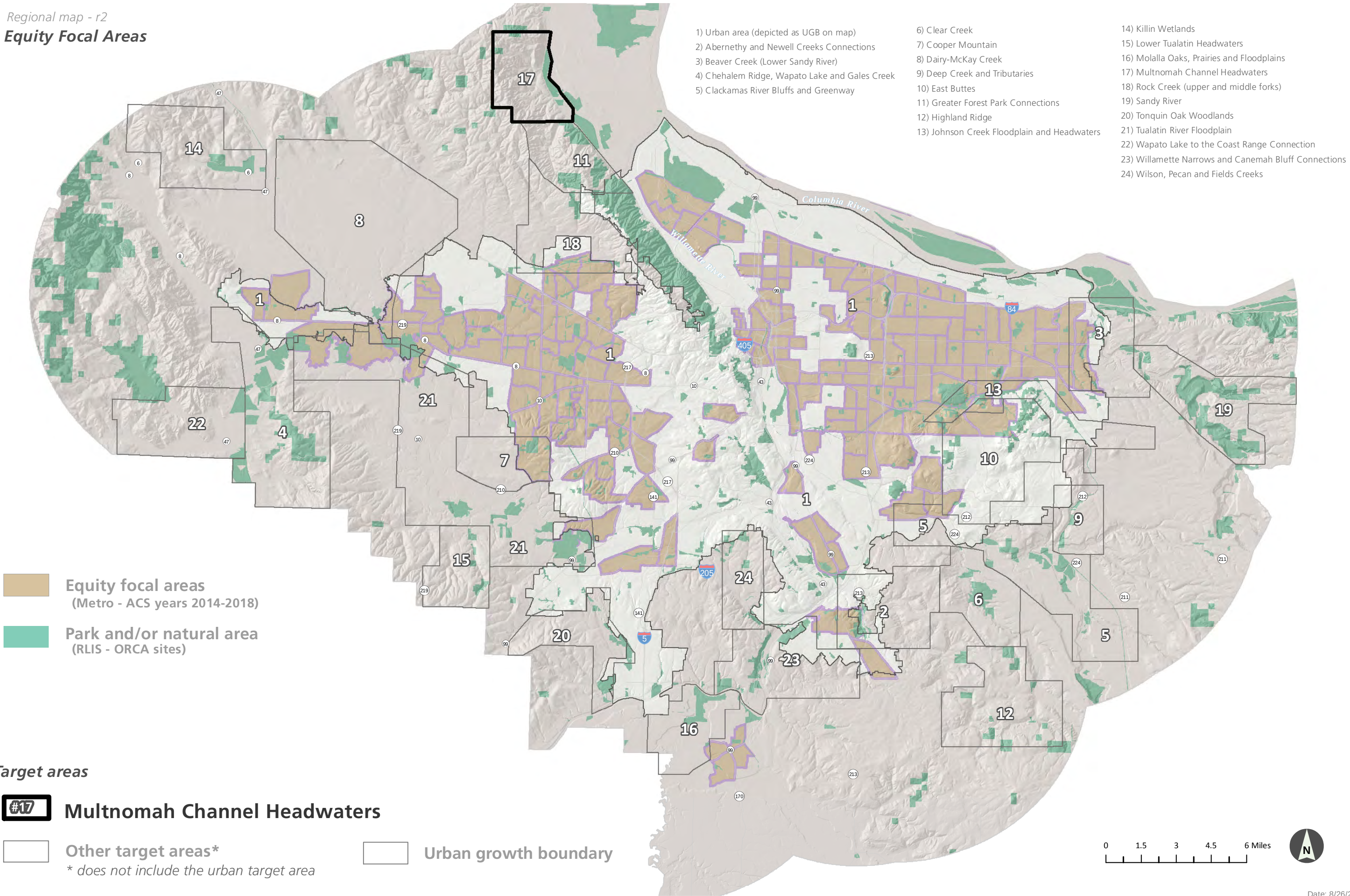
Population in this area is low and interspersed throughout unincorporated communities, rural homesteads, and small neighborhoods along Skyline Boulevard and Rocky Pointe Marina. Population for the entire zip code is less than 5,000 which includes more area than the MCHTA covers. Few people of color are living within the area, with less than 10% of the population listed as non-white.

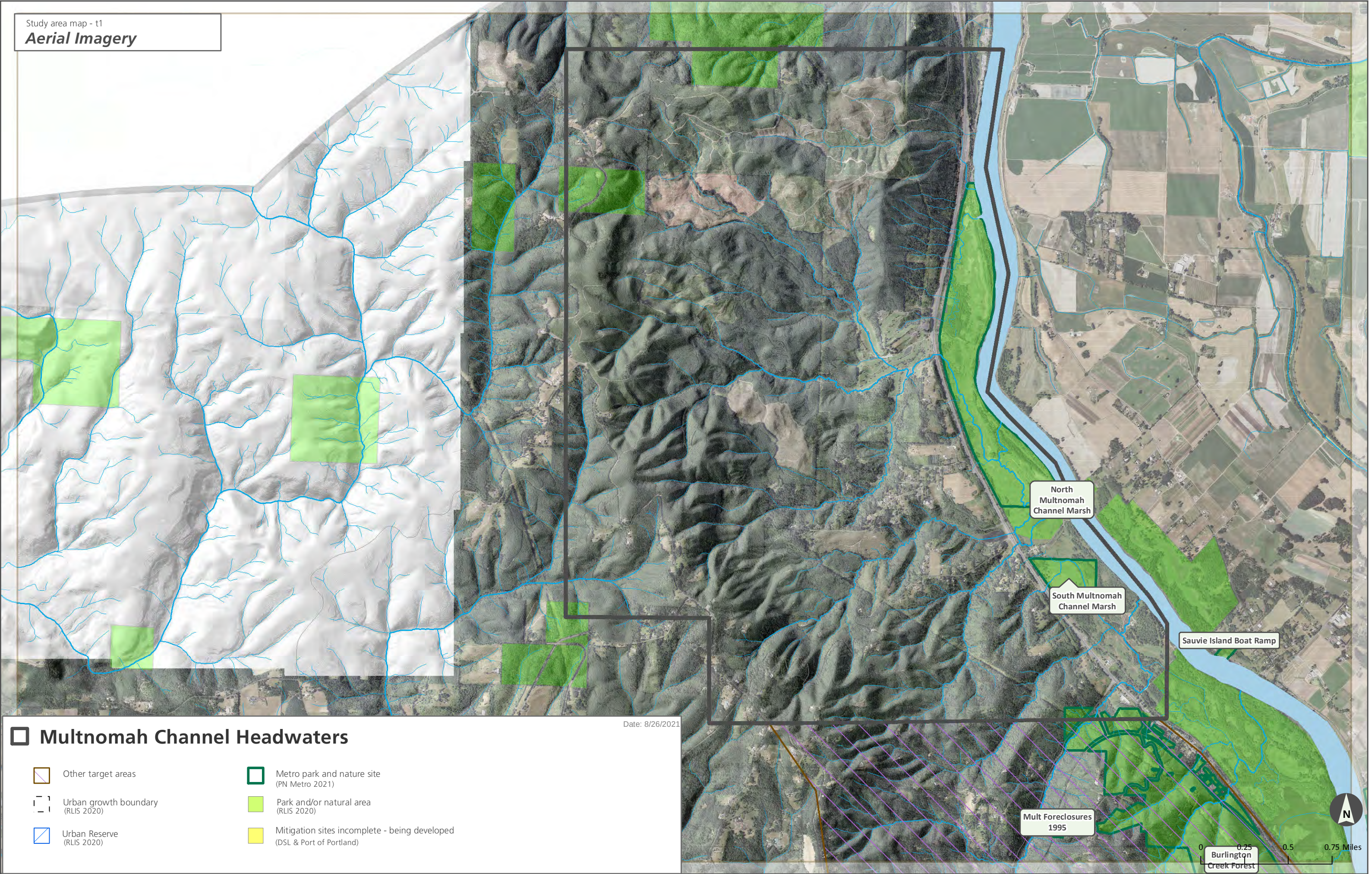
Important note on demographic data

Through the bond's investments, Metro is working to ensure that parks and nature across greater Portland benefit communities who have not benefited equitably from past investments by prioritizing community engagement, racial equity, and climate resilience. Although the Equity Focal Area map focuses on demographics within geographies, Metro recognizes that there are many components to ensuring equitable outcomes through its investments and that geography or adjacency is not the sole way to advance equity. Throughout the refinement process and outside of this ecological assessment, our community engagement will address the harm institutions, like government, have perpetuated towards communities of color that have been historically marginalized by centering these voices and needs. Including this data here helps emphasize that people are part of the landscape and acknowledges that if we do not review or analyze relevant data on where people live through these ecological assessments, we may miss opportunities to achieve the multi-layered goals of the bond measure.

Target Areas







LAND USE AND LAND COVER, SPECIES AND SYSTEMS

The MCHTA is the northernmost target area within the Metro study, directly south of Columbia County, and directly east of Washington County. It encompasses the Unincorporated Multnomah County Skyline Ridge Neighbors Area according to tax lot information. It is a new target area designation for Metro (Target Area Number 17) and is one of the smaller areas of study.

REGIONAL AND TARGET AREA MAPS 3A-3E: LAND COVER

Five regional land cover maps that display aspects of the landscape identified as priorities by community, stakeholders and in the bond resolution. Because we lack species specific and plant community specific data in most cases, these layers serve as our best surrogates for species associated with various habitat types.

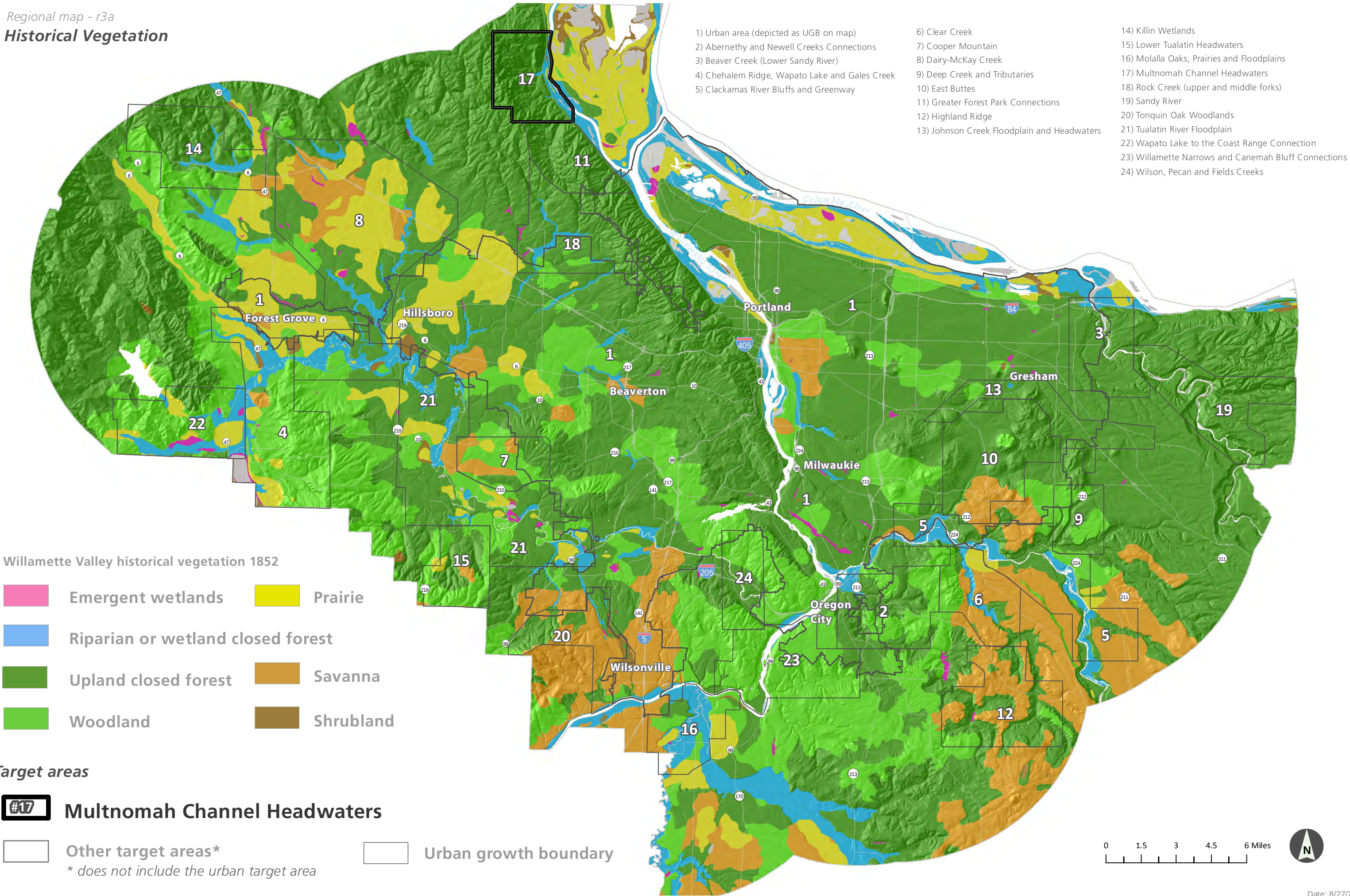
Land cover within the MCHTA is primarily upland coniferous native forest. East of Highway 30, the North Multnomah Channel Marsh creates a scrub-shrub wetland buffer between the Multnomah Channel and Highway 30. Along the highway, pockets of small residential communities, recreation, and other agricultural land use also occurs within the MCHTA, but most of the MCHTA to the west of the highway is primarily densely wooded and used for timber harvest.

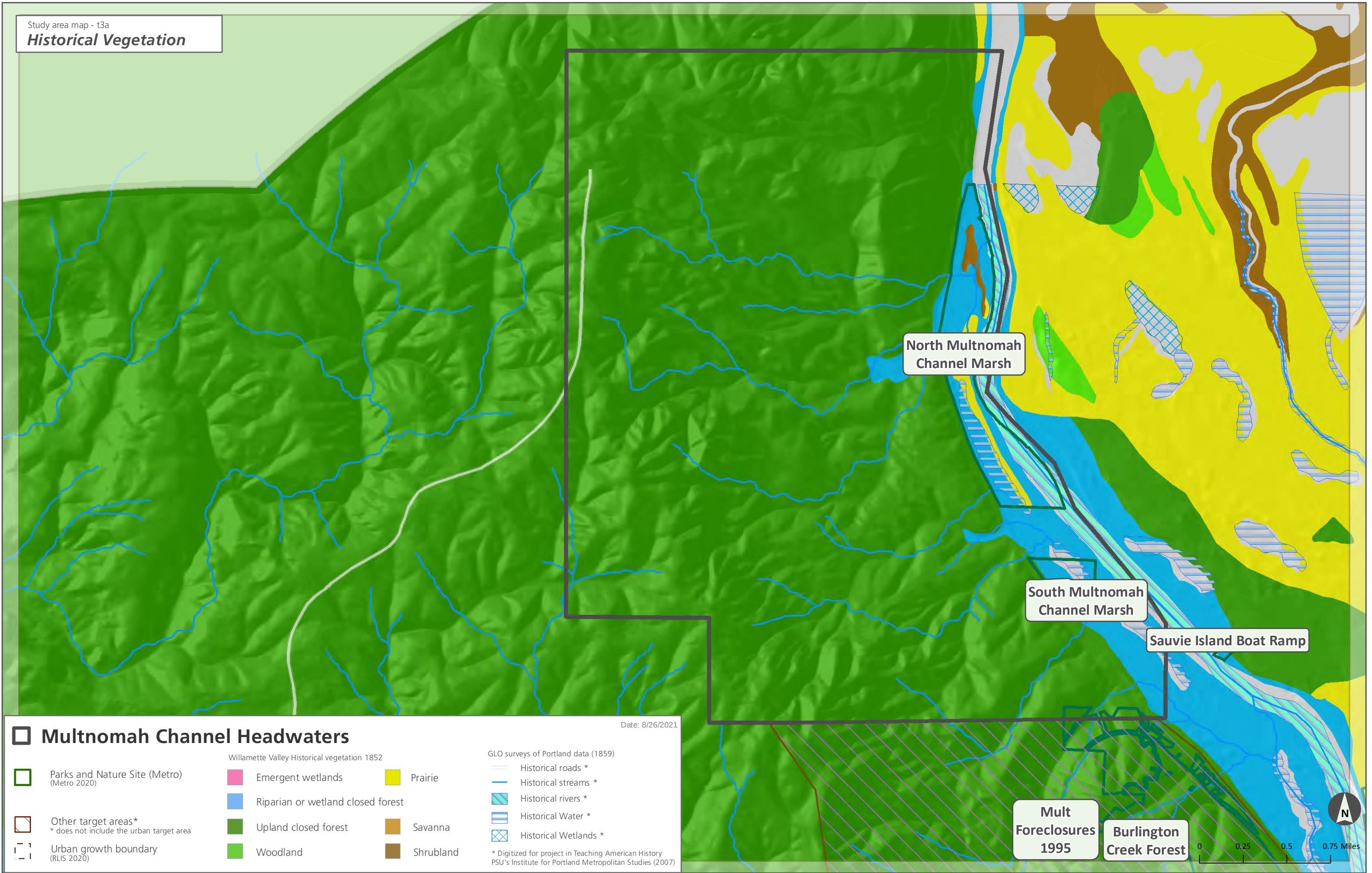
The site connects regionally to Forest Park to the Southeast, Sauvie Island across the Multnomah Channel, the community of Linnton along Highway 30, and the forested woodland of the Tualatin Mountains nestled between Highway 26 and Highway 30. Small, unincorporated counties such as Helvetia, Holbrook, Burlington, and Folkenberg are all located within or nearby the MCHTA. The city of Scappoose lies to the north.

Multnomah Channel is a tributary of the Willamette River, forking away from the Willamette prior to the rivers' confluence with the Columbia River a few miles away. The Multnomah Channel flows northwest around Sauvie Island and along Highway 30 before it joins the confluence of the Columbia River. Multiple small streams flow into the channel along the MCHTA. The steep terrain is riddled with streams and drainages.

REGIONAL AND TARGET AREA MAP 3A: HISTORIC VEGETATION

These maps show historical vegetation of the area, derived from the 1850 GLO survey records and a pre-Euro-American settlement vegetation model (Christy and Alverson 2011). Historically, the site was like what it is today; upland mature coniferous forest within the Tualatin mountains (Southwest Hills of Portland are also part of this range) and riparian or wetland forest and wetland habitat along Multnomah Channel. The channel was historically more meandering and braided, so the network of wetlands was even more complex than it is today. Small patches of prairie and savanna were present on islands within the Multnomah Channel.





REGIONAL AND TARGET AREA MAP 3B: CURRENT LAND COVER

Current land cover is similar to what it has been historically, albeit more of a mosaic of forest ages broken up by agriculture and logging. Portions of the site are currently used for timber harvests, unincorporated communities, powerline corridors, a golf course, and small-scale agricultural practices. This has created a patchwork of forest ages, from clear-cuts to mature forest, especially in the center of the MCHTA. To the far west along Skyline Boulevard, mature upland closed forest still dominates with only small clearings created in the canopy for intermittent residences. Highway 30 and the BNSF railroad run North to South the entire target area, creating a visual transition between upland coniferous forest atop steep basalt cliffs to floodplain and riparian wetlands. These two transportation corridors create barriers to biotic permeability, namely fish, amphibians and smaller mammals.



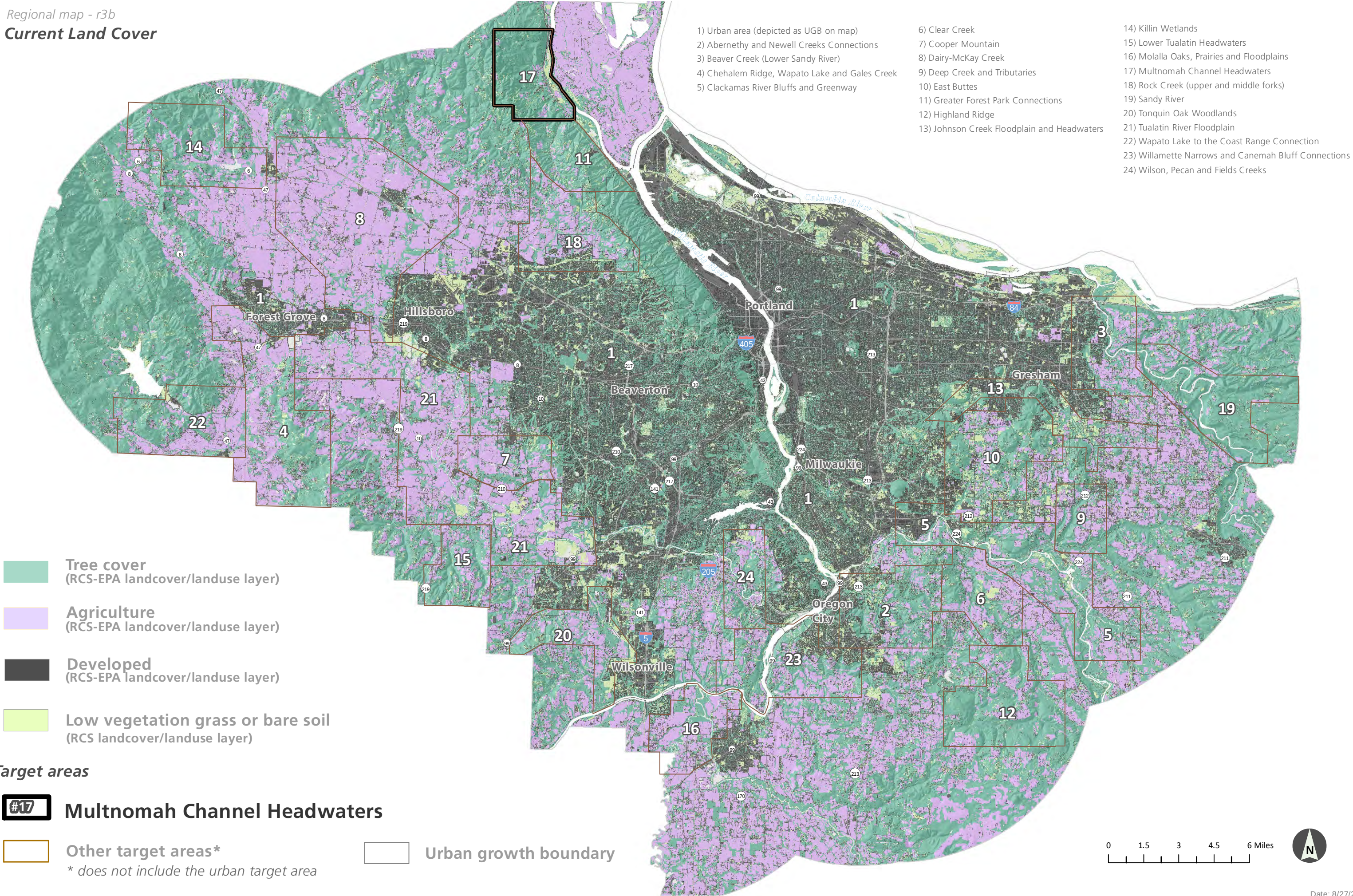
Figure 1: A view of the Rocky Point Mountain Biking Trails. Harvested timberland leased from Weyerhaeuser and maintained by the NW Trail Alliance, East Multnomah Soil & Water Conservation, Portland Water Bureau, and the Western Invasives Network.

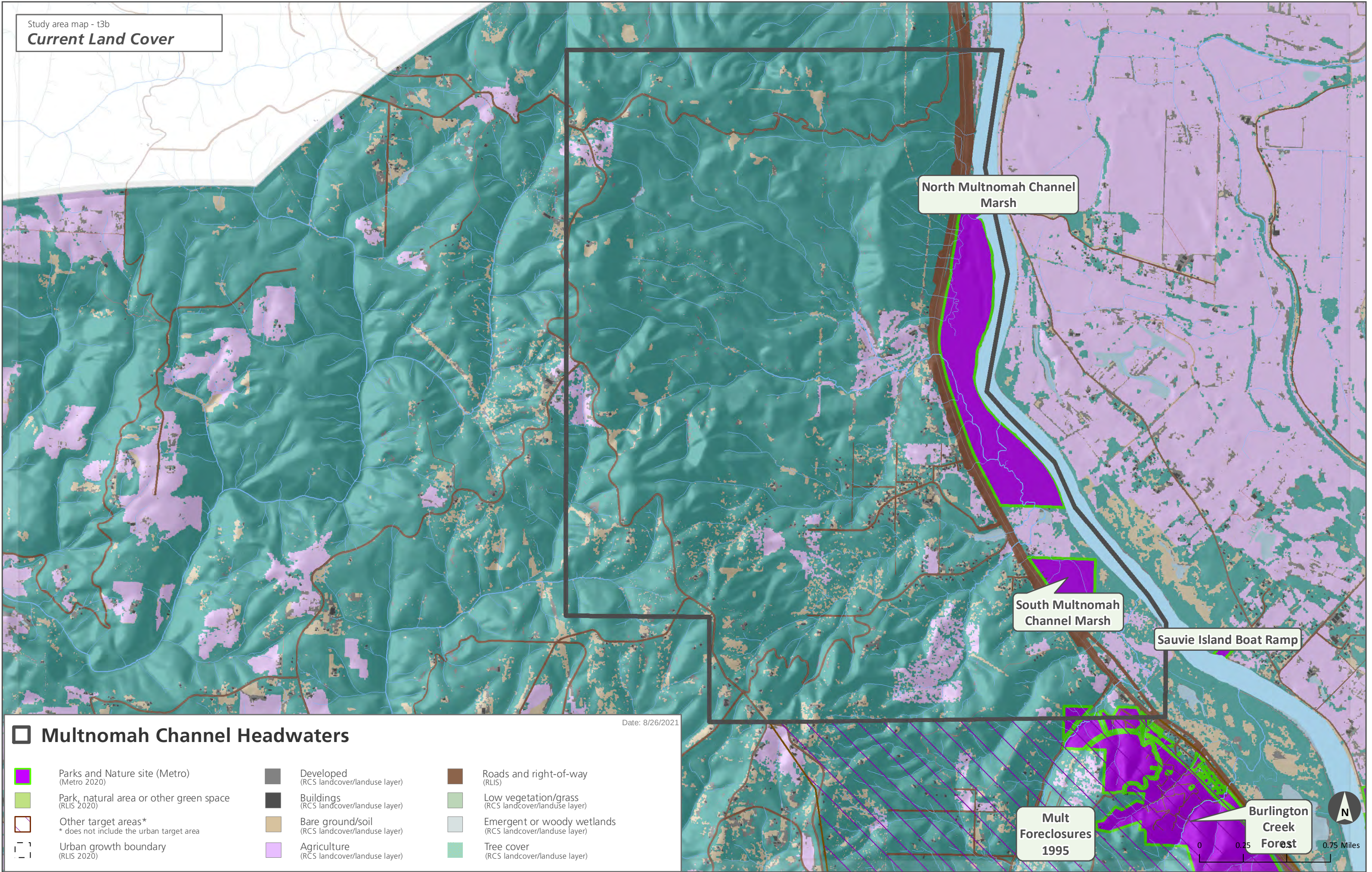


Figure 2: BPA easement for high voltage powerlines near the unincorporated community of Holbrook.



Figure 3: Wildwood Golf Course off Highway 30. Several creeks converge here.





REGIONAL AND TARGET AREA MAP 3C: OAK

Oregon White Oak woodlands (*Quercus garryana*) are indicated on maps and along the edge of the closed upland forest, along Highway 30, with the largest group growing in Wildwood Golf Course. Site reconnaissance did not indicate any large oak populations or connectivity of Oregon White Oak along the corridor. Douglas-fir is the predominant species west of Highway 30, and Oregon Ash (*Fraxinus latifolia*) and willow (*Salix* spp) are the dominant species east of Highway 30. Few oaks were seen, and they were primarily growing within the riparian matrix. Oak in this area does not seem ecologically significant compared with other study areas within the Willamette Valley ecoregion. They do not seem to have existed here historically in any great significance. Refer to the Appendix for maps 3c.

REGIONAL AND TARGET AREA MAP 3D: PRAIRIE AND SAVANNA LOSS

Maps show the only historic prairie likely existed in the braided ground of Multnomah Channel prior to landform changes. Over time, Multnomah Channel has become much narrower and the braided network has filled in due to slight tidal action, siltation/sediment deposits, and management of the shoreline (Tuppan, 2007). Upstream, the current hydrology and landform are not well-suited to support oak savanna or prairie habitat. A large and ecologically significant oak savanna habitat existed across the channel on Sauvie Island historically, outside the current MCHTA extent. Given the lack of significant prairie and savanna habitat historically, these are not likely conservation targets for MCHTA. The Appendix includes maps 3 showing these absences.

REGIONAL AND TARGET AREA MAP 3E: FLOODPLAINS AND WETLANDS

The MCHTA is part of the Multnomah Channel Tributaries watershed area, with small streams throughout the hillsides draining directly into Multnomah Channel. Many have been piped directly under Highway 30. Some streams may drain away from the channel into the Tualatin River, which becomes the Skyline West Area watershed.

The wetland area east of Highway 30 is entirely within the floodplain of Multnomah Channel. This includes the North Multnomah Channel Marsh, South Multnomah Channel Marsh, Burlington Bottoms (which is immediately south of the MCHTA), and several privately owned parcels of land such as Rocky Pointe Marina, a houseboat community.

Multnomah Channel offers flood reduction for the Willamette River, providing flood storage and bank overflow in North Multnomah Marsh and Sauvie Island.

REGIONAL MAP 4: WATER QUALITY (BY STREAM UNITS)

Several small creeks and streams empty into Multnomah Channel along the steep drainages of the MCHTA. Crabapple Creek, Patterson Creek, Jackson Creek, Jones Creek, and Joy Creek all cut through the MCHTA in a northeastern direction before joining the channel. The east fork of McKay Creek starts within the MCHTA near NW Rocky Point Road, before quickly flowing southwest. McCarthy Creek cuts through the MCHTA in the southeast and feeds directly to Burlington Bottoms.

No water quality monitoring stations exist within the MCHTA. The closest stations are southeast at the Sauvie Island Boat Ramp and north of the MCHTA along Multnomah Channel at Pirate's Cove Marina.

Water quality of the streams feeding into the channel does not seem to be heavily degraded or impacted with the exception of logging activities happening within the MCHTA. Clear-cut activities create bare areas of soil where invasive species can create monocultures, higher water temperatures due to lack of shade, and higher sedimentation within the stream and sediment transport during large rain events due to increased erosion. Most streams within the MCHTA are moving through low population, heavily canopied areas so timber harvest activities represent the primary impact to water quality. Flooding from these streams is minimal due to the steep banks surrounding them. Once the streams feed into Multnomah Channel, however, water quality becomes far worse and the entire Multnomah Channel within the MTCHA is impaired for a variety of water quality parameters.

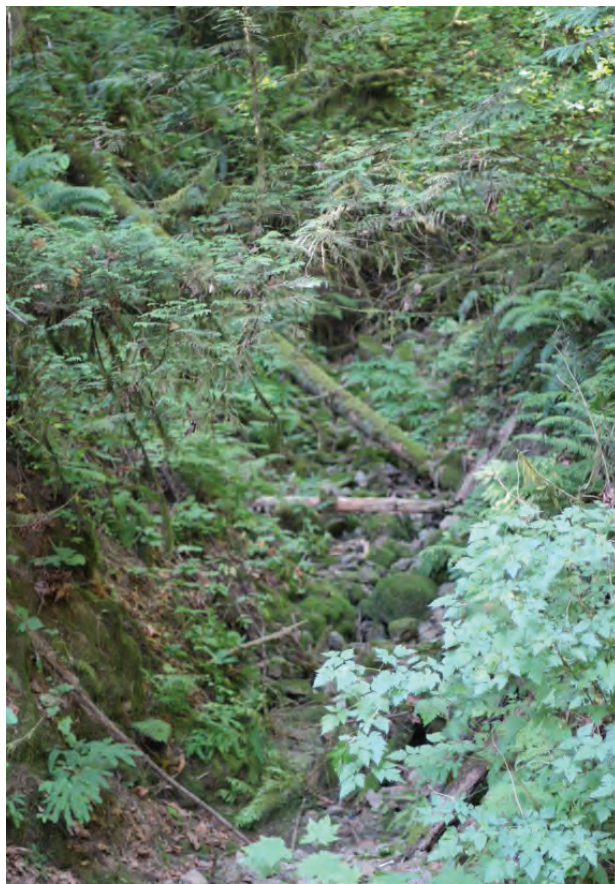
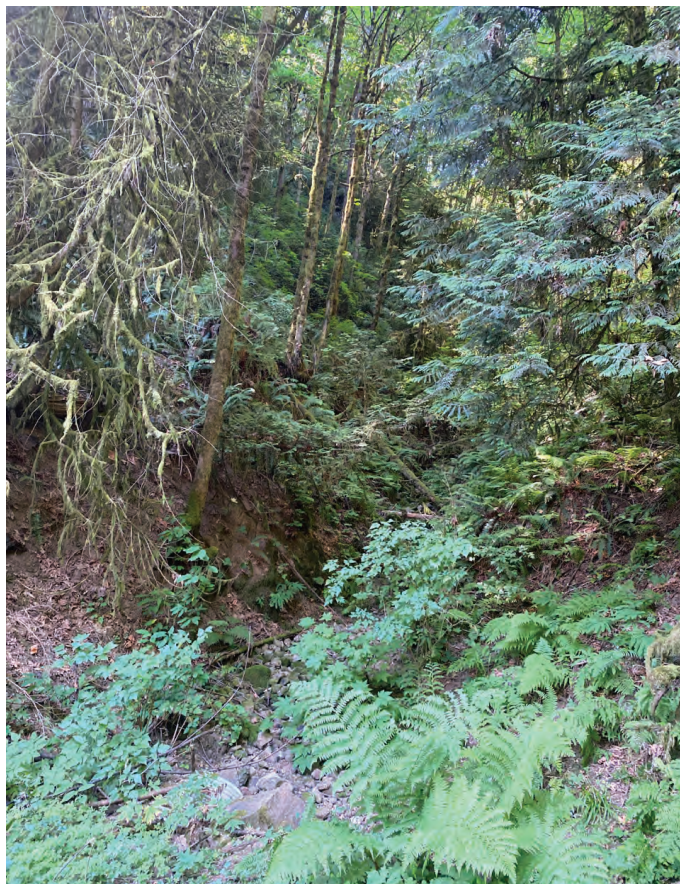
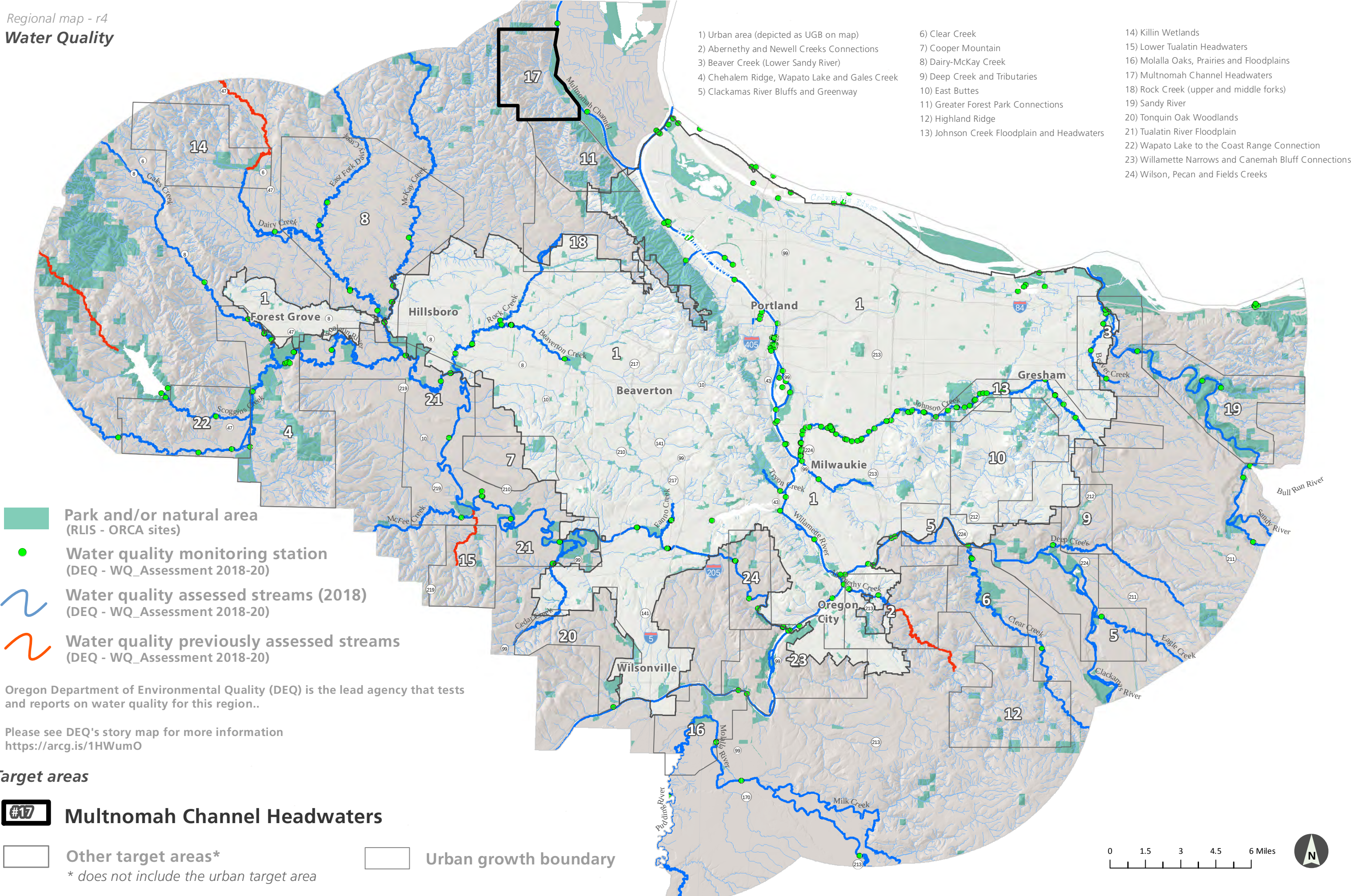
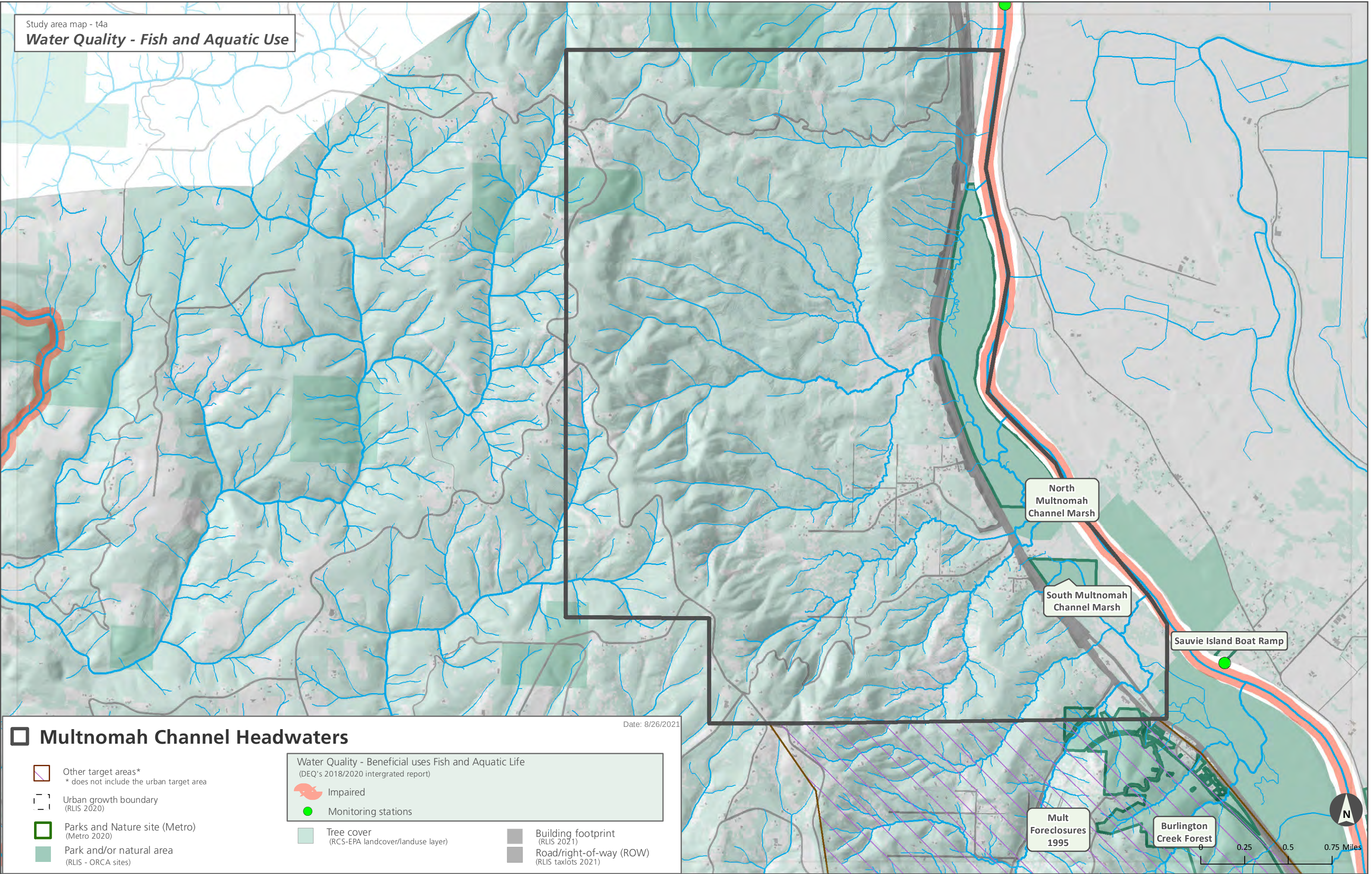


Figure 4: Views of Jackson Creek from NW Logie Trail Road. A narrow creek in upland forest with steep embankments, some bank incision and little to no wetland is typical for the target area west of Highway 30. Native plants and mature canopy create desirable habitat for wildlife.





Multnomah Channel Headwaters

Date: 8/26/2021

- Other target areas*
* does not include the urban target area
- Urban growth boundary
(RLIS 2020)
- Parks and Nature site (Metro)
(Metro 2020)
- Park and/or natural area
(RLIS - ORCA sites)

- Water Quality - Beneficial uses Fish and Aquatic Life
(DEQ's 2018/2020 integrated report)
- Impaired
 - Monitoring stations
 - Tree cover
(RCS-EPA landcover/landuse layer)
 - Building footprint
(RLIS 2021)
 - Road/right-of-way (ROW)
(RLIS taxlots 2021)

Mult
Foreclosures
1995

Burlington
Creek Forest

0 0.25 0.5 0.75 Miles

TARGET AREA MAP 4A-D: WATER QUALITY BY STREAM UNITS

Three of the creeks in the MCHTA converge within Wildwood Golf Course. These creeks are Patterson Creek, Crabapple Creek, and a third un-named creek.

Creeks within MCHTA classified by the East Multnomah Soil and Water Conservation District as “potentially significant water resource and wetland sites, Class I reach” include Joy Creek, Jones Creek, Jackson Creek.

All streams within the MCHTA leading to Multnomah Channel are fish-bearing, with records of cutthroat trout using the creeks as migratory passage.

The Multnomah Channel is used daily for boating recreation activities. Within the MCHTA, there are two houseboat communities and two public boat launch sites just outside the MCHTA. Refer to the Appendix for maps 4 a-d.

TARGET AREAS MAP 5: ALTERED STREAMS

Streams within the MCHTA have not been heavily altered or placed underground, except to cross Highway 30. Maps do not show any stream alteration at all, although streams are likely piped under Highway 30 via culvert before emptying into the Multnomah Channel floodplain. Refer to the Appendix for map 5.

REGIONAL MAP 6: TOXICS

No known toxic waste storage or disposal occurs within the MHCTA or the surrounding area of the Tualatin Mountains. Refer to the Appendix for map r6:Toxics.

TARGET AREAS MAP 6: TOXICS

Map t6 shows one area of Brownfields suspected contamination in the southeast portion of the MCHTA, from a tractor trailer gasoline spill in the 1980s. Approximately 5,700 gallons of gasoline were spilled and seeped into the soil and surface water. No other confirmed contamination or cleanup sites exist within the MCHTA. Refer to the Appendix for t6:Toxics.

REGIONAL MAP 7: SALMON, STEELHEAD, LAMPREY

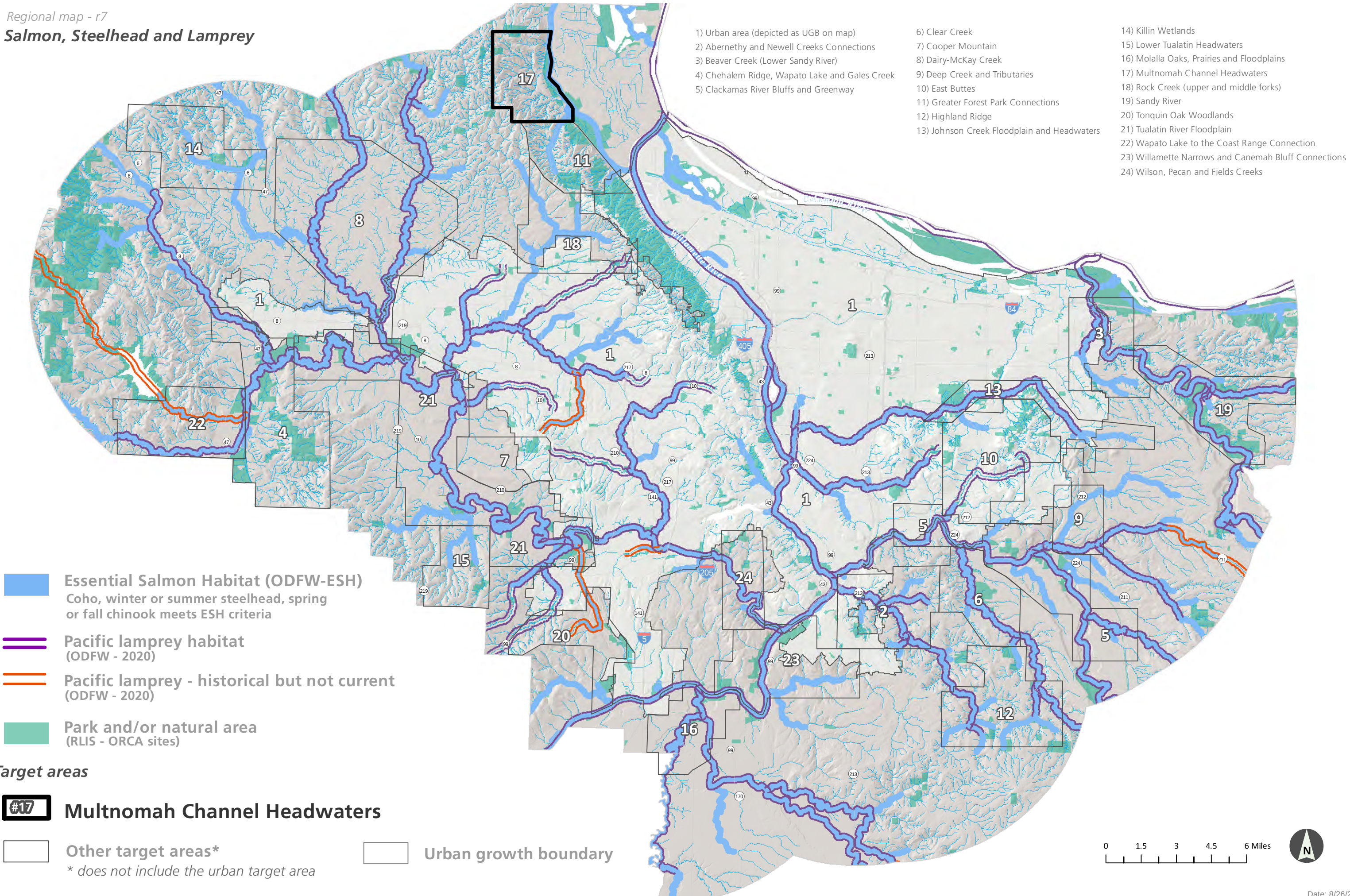
Multnomah Channel is part of the essential salmonid habitat network. MCHTA is bordered by a network of small creeks and streams, some of which drain into Multnomah Channel to the east, and some of which drain to the Tualatin River to the west. Both the Tualatin River and Multnomah Channel eventually drain into the Columbia River. This creates an important network of fish passage and breeding habitats with minimal manmade barriers and development impacts. Lamprey habitats occur in the larger waterways, the Tualatin, and Multnomah Channel, but maps do not indicate the smaller network of streams provide habitat for lamprey.

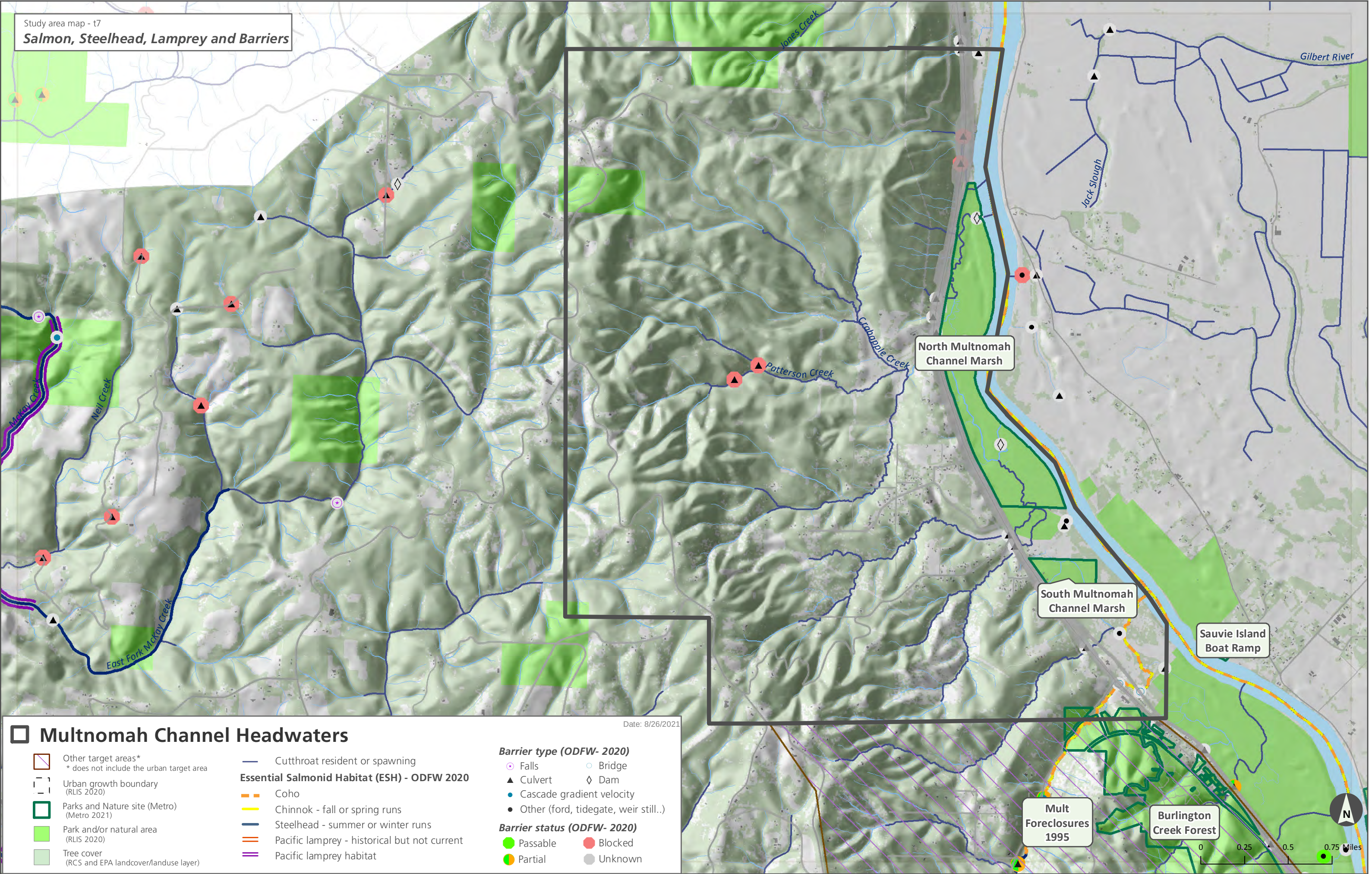
TARGET AREA MAP 7: SALMON, STEELHEAD, LAMPREY AND BARRIERS

McCarthy Creek in the far southeast corner of the MCHTA is the most significant creek for salmonid habitat. It is listed by ODFW as a Coho Salmon spawning habitat, a winter steelhead spawning habitat, and a spring Chinook rearing habitat in addition to Cutthroat Trout. No other creek within the MCHTA provides such diverse habitat. McCarthy Creek is also the only stream in the MCHTA that is not obstructed by Highway 30, due to a bridge beneath Highway 30 at the intersection of Cornelius Pass Road and Highway 30.

Numerous culverts along Highway 30 likely present fish barriers, but natural barriers may also be present in the steep and rocky bluff areas. Blocked culverts and other fish barriers are mapped east of the highway and along Patterson/Crabapple Creek. Patterson and Crabapple Creek converge in the Wildwood Golf Course and are piped under Highway 30 before draining into the Multnomah Marsh wetland complex and eventually Multnomah Channel. Removing the fish barriers along the creeks would be an impactful habitat improvement within MCHTA.

Multnomah Channel contains the same fish species as the Willamette River. Coho Salmon, Steelhead, Trout, Sturgeon, Smallmouth Bass, Largemouth Bass, Crappie, Walleye, Catfish, American Shad, Yellow Perch, and Sunfish are documented within the channel.





REGIONAL MAP 8: REGIONAL CONNECTIVITY

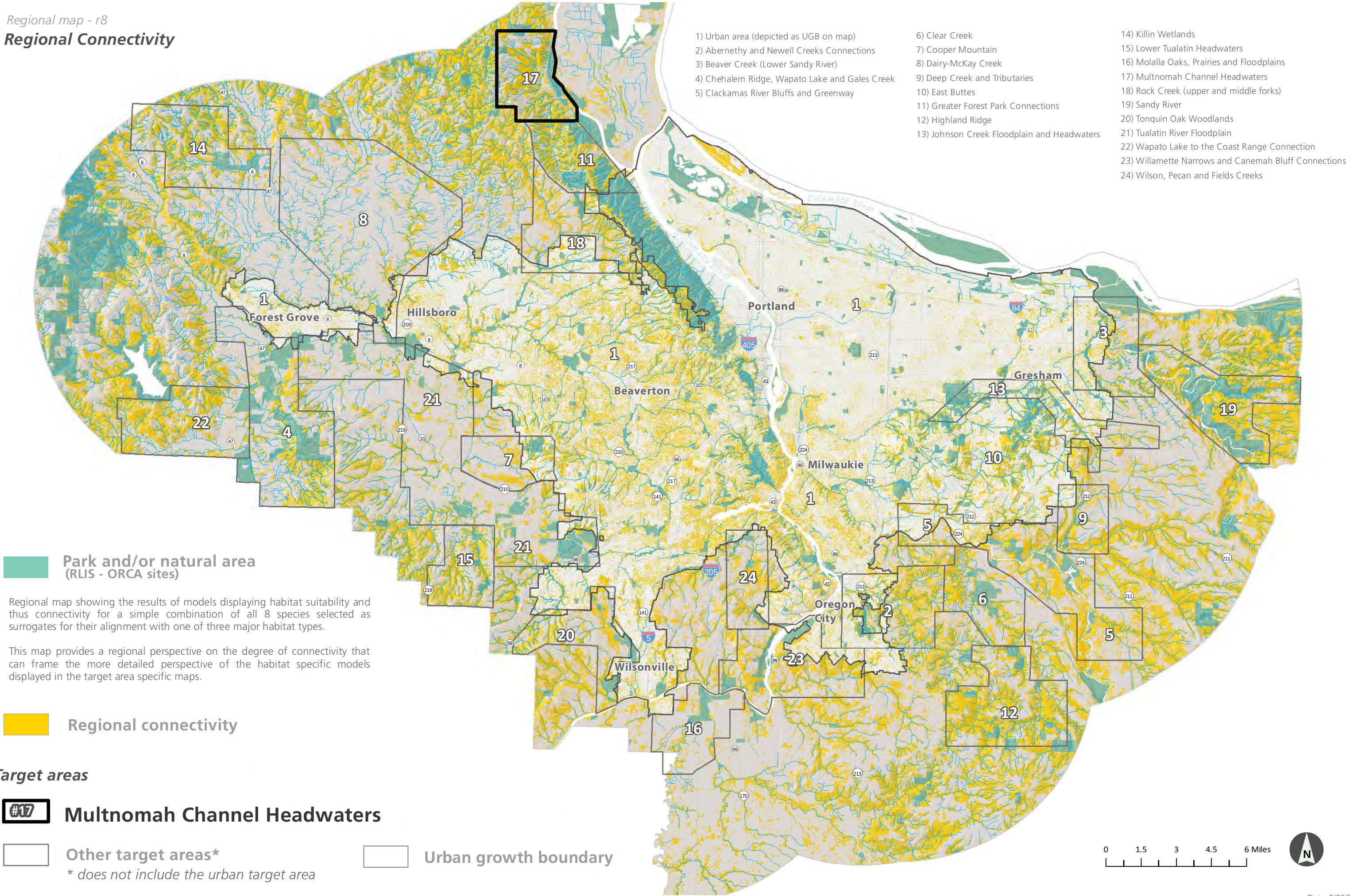
The MCHTA plays the role of a nexus of connectivity for nearby protected landscapes. The Tualatin Mountains link urban and rural areas and creates wildlife passage for ground, water, and air dwelling animals. Forest Park and the coast range all blend together in this region and provide connectivity to major waterways within the area such as the Columbia, Willamette, and Tualatin rivers and Scappoose Bay. The MCHTA and surrounding region are a matrix of mature forest, early successional forest, riparian forest, wetlands, and basalt cliffs.

TARGET AREA MAP 8: CONNECTIVITY (USING CLUSTERED SURROGATE SPECIES MODELS)

Map t8a Connectivity – Oak

The MCHTA indicates a fairly high surrogate species cluster for oak presence (top 22%) as shown in map t8c, but site reconnaissance does not indicate the MCHTA supports or should support a large oak woodland habitat. The MTCHA also did not historically have large areas of oak savanna. The MCHTA, with its steep basalt cliffs and lowland floodplain, provides more favorable habitat for native mature coniferous forest and wetland species. See the Appendix for map t8a.

Regional Connectivity



Map t8b Connectivity – Upland Forest

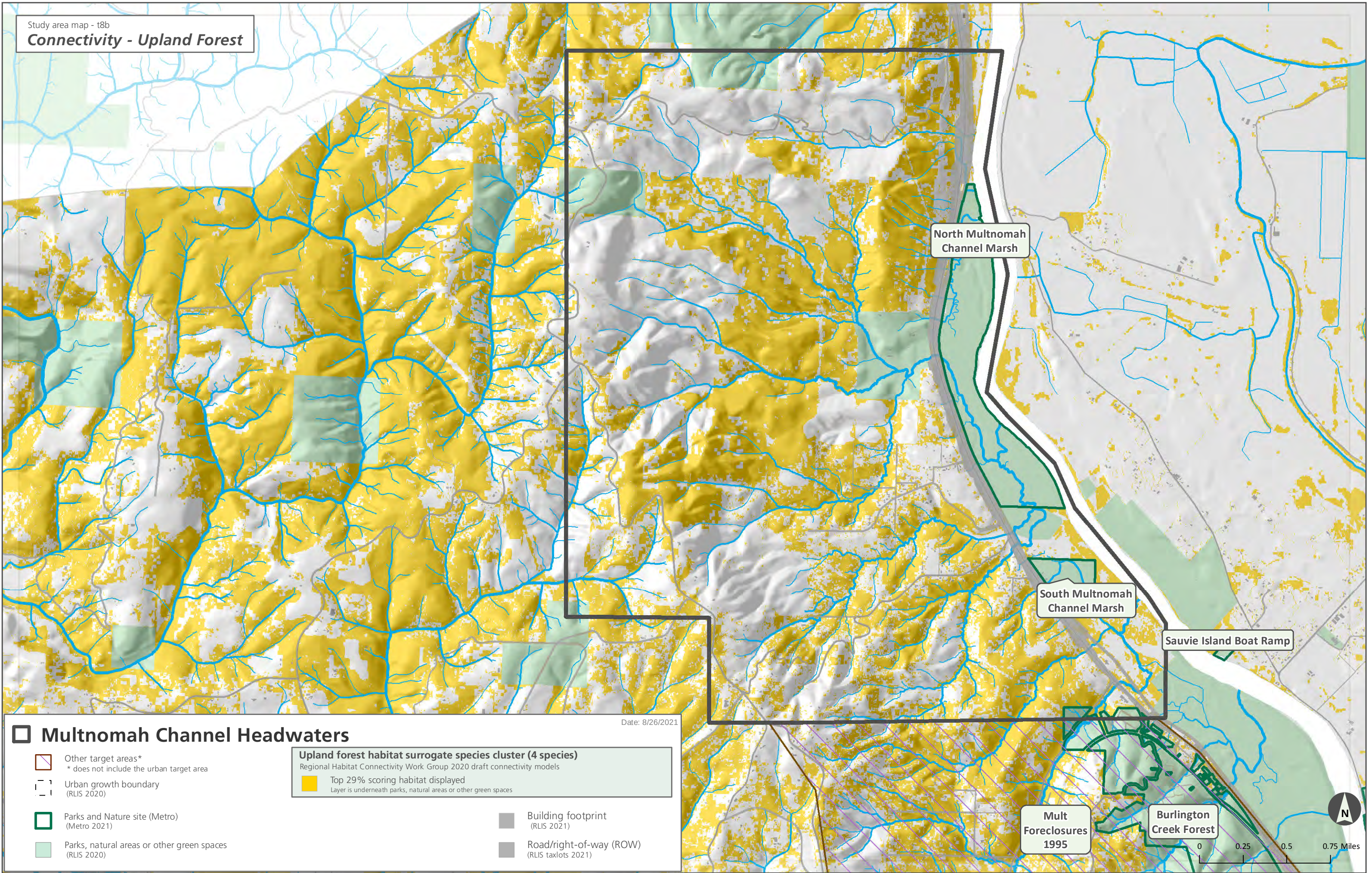
Map t8b shows a surrogate species forest habitat cluster of 29.4%. This is underestimated with site observations, as large swaths of forested land within the MCHTA have not been modeled as forest habitat, while site reconnaissance indicates it is. This is especially true in the northwest section of the MCHTA along Skyline Boulevard. Gaps in forest habitat may be due to unincorporated communities, clear cuts, and Bonneville Power Associate land easements. Connectivity with upland forest is high within the entire MCHTA apart from Highway 30 and the wetlands east of the highway.



Figure 5: An example of mature upland forest found along Skyline Boulevard and on the western side of the target area. Residences are sprinkled throughout the forest here.



Figure 6: An example of clearcuts and successional replanted forest frequently seen in the northern part of the target area, such as Rocky Point Road.



Map t8c Connectivity – Wetlands

Map t8c shows wetland surrogate species at 24.5%, with species clustered in the floodplain east of Highway 30 and close to the creeks that drain into Multnomah Channel just west of Highway 30. This model seems accurate with what was observed in the field, with the steep drainages creating small banks with limited lowland areas for wetlands to form.

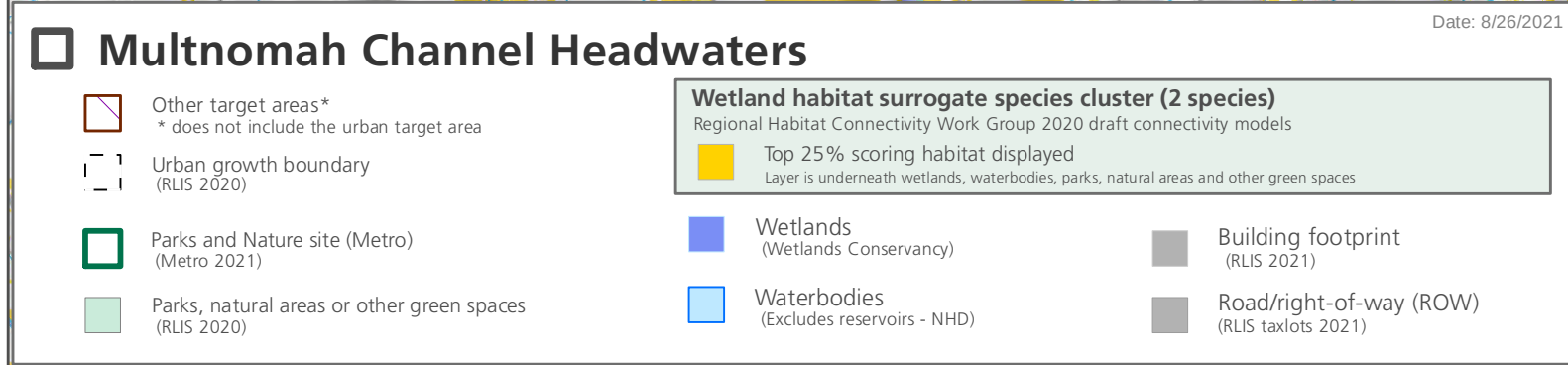


Figure 7: Rocky Pointe Marina, a houseboat community on the Multnomah Channel. The marina is adjacent to Multnomah Channel Marsh and the scrub-shrub wetland matrix.



Figure 8: The wetland east of Highway 30. An unofficial walking path adjacent to Rocky Pointe Marina was accessed through a hole in a fence.

Connectivity - Wetland Habitat



Wildlife Crossing Constraints and Opportunities

Highway 30 is located at the base of the large, forested areas of the Tualatin Mountains and presents a barrier to wildlife that would otherwise move freely between the upland forests and bottomland wetlands. Numerous potential crossings exist within the MCHTA. The following five areas were evaluated:

- North Golf Course
- Wildwood Golf Course
- Rainbow Lake
- South Rainbow Lake
- Cornelius Pass Road at Highway 30

These sites were selected based on their potential to provide connectivity between the forested area west of Highway 30 and the habitats available east of Highway 30.

North Golf Course

There is a well vegetated riparian area along Boat Basin Road north of the Wildwood Golf Course. The riparian area and stream enter an undersized culvert that presents a barrier to wildlife passage. This location could be an important connectivity pathway for many wildlife species in this area.



Figures 9 and 10 show conditions of the culvert and riparian area in this location.



Figure 9: Riparian conditions at a culvert crossing north of the Wildwood Golf Course along Highway 30. Culvert presents a barrier to wildlife crossing.



Figure 10: Culvert is undersized and is a barrier to wildlife passage.

Wildwood Golf Course

At least two drainages (Patterson Creek and Crabapple Creek) funnel into the Wildwood Golf Course from the forested area west of Highway 30. The drainages converge and enter a twin box culvert at Highway 30 just north of Gallagher Road. Wet passage is likely provided here, but no dry passage for wildlife exists. Roadkill was observed in this area. Highway 30 and the BNSF railroad are barriers to wildlife in this location.



Figures 11 and 12 show conditions of the culvert north of Gallagher Road. Highway 30 is a barrier to wildlife in this location and crossings for wildlife could be improved within the riparian area.



Figure 11: View of the twin box culvert. Wet passage likely provided, but no dry passage available.



Figure 12: View of the riparian conditions above the twin box culvert. Highway is a barrier to wildlife at this location.

Rainbow Lake

Rainbow lake is a hotspot for wildlife, but Highway 30 is a barrier between Rainbow Lake and the wetland complex located east of Highway 30. There is a water control structure located at the southeast point of the lake under Highway 30, but passage is not provided. In addition, a fence is located along the Highway along the boundary of Rainbow Lake.



Figures 13 and 14 show conditions at Rainbow Lake.



Figure 13: View of the riparian conditions above the twin box culvert. Highway is a barrier to wildlife at this location.



Figure 14: View of the fence and Highway 30. The water control structure is in the bottom left of the photo.

South Rainbow Lake

An unnamed tributary extends to Highway 30 south of NW Logie Trail Road. This feature passes beneath Highway 30 through an undersized open bottom culvert. Passage may be provided for small wildlife such as Red-legged Frogs (*Rana aurora*) (observed onsite) but is limited for anything else at this location.



Figures 15 and 16 show conditions of the unnamed tributary riparian area and culvert. Highway 30 is a barrier to wildlife here.



Figure 15: Riparian conditions of unnamed tributary extending to Highway 30 from adjacent forested uplands.



Figure 16: Existing conditions of open bottom culvert (photo center). Red-legged Frog observed in this location. Note wetted channel.

Cornelius Pass Road at Highway 30

McCarthy Creek passes beneath Highway 30 at the intersection of Cornelius Pass Road and Highway 30. McCarthy Creek has a well vegetated riparian corridor and connects habitats east of Highway 30. Highway 30 is a bridge over McCarthy Creek at this location. Wet and dry passage are provided. Controlling invasive species and extending the dry bench further from the crossing location would improve passage here. Numerous wildlife prints were observed in this location.



Figures 17 and 18 show conditions of this crossing under Highway 30.



Figure 17: View of the crossing under Highway 30. Wet and dry passage provided here. There are other areas along Highway 30 where a crossing like this one is needed.



Figure 18: View of McCarthy Creek and old Highway 30 bridge. Passage is provided below old Highway 30 but could be improved. Riparian area deteriorates in proximity to Highway 30. Traffic on Cornelius Pass Road is visible in the upper right of photo.

REGIONAL MAP 9: REGIONAL TAX LOT SIZE

This map shows that the MCHTA is like the other outlying target areas that are comprised mostly of tax lots over 40 acres, with numerous areas of parks and/or natural areas. Urban development is generally contained within the UGB and comprised of tax lots less than 1-acre. Only a small portion of the MCHTA contains tax lots less than 1-acre. See the Appendix for map r9.

TARGET AREA 9: TAX LOT SIZE

Most of the MCHTA is owned by Weyerhaeuser, with tax lot maps indicating over 40 acres as part of the same tax lot. Around some of the unincorporated communities tax lot sizes become smaller; closer to 1-10 acres. Metro already owns the North Multnomah Channel Marsh, South Multnomah Channel Marsh, and Burlington Bottoms that is just slightly within the MCHTA.

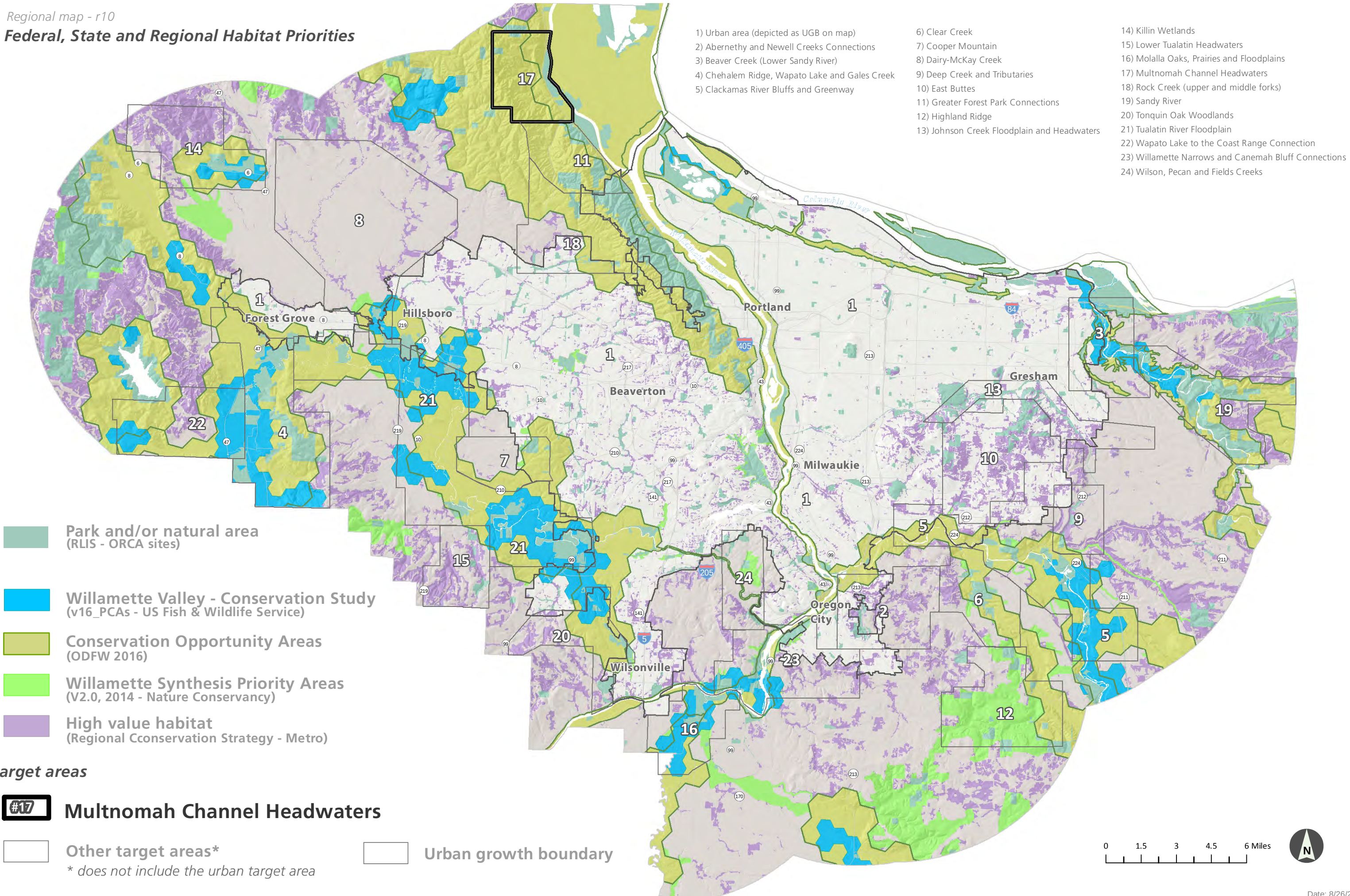
REGIONAL MAP 10: REGIONAL FEDERAL, STATE AND REGIONAL PRIORITIES

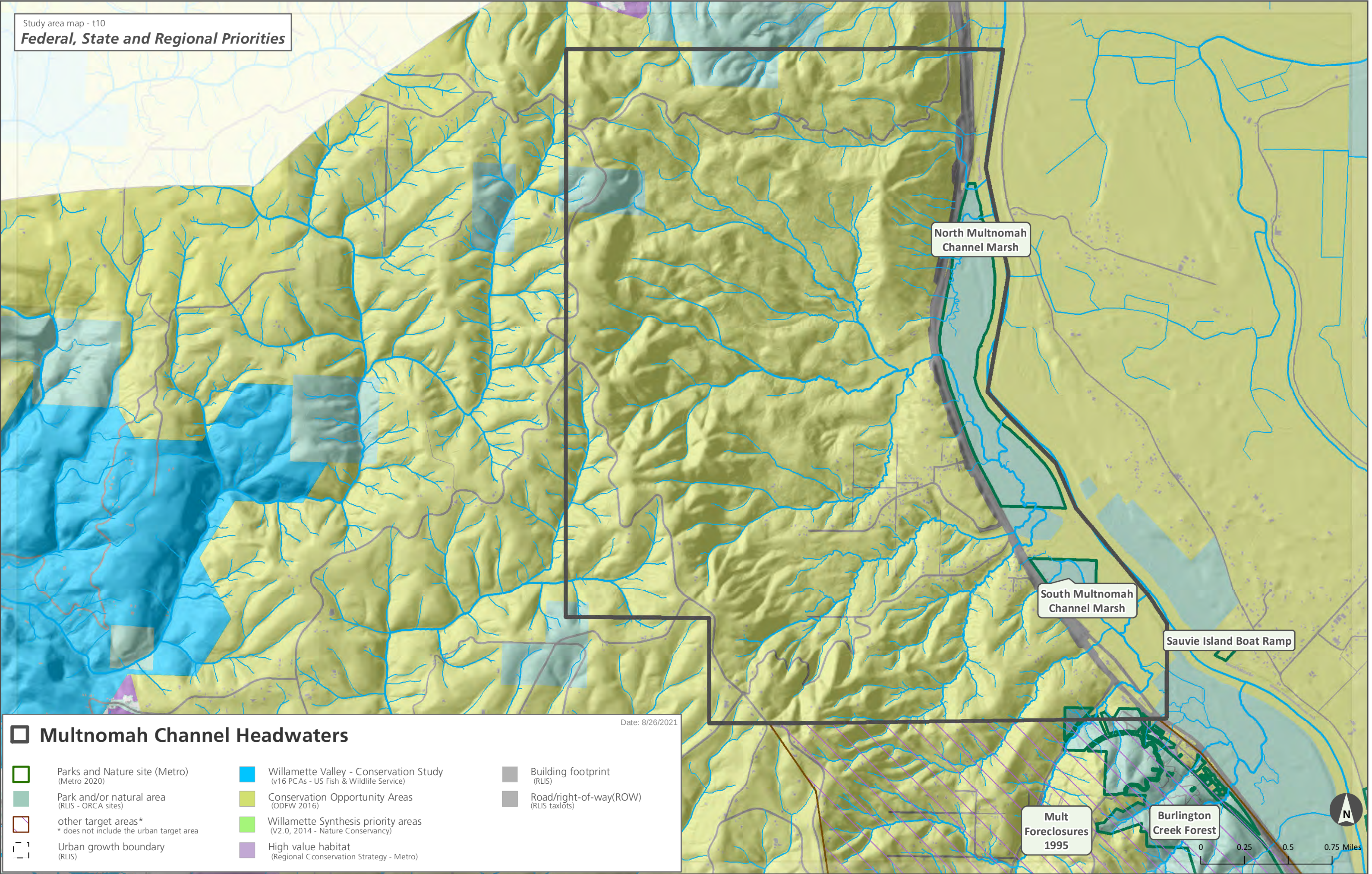
Besides areas listed as Park and/or natural area, the entire MCHTA is considered a Conservation Opportunity Area. The target area to the south of the MCHTA is also mapped as either Park and/or natural area or Conservation Opportunity Area. No other target areas are mapped with such extensive opportunity areas.

TARGET AREA MAP 10: FEDERAL, STATE AND REGIONAL PRIORITIES

ODFW has listed the entire MCHTA as a Conservation Opportunity Area.

Federal, State and Regional Habitat Priorities





CURRENT CONSERVATION OWNERSHIP IN THE ASSESSMENT AREA

Metro has acquired two properties in the MCHTA for a total of 323 acres. One additional public Property, Burlington Bottoms, has its northernmost border just within the MCHTA. While it's included in the list below and should be considered, it is excluded as an 'in-target' acquisition. Other notable parks and natural areas include the Rocky Point Trailhead and informal hiking areas.

Table 1: Major parks and natural areas in the MCHTA

PROPERTY NAME	SIZE (ACRES)	OWNED/ MANAGED BY	WHAT TARGET AREA GOALS DOES IT HELP ACHIEVE?	DO PEOPLE HAVE OPPORTUNITY TO EXPERIENCE TARGET AREA'S GOALS HERE?
North Multnomah Channel Marsh	278 acres	Metro	Wetlands, floodplains, riparian habitat, aquatic habitats and fish species, wildlife species	Limited – access by local residents permitted but not encouraged. No formal trails or parking.
South Multnomah Channel Marsh	46 acres	Metro	Wetlands, floodplains, riparian habitat, aquatic habitats and fish species, wildlife species	Limited – access by local residents permitted but not encouraged. No formal trails or parking.
Burlington Bottoms	354 acres	ODFW (BPA-owned)	Wetlands, floodplains, riparian habitat, aquatic habitats and fish species, wildlife species	Burlington Loop Trail (3.2 mi)
Wildwood Golf Course	159 acres	Private	Forests and headwaters, wildlife species	Private access for a fee
Rocky Point Mountain Bike Trail Network	3,000 acres	Weyerhaeuser/ NW Trail Alliance	Wetlands, Forests and headwaters, Uncommon plants, wildlife species, fish species	Hiking and mountain biking trail network, permitted or membership access with NWTa

RELEVANT PARTNERS AND LOCAL/REGIONAL PLANNING EFFORTS

Table 2: Active partners in the MCHTA

ORGANIZATION	STATUS	PROGRAM/COMMENTS
BNSF Railway	National freight railroad network <i>(potential partner)</i>	Landholder and easement through floodplain between Highway 30 and Multnomah Channel
Bonneville Power and Associates	Utility	Leased easements through the land. Also mitigation grantor for salmon/wetland recovery.
Ducks Unlimited	Non-profit conservation organization	Multnomah Marsh fish and bird habitat enhancement projects
East Multnomah Soil & Water Conservation District	Local government	Associate trail steward and volunteer maintenance
Lower Columbia Estuary Partnership	Non-profit national estuary program	Restoration modeling/monitoring along the Columbia River
Oregon Watershed Enhancement Board	State agency	Multnomah Marsh
ODFW	State government	Has developed detailed assessments of threats and opportunities
NMFS/NOAA Fisheries	U.S. fishery management	Fish monitoring within Multnomah Channel and streams
Northwest Trail Alliance	Non-profit conservation organization	Mountain bike trail building and maintenance within leased timber land.
Pacific Gas and Electric Company	Utility <i>(potential partner)</i>	Utility easements in floodplains
US Fish & Wildlife	Federal Government	Multnomah Marsh habitat restoration
Western Invasives Network	Multi-agency network	Informational signage in Rocky Point trails and hiking areas
Weyerhaeuser	Private timber company <i>(potential partner)</i>	Primary landholder. Leases land to local agencies and engages in tree replanting and other planting efforts.

SECTION 4: TARGET AREA OPPORTUNITIES, PRIORITIES AND CONSTRAINTS

This section discusses the habitat types, species, ecosystem processes and geographies that offer MCHTA specific and regionally significant opportunities to protect and restore land and enhance climate resiliency following the criteria in the bond resolution. Potential constraints or barriers to success are also addressed, and recommendations made for any important adjustment to study area boundaries during refinement.

AREAS OF POTENTIAL/OPPORTUNITIES

Opportunities to protect and restore land while enhancing climate resiliency within the MCHTA fall into several categories:

- Protection and restoration of riparian corridors.
- Establishment of wildlife corridors that link the upland forest west of Highway 30 and the Multnomah marsh and channel on the east side of Highway 30.
- Further connect trails from Forest Park into the Tualatin Mountains.
- Link wildlife corridors and protected ecosystems to Burlington Creek, Ennis Creek, McCarthy Creek and North Abbey Creek, four sites previously acquired by Metro for protection just south of the MCHTA.

INTRODUCTION/OVERVIEW

Protecting riparian corridors along the steep, undeveloped hillslopes above the Multnomah Channel offers water quality benefits as well as wildlife connectivity through timber harvest areas. Restoration of riparian corridors where vegetation has been removed or treated with herbicide in recent history, such as through the Wildwood Golf Course, would also greatly improve water quality in tributary streams. While protecting streams from erosion, contamination, and warming is important in all target areas, the MCHTA provides a unique opportunity to preserve intact habitat before urbanization occurs in this area. Intact riparian corridors will be important to attenuating climate change related issues.

Enhancement or possible re-establishment of wildlife corridors through Highway 30 provides opportunities for wildlife to re-connect to important wetland and riparian habitat along the Multnomah Channel floodplain and would help restore genetic continuity between the two ecosystems.

Metro has previously acquired creek drainages south of the MCHTA to help protect water systems, ecosystems and potentially add further access north of Forest Park. Continuation of further acquisitions will help link these systems and increase ecosystem protections.

Table 3 summarizes conservation opportunities in the MCHTA as they relate to bond-specific objectives.

CONSERVATION TARGETS

Table 3: Conservation targets

TARGET	CURRENT STATUS	KEY THREATS	KEY STRATEGIES
Upland prairie/savanna	Historic/Very limited coverage	Channel realignment, wetland expansion, no longer significant habitat type	N/A not a priority conservation strategy in MCHTA
Oak woodland	Historic/Very limited coverage	Channel realignment, wetland expansion, no longer significant habitat type	N/A not a priority conservation strategy in MCHTA
Forests and headwaters	Existing, remnant, historic	Timber harvest, residential area expansion	Conserve and restore additional land, prioritizing near creeks and waterways
Wetlands, floodplains, and riparian habitat	Existing, historic	Water quality, land conversion, climate change, invasive species	Re-establish connectivity to upstream habitats across Highway 30. Enhance existing wetland habitat.
Aquatic habitats and fish species	Existing, remnant, historic	Timber harvest, agricultural practices, residential area expansion, invasive species, climate change, loss of habitat, poor water quality.	Re-establish connectivity to upstream habitats across Highway 30. Protect existing habitat and enhance water quality.
Wildlife species	Existing, remnant, historic	Timber harvest, agricultural practices, residential area expansion, invasive species, climate change, loss of habitat	Protect existing wildlife connectivity and restore canopy loss, wildlife crossings and native vegetation
Uncommon plants	Existing, remnant, historic	Timber harvest, agricultural practices, residential area expansion, invasive species, climate change, loss of habitat	Monitor for uncommon plants, create protection and restoration strategy, protect, and improve existing habitat and create habitat for introduced species.
Other targets			

Table 4: Rare species known from MCHTA

SPECIES NAME	TAXA GROUP	STATUS	HABITAT ASSOCIATION
<i>Actinemys marmorata</i> (Western Pond Turtle)	Reptiles	Habitat present, restoration potential	Creek/river/channel/slough, pond/lake/pool, bare earth, emergent wetland
<i>Branta canadensis</i> (Dusky Canada Goose)	Birds	Documented occurrence, habitat present, restoration potential	Wetlands, woodlands, grasslands
<i>Branta hutchinsii</i> (Cackling Goose)	Birds	Documented occurrence, habitat present, restoration potential	Wetlands, woodlands, grasslands
<i>Bucephala albeola</i> (Bufflehead)	Birds	Documented occurrence, habitat present, restoration potential	Wetlands, small open fresh water
<i>Chrysemys picta</i> (Painted Turtle)	Reptiles	Habitat present, restoration potential	Wetlands, floodplains, and riparian habitat
<i>Contopus cooperi</i> (Olive-sided Flycatcher)	Birds	Documented occurrence, habitat present, restoration potential	Open woodlands, riparian forest, upland closed forests
<i>Cygnus buccinator</i> (Trumpeter Swan)	Birds	Documented occurrence, habitat present, restoration potential	Open water, emergent wetland, scrub shrub wetland
<i>Dryocopus pileatus</i> (Pileated Woodpecker)	Birds	Documented occurrence, habitat present, restoration potential	Upland closed forest, riparian forest, open woodland
<i>Empidonax traillii</i> (Little Willow Flycatcher)	Birds	Documented occurrence, habitat present, restoration potential	Scrub shrub wetland, riparian forest
<i>Fluminicola virens</i> (Olympia Pebblesnail)	Invertebrate Animal	Habitat present, restoration potential	River systems
<i>Haliaeetus leucocephalus</i> (Bald Eagle)	Birds	Documented occurrence, habitat present, restoration potential	Riparian forest, wetlands, marine, upland closed forest
<i>Lampetra tridentata</i> (Pacific Lamprey)	Fish	Habitat present, restoration potential	Gravel bottom rivers and streams
<i>Myotis yumanensis</i> (Yuma Myotis, Vesper Bat)	Mammals	Documented occurrence, habitat present, restoration potential	Upland closed forest, wetlands, open water, caves
<i>Odocoileus virginianus leucurus</i> (Columbian White-tailed Deer)	Mammals	Documented occurrence, habitat present, restoration potential	Riparian forest, wetlands, oak savanna
<i>Oncorhynchus kisutch</i> (Coho Salmon)	Fish	Documented occurrence, habitat present, restoration potential	Marine, brackish estuary, freshwater rivers, streams, and lakes, cold water
<i>Oncorhynchus mykiss</i> (Rainbow Trout)	Fish	Documented occurrence, habitat present, restoration potential	Marine, brackish estuary, freshwater rivers, streams, and lakes, cold water
<i>Onchorhynchus tshawaytscha</i> (Chinook Salmon)	Fish	Documented occurrence, habitat present, restoration potential	Marine, brackish estuary, freshwater rivers, streams, and lakes, cold water

<i>Patagioenas fasciata</i> (Band-tailed Pigeon)	Birds	Documented occurrence, habitat present, restoration potential	Upland coniferous forest, oak woodland, open woodland, urban areas, orchards, and fields
<i>Progne subis</i> (Purple Martin)	Birds	Documented occurrence, habitat present, restoration potential	Open water, farms, towns, semi-open land, coniferous forest, lowland desert
<i>Rana aurora</i> (Northern Red-legged Frog)	Amphibians	Documented occurrence, habitat present, restoration potential	Vernal pool, ponds, rivers, wetlands, streams, open woodland, riparian forest
<i>Rotala ramosior</i> (Toothcup)	Vascular Plant	Habitat present, restoration potential	Emergent wetland, pond edges, sandy or peaty meadows
<i>Zizia aptera</i> (Golden Alexanders)	Vascular Plant	Habitat present, restoration potential	Open woods, moist meadows

PROTECT AND RESTORE LAND PRIORITIES VERSUS BOND PROGRAMMATIC CRITERIA

Table 5: 2019 Bond Protect and Restore Land opportunities and objectives

PROGRAM CRITERIA AND OBJECTIVES	HOW IT IS ADDRESSED BY THIS TARGET AREA?	HOW IMPORTANT IS FEATURE FOR TARGET AREA? (HIGH, MED, LOW)
Protect clean water for people, fish, and wildlife. Improve water quality, quantity; include protection of headwaters, wetlands, floodplains, riparian areas and preventing flooding in urban areas.	Protection and restoration of headwater streams, riparian areas and the Multnomah Channel floodplain directly addresses this objective.	High priority for the MCHTA whose upper tributaries reaches are vulnerable to erosion, sediment transportation, and temperature elevation from timber harvest activities. However, recent restoration efforts in floodplain areas help attenuate these upslope issues. Action on this issue indirectly supports recovery of Salmon, Steelhead, Lamprey and Trout.
Protect and restore culturally significant plant communities. Prioritize culturally significant plants in partnership with greater Portland Indigenous community.	Some opportunities especially in wetlands and riparian areas, limited oak, and prairie opportunities.	Low. Although all habitats can support such use in some way, the value is mostly unexceptional because of limited oak, prairie, and unique wetland habitat opportunities.
Protect, connect, and improve habitat for native fish and wildlife. Increase the focus on salmon, trout, steelhead, and lamprey.	Multnomah Channel has opportunities for Chinook, Coho salmon, Steelhead, and Lamprey restoration by improving floodplain habitat in areas still dominated by agricultural land uses.	Moderate/High. Listed and sensitive fish species are present and previous restoration efforts have created large areas of restored wetland and riparian habitat in the Multnomah Channel floodplain. Some areas for potential restoration exist where agricultural uses are present.
Restore and enhance habitat for wildlife prioritized in federal, state, and regional conservation plans and/or identified through community engagement.	Not a federal or state priority but offers opportunities to protect a wide range of wildlife associated with upland forests and riparian areas.	Moderate for alignment with Federal and State plans, high for local importance.
Provide future potential access to nature for people, scenic views, and community gathering spaces. Prioritize land acquisition with the potential to increase access to nature for communities of color, Indigenous communities, low-income and other historically marginalized communities.	MCHTA has a low percentage of low-income families and people of color and does not provide accessible nature to a diverse urban population.	Moderate. Park access is generally low within MCHTA.
Protect farmland and the agricultural economy in the greater Portland region by supporting the protection of natural resources on working lands.	EMSWCD is an active partner with the JCWC. It is possible Bond investment could support natural resource enhancement on area agricultural lands.	Low. Much of the existing farmland within MCHTA is adjacent to protected restoration areas. While opportunities exist to collaborate with the farming community, the current farming practices conflict with goals to restore wetland and riparian floodplain habitats.

2019 BOND CLIMATE RESILIENCE OPPORTUNITIES

Table 6. Climate resilience opportunities in the MCHTA

CLIMATE RESILIENCE CRITERIA AND OBJECTIVES	HOW IT IS ADDRESSED BY THIS TARGET AREA?	HOW IMPORTANT IS FEATURE FOR TARGET AREA (HIGH, MED. LOW)
Protection, connection, and restoration of habitat to ensure strong populations of native plants, fish and wildlife can adapt to a changing climate.	The MCHTA currently provides large areas of intact native habitat and wildlife corridor function but can be cleared by logging activities at any time. Highway 30 creates a barrier that biota must pass to provide optimal migration and climate resilience. Metro should consider passage opportunities when identifying areas to begin protecting and restoring land to avoid creating isolated fragments on either side of the highway.	High. The MCHTA provides native forested habitat and floodplain restoration areas that are isolated from each other by Highway 30. The actions within the MCHTA should focus on promoting better biotic connectivity through the major barrier in the MCHTA – Highway 30.
Protection and restoration of floodplains, headwaters, streams, and wetlands to increase their capacity to handle stormwater to protect vulnerable communities from flooding.	Acquiring and restoring additional land between Highway 30 and Multnomah Channel provides the most immediate opportunity to enhance stormwater buffering and stream and wetland resilience during future amplified storm events. Tributary restoration through the Wildwood Golf Course would also provide significant stormwater buffering.	High. Opportunities to restore floodplain habitat along Multnomah Channel should be considered to provide the highest uplift to resilience to stormwater runoff and water quality improvements.
Investments in developed areas that increase tree canopy to reduce heat island effects.	There is very little dense development in the MCHTA. Most development is limited to sparse, residential-related structures.	Moderate. Very little developed urban area in the MCHTA. However, protection from further logging and riparian restoration could provide substantial reforestation benefits and regional climate moderation.

AREAS OF POTENTIAL CONFLICT/CONCERN

The following is a list of potential conflicts and concerns to consider when developing a prioritization and implementation strategy during the MCHTA refinement process.

- High costs of acquiring properties.
- Landowner willingness.
- Within the rapidly changing land use and density matrix, it will be important to consider anticipated changes surrounding potential opportunity areas. Transportation plans, urban growth areas, and proposed subdivisions or industrial reserves should be reviewed with local governments for areas surrounding a proposed conservation activity area.
- Acquiring/protecting lands before future development eliminates opportunities.
- Opportunities for protecting and enhancing functional biotic corridors in the MCHTA, especially those passing under Highway 30 will be extremely limited, challenging, and possibly extremely expensive.

RECOMMENDATIONS FOR TARGET AREA BOUNDARIES

The MCHTA study area is generally strategically framed to encompass most of the headwater segments of the Multnomah Channel. The following minor modifications to the study area could be considered during refinement:

- Reduce the western boundary of the MCHTA to more closely follow Skyline Boulevard which generally follows the ridgeline, thereby removing Jackson Creek and minor tributaries from the MCHTA that do not flow into the Multnomah Channel.
- Reduce the northern boundary to just north of Rocky Point Road so as not to include a small portion of a separate watershed.

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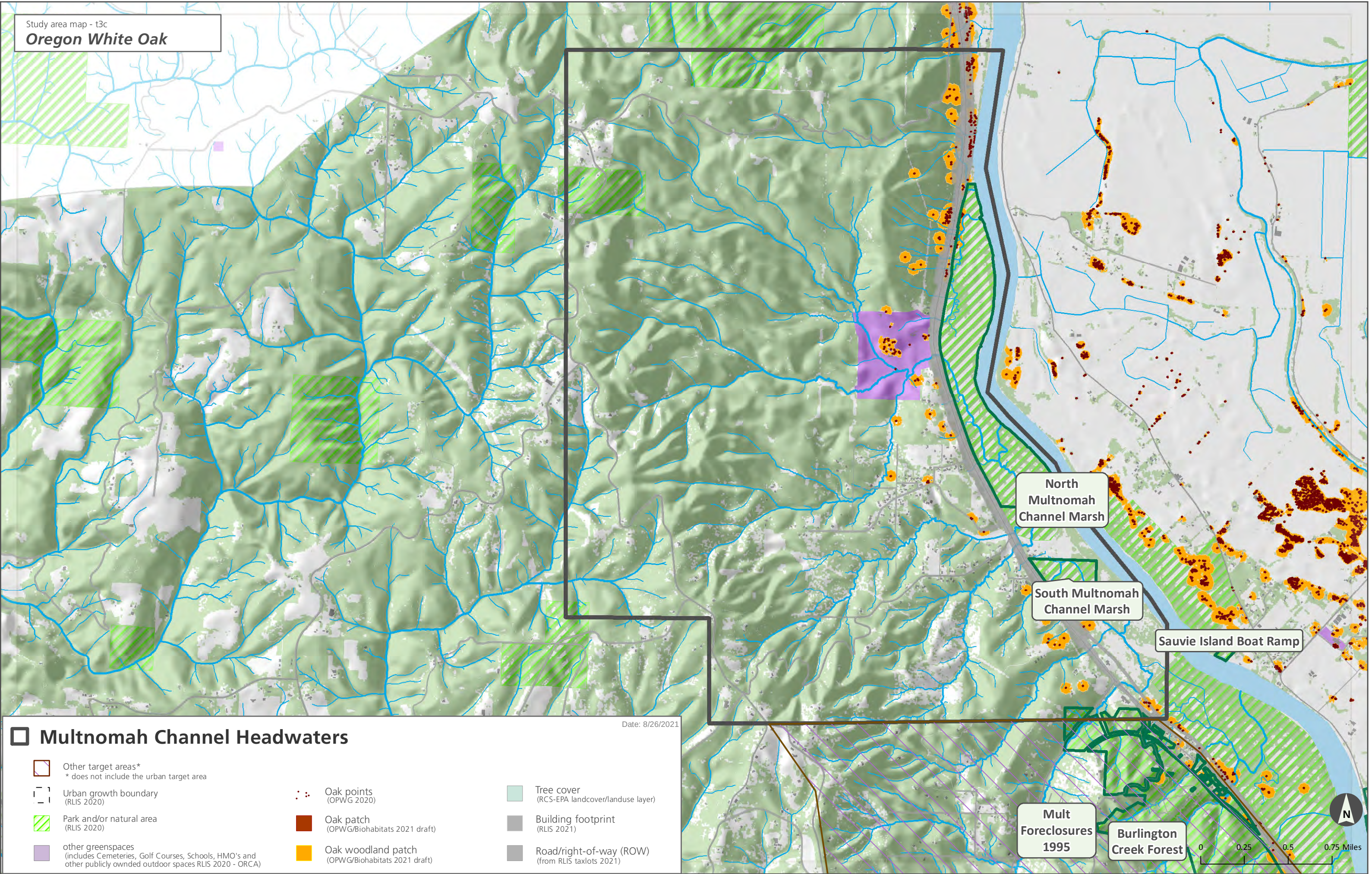
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APPENDICES



Multnomah Channel Headwaters

Other target areas*

* does not include the urban target area

Urban growth boundary

(RLIS 2020)

Park and/or natural area

(RLIS 2020)

other greenspaces

(includes Cemeteries, Golf Courses, Schools, HMO's and other publicly owned outdoor spaces RLIS 2020 - ORCA)

Oak points

(OPWG 2020)

Oak patch

(OPWG/Biohabitats 2021 draft)

Oak woodland patch

(OPWG/Biohabitats 2021 draft)

Tree cover

(RCS-EPA landcover/landuse layer)

Building footprint

(RLIS 2021)

Road/right-of-way (ROW)

(from RLIS taxlots 2021)

Date: 8/26/2021

**Mult
Foreclosures
1995**

**Burlington
Creek Forest**

0 0.25 0.5 0.75 Miles

- 1) Urban area (depicted as UGB on map)

2) Abernethy and Newell Creeks Connections

3) Beaver Creek (Lower Sandy River)

4) Chehalem Ridge, Wapato Lake and Gales Creek

5) Clackamas River Bluffs and Greenway
- 6) Clear Creek

7) Cooper Mountain

8) Dairy-McKay Creek

9) Deep Creek and Tributaries

10) East Buttes

11) Greater Forest Park Connections

12) Highland Ridge

13) Johnson Creek Floodplain and Headwaters
- 14) Killin Wetlands

15) Lower Tualatin Headwaters

16) Molalla Oaks, Prairies and Floodplains

17) Multnomah Channel Headwaters

18) Rock Creek (upper and middle forks)

19) Sandy River

20) Tonquin Oak Woodlands

21) Tualatin River Floodplain

22) Wapato Lake to the Coast Range Connection

23) Willamette Narrows and Canemah Bluff Connections

24) Wilson, Pecan and Fields Creeks

Oregon white oak
(Oak Prarie Working Group (OPWG/Biohabitats 2020))

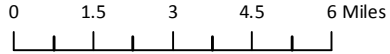
- Oak patch
- Oak woodland

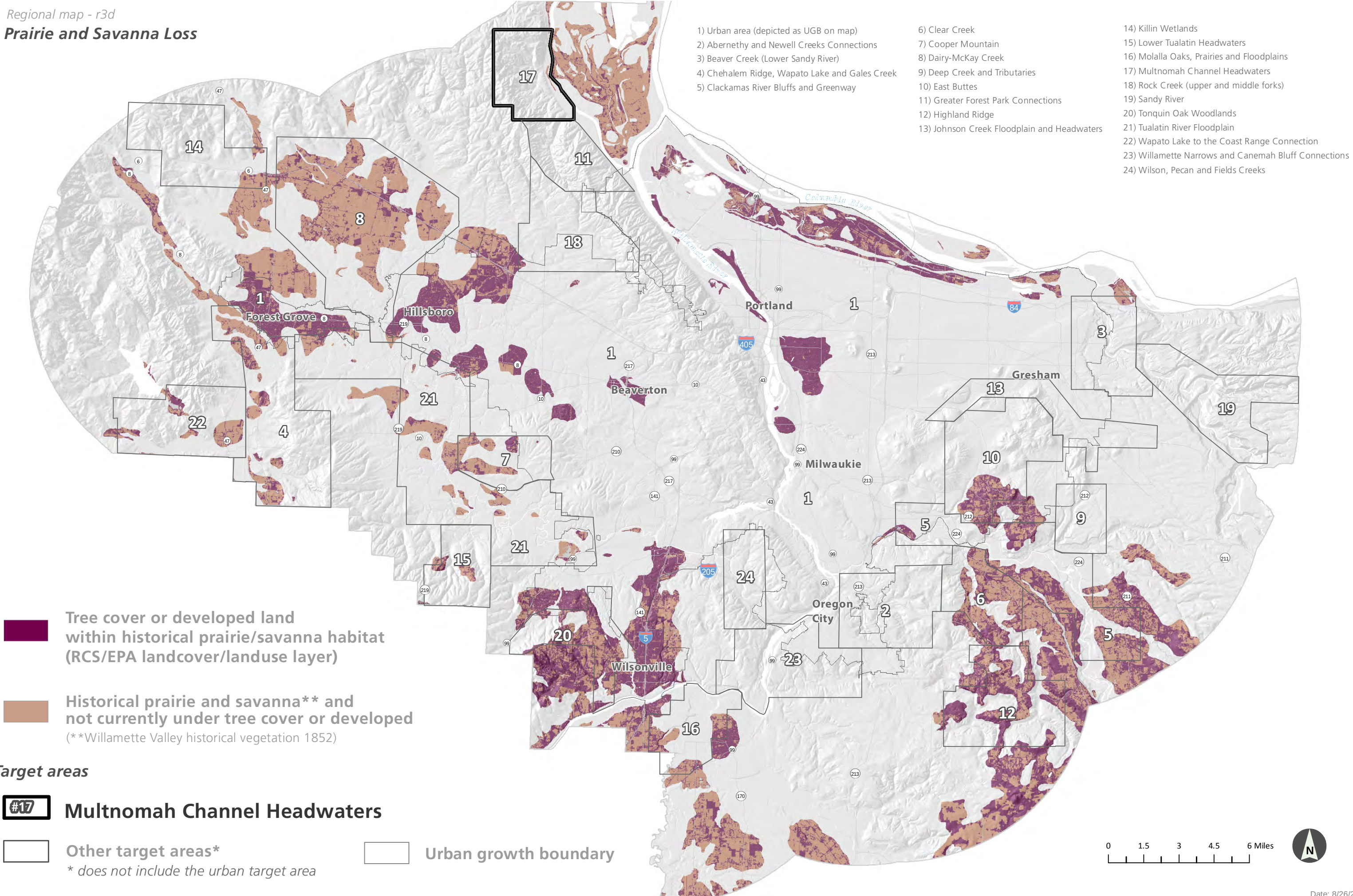
Tree cover
(RCS-EPA landcover/landuse layer)

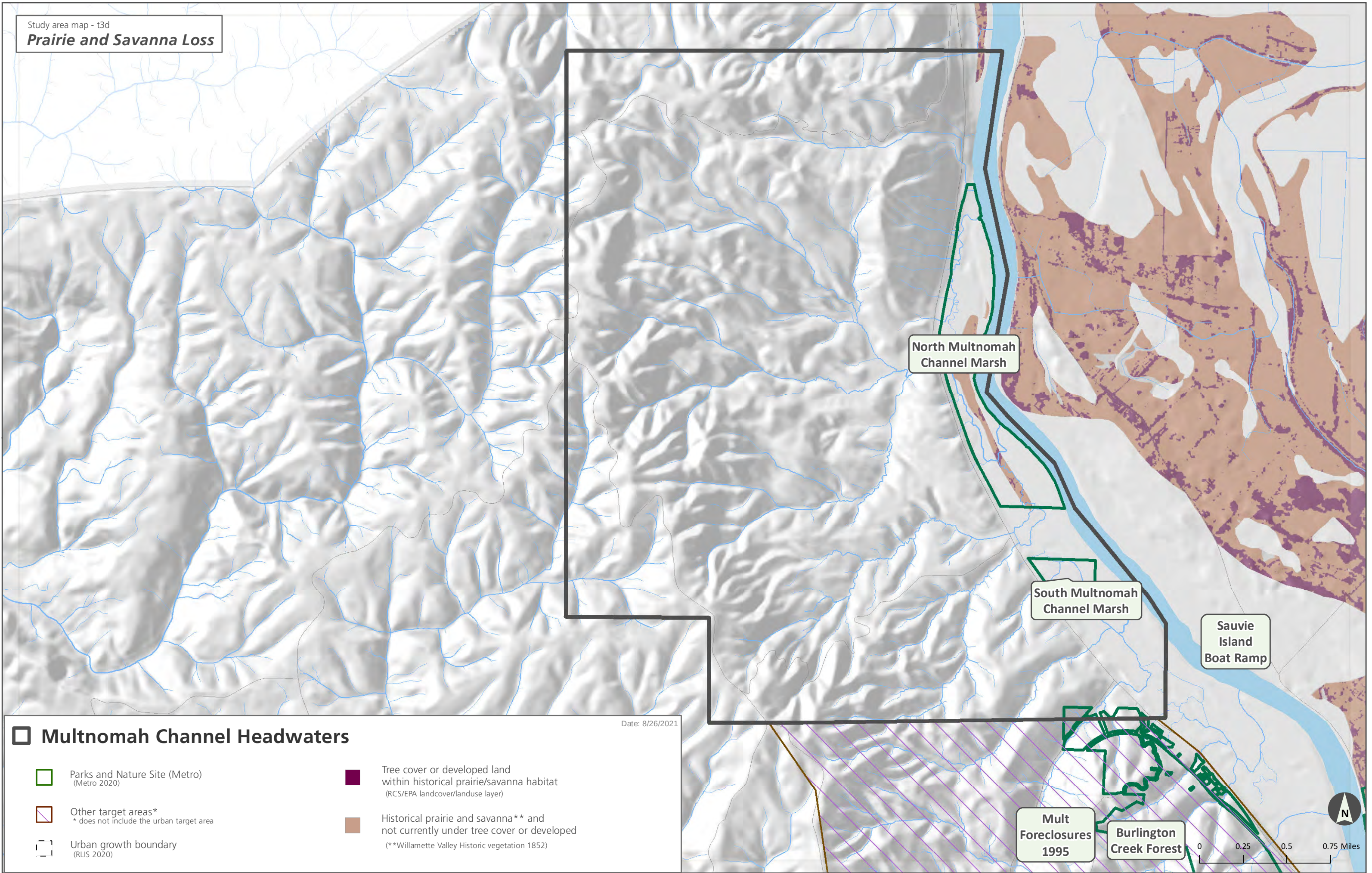
Target areas

- #17

Multnomah Channel Headwaters
- Other target areas*
- Urban growth boundary
- * does not include the urban target area







Multnomah Channel Headwaters

Date: 8/26/2021

- | | |
|---|---|
|  Parks and Nature Site (Metro)
(Metro 2020) |  Tree cover or developed land
within historical prairie/savanna habitat
(RCS/EPA landcover/landuse layer) |
|  Other target areas*
* does not include the urban target area |  Historical prairie and savanna** and
not currently under tree cover or developed
(**Willamette Valley Historic vegetation 1852) |
|  Urban growth boundary
(RLIS 2020) | |

Mult Foreclosures 1995

Burlington Creek Forest

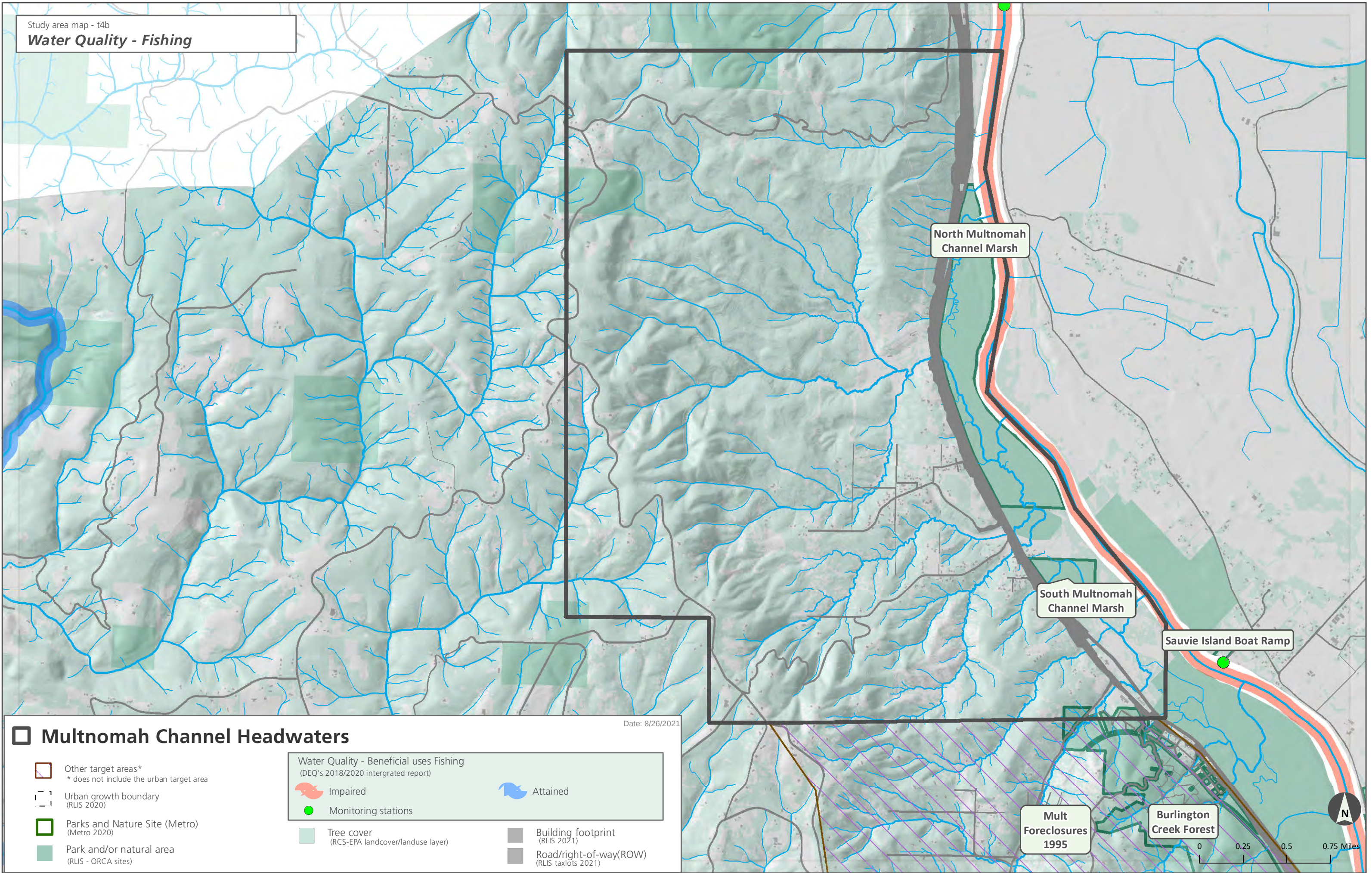
0

0.25

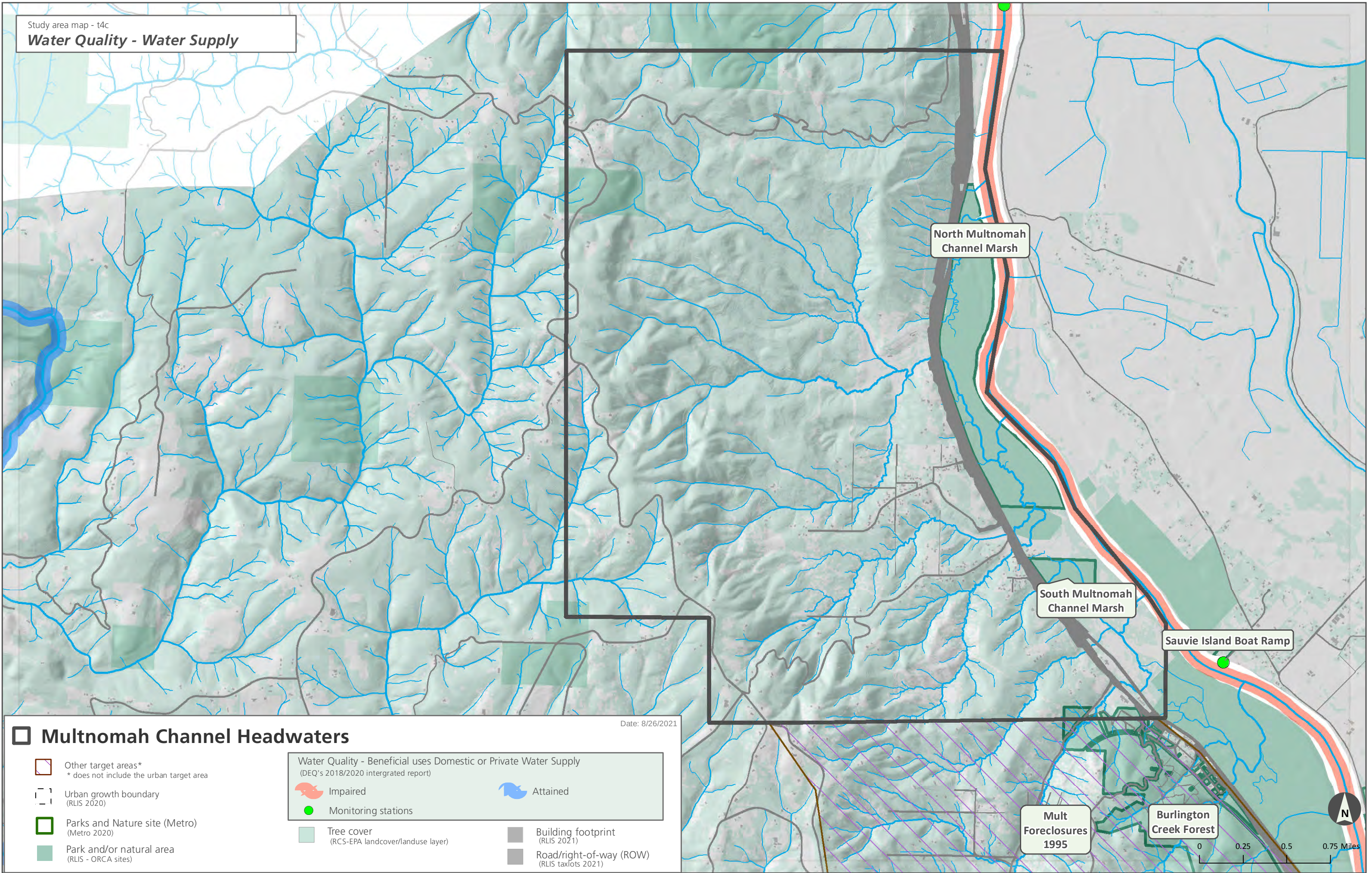
0.5

0.75 Miles

N



Date: 8/26/2021



Multnomah Channel Headwaters

Date: 8/26/2021

- Other target areas*
* does not include the urban target area
- Urban growth boundary
(RLIS 2020)
- Parks and Nature site (Metro)
(Metro 2020)
- Park and/or natural area
(RLIS - ORCA sites)

Water Quality - Beneficial uses Domestic or Private Water Supply
(DEQ's 2018/2020 integrated report)

Impaired

Attained

Monitoring stations

Tree cover
(RCS-EPA landcover/landuse layer)

Building footprint
(RLIS 2021)

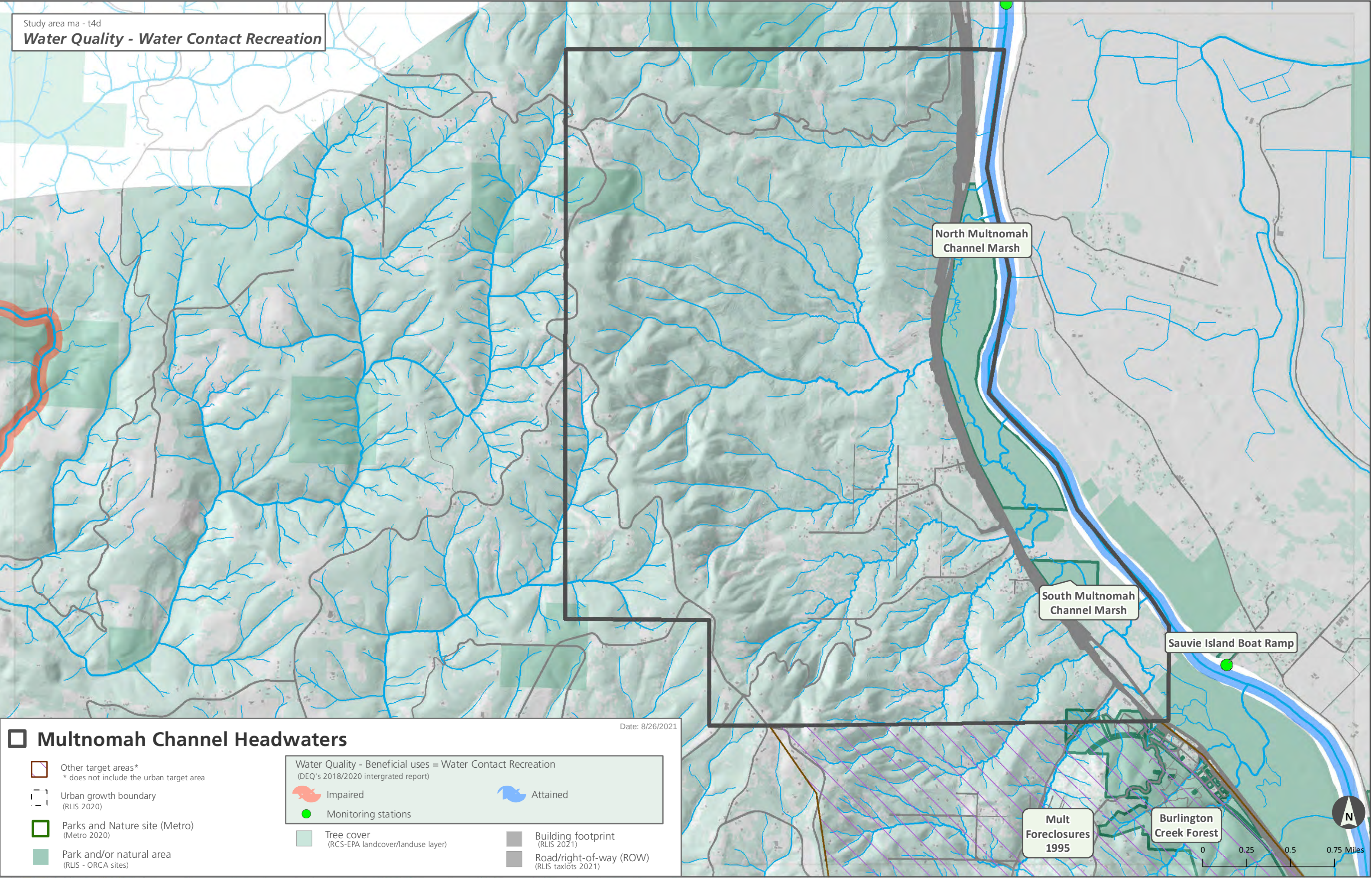
Road/right-of-way (ROW)
(RLIS taxlots 2021)

**Mult
Foreclosures
1995**

**Burlington
Creek Forest**

0 0.25 0.5 0.75 Miles





Multnomah Channel Headwaters

Other target areas*
* does not include the urban target area

Urban growth boundary
(RLIS 2020)

Parks and Nature site (Metro)
(Metro 2020)

Park and/or natural area
(RLIS - ORCA sites)

Water Quality - Beneficial uses = Water Contact Recreation
(DEQ's 2018/2020 intergrated report)

Impaired

Attained

Monitoring stations

Tree cover
(RCS-EPA landcover/landuse layer)

Building footprint
(RLIS 2021)

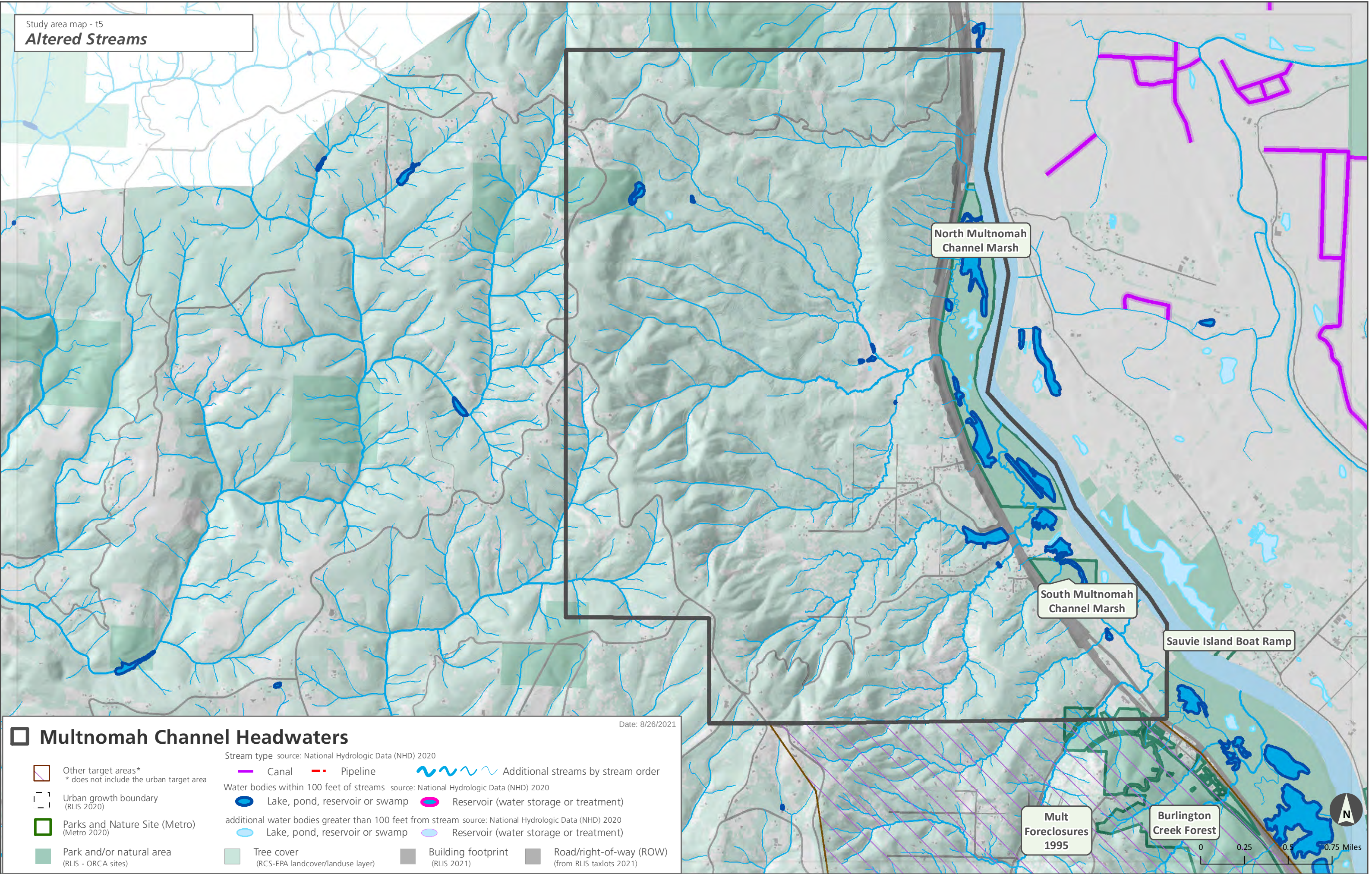
Road/right-of-way (ROW)
(RLIS taxlots 2021)

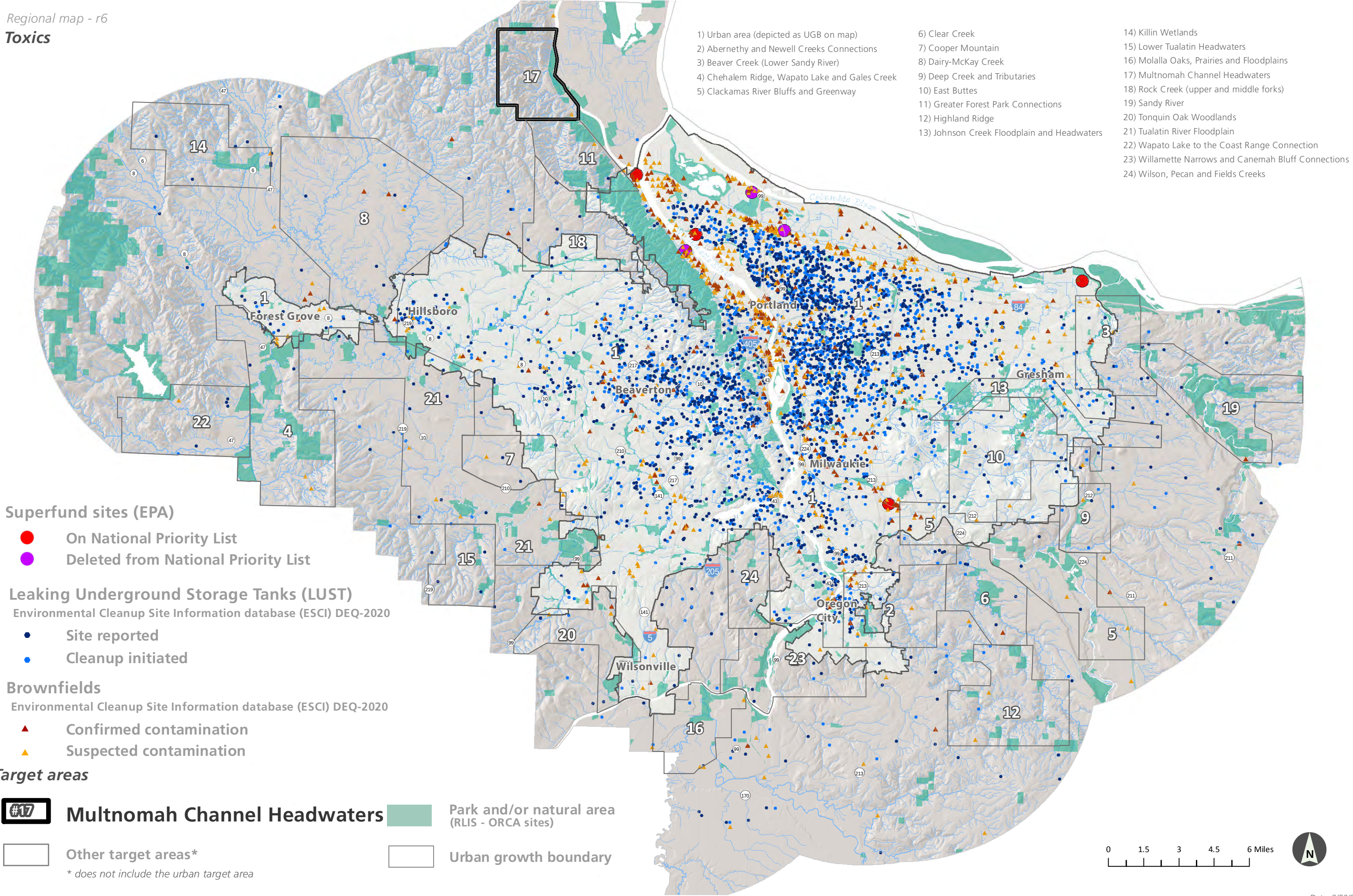
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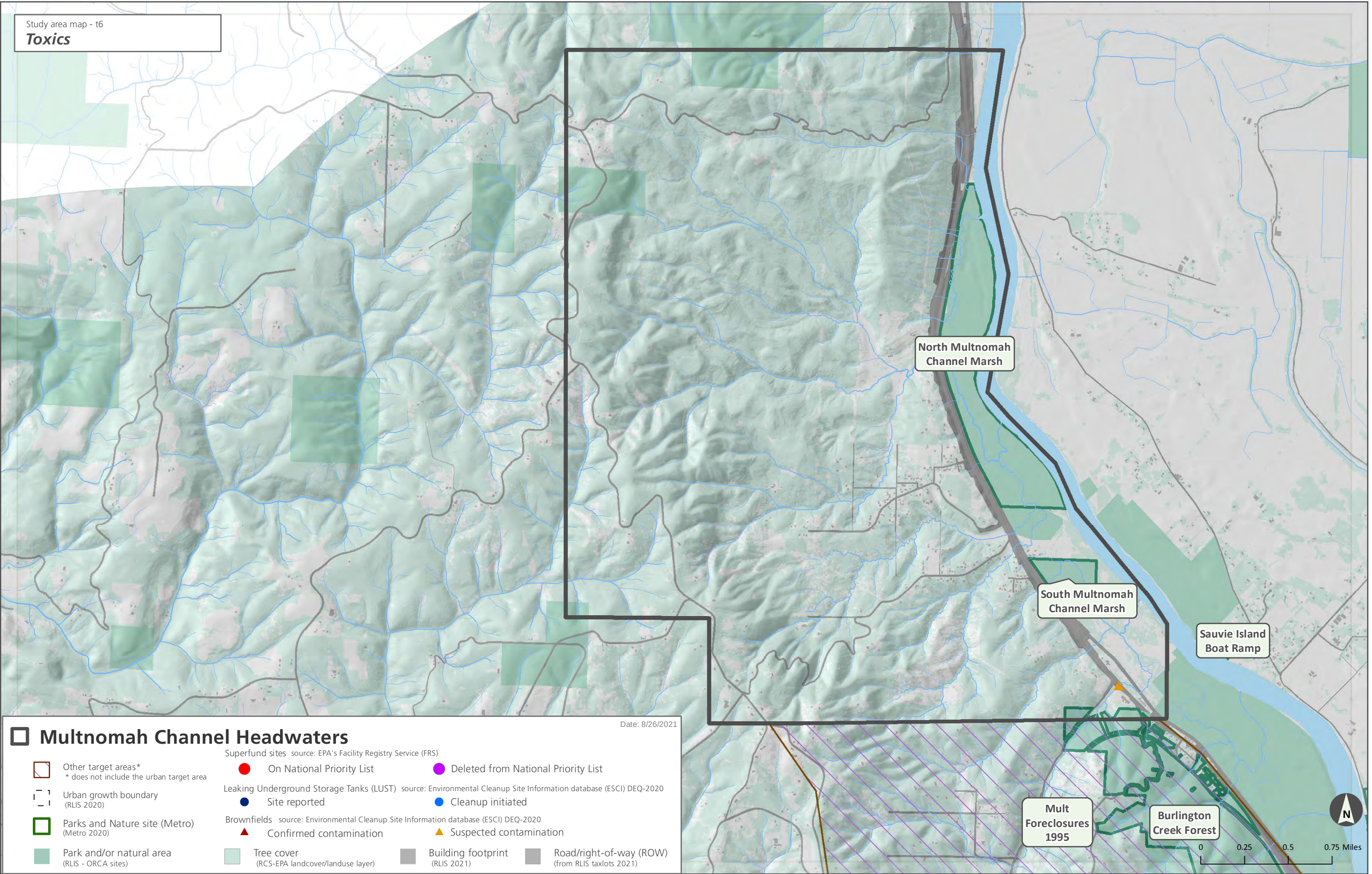
**Mult
Foreclosures
1995**

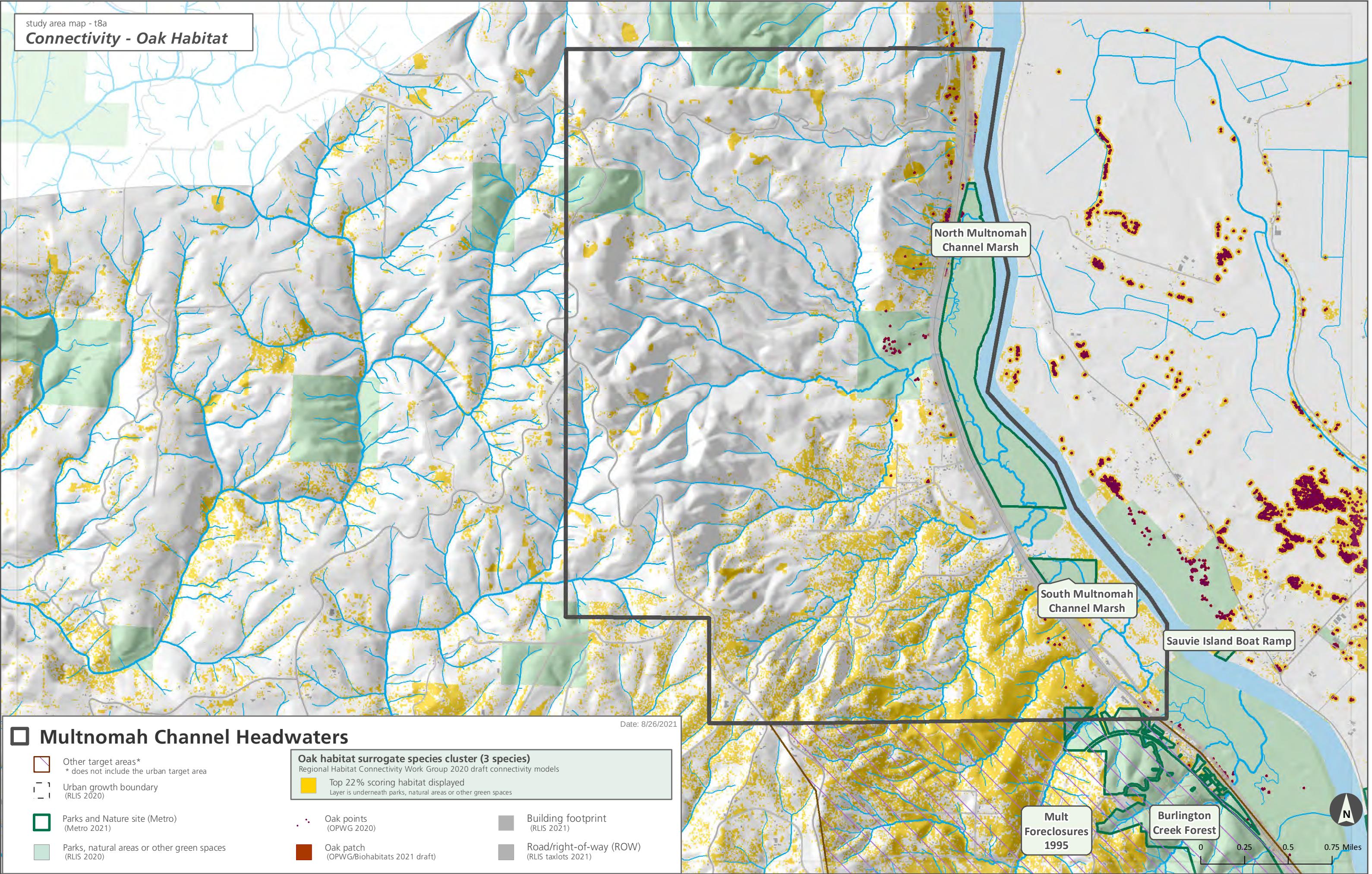
**Burlington
Creek Forest**

0 0.25 0.5 0.75 Miles

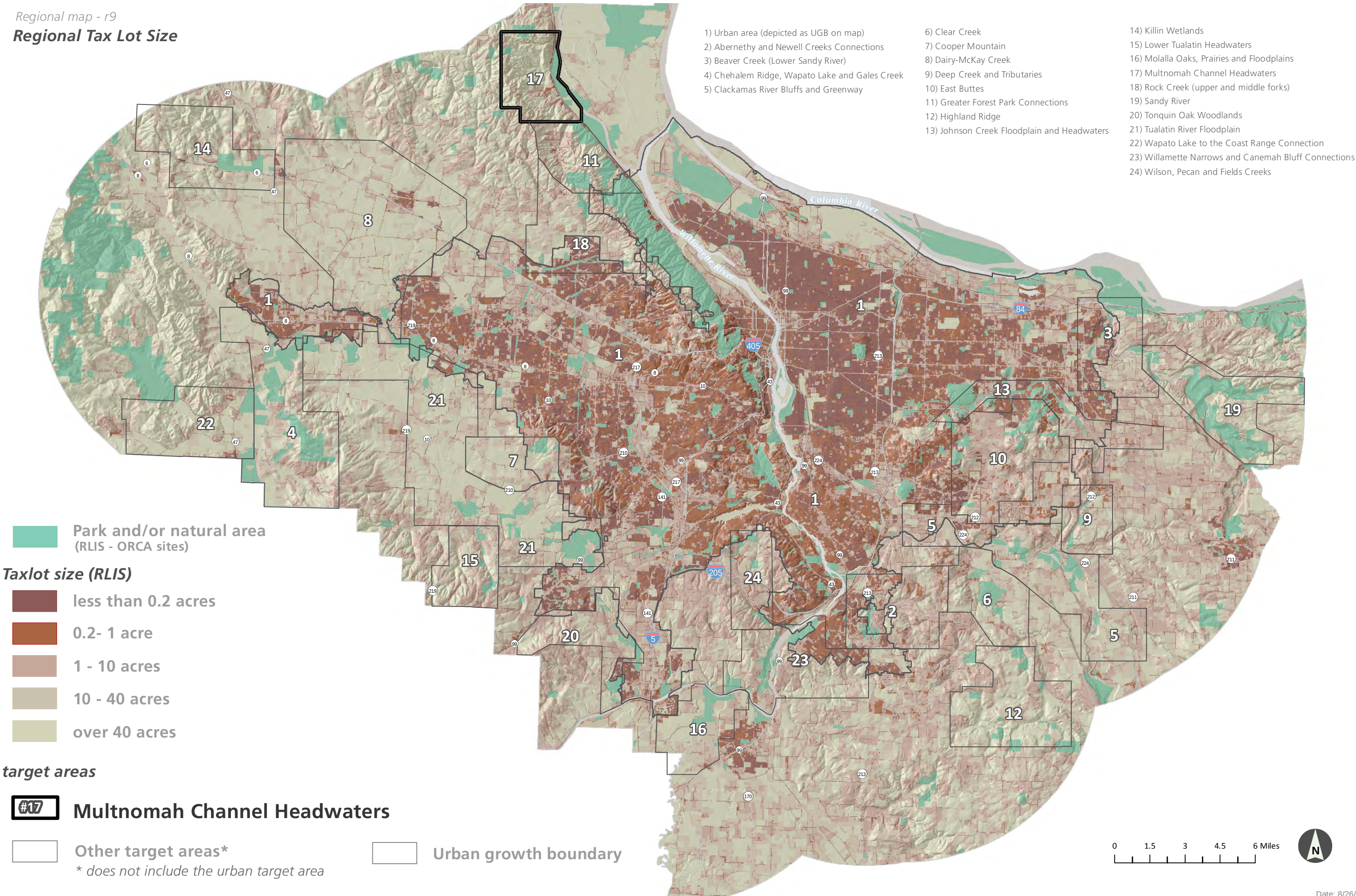








Regional Tax Lot Size



Study area map - t9

Taxlot Size

