

NATURAL RESOURCES REPORT

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Executive Summary

This report provides a planning-level review of natural resources within the Cooper Mountain Community Plan (Community Plan) area. Specifically, this report covers wetlands and waterways, riparian areas, and upland wildlife habitats. The goal of this report is to provide project planners with the ecological context to support community plan development for the Community Plan area. A Local Wetland Inventory (LWI) has also been conducted for the Community Plan area. The detailed LWI documentation has been prepared as a separate report; however, the mapping results and general findings are included in this report.

The Community Plan area (see Figure 1) primarily consists of rural lands that are bordered to the east, north, and south by suburban development. The area to the west of the overall Community Plan area consists of rural landscape. The northern edge of the Community Plan area is situated along the top of Cooper Mountain, where topography is typically gently rolling, with slopes gradually steepening to the north and south to each side of the ridge top. In this area, vegetation consists of lawns, suburban landscaping, and remnant tree groves.

Slopes steepen to the south of the Community Plan area, with several drainages flowing generally from northeast to southwest. These drainages typically occur in steep, forested V-shaped ravines, including McKernan Creek, which is the principal drainage. The headwater of Summer Creek is located east of 175th Avenue and drains the easternmost portion of the Community Plan area. Moderately sloping terraces occur between the ravines. These land surfaces typically consist of pasture and more intensive agricultural production including annual crops, vineyards, and orchards. Some wood lots and native forest also occur on the terraced surfaces. The majority of the Cooper Mountain Nature Park (Nature Park) is located within the Community Plan area; however, a portion occurs just outside the area to the northwest. The park contains a host of native plant communities, including Douglas-fir (*Pseudotsuga menziesii*) forest, Oregon oak (*Arbutus menziesii*) and madrone woodlands, and prairie.

The Nature Park is a key natural resource feature within the Community Plan area. As noted above, the park contains a diverse mix of native habitats and considerable restoration work has been—and continues to be—carried out in the park. The park contains the regionally rare upland prairie and oak and madrone woodland habitat, which supports what may be the largest remaining population of the state endangered pale larkspur (*Delphinium leucophaeum*). Park habitats also support populations of sensitive species including meadow checkermallow (*Sidalcea campestris*), breeding populations of Northern red-legged frog (*Rana aurora aurora*), and Western gray squirrel (*Sciurus griseus*). Restoring and enhancing oak and prairie habitat is one of the primary management goals for the park. Additional management goals include improving riparian corridors, enhancing park access through land acquisition and securing trail connections between major publicly owned properties, and keeping important wildlife corridors and buffers intact.



Slopes in the southern third of the Community Plan area, particularly the southwest corner, tend to be gentler than elsewhere. In this portion of the Community Plan area, generally west of SW 175th Avenue, land use is predominantly agricultural and features a mix of annual crop production, pasture, orchards, and viticulture. However, an important partially forested riparian corridor along McKernan Creek extends through this area, with the creek eventually flowing under SW Grabhorn Road and outside the Community Plan area. As development occurs within the Community Plan and adjacent South Cooper Mountain Plan areas, this riparian corridor will be critical to fish and wildlife that may travel between the Nature Park and rural areas west of SW Grabhorn Road.

The Community Plan area east of SW 175th Avenue is associated with the headwaters of the Summer Creek watershed. This area consists of relatively steep terrain with a relatively high percent cover by native trees including Douglas-fir. In comparison to much of the area west of SW 175th Avenue, the area east of the roadway tends to have smaller lot sizes consisting of single-family residences and much less land devoted to agricultural uses.

Summary of Results

Waterways, Wetlands, and Riparian Areas

Roughly 7.83 miles of streams occur within the Community Plan area. All mapped drainages are assumed to be subject to state and federal regulations.

Based on a review of Oregon Department of Fish and Wildlife (ODFW) fish distribution maps, Community Plan area streams do not support populations of anadromous fish, such as salmon and steelhead trout. Likewise, there is limited habitat opportunity for native fish. Streams are fairly small (2 to 3 feet wide by 4 to 12 inches deep) and of relatively high gradient, and their upper reaches likely only flow seasonally. Portions of streams have also been rerouted, piped, and/or ditched. The lower reaches of McKernan Creek, within the Community Plan area, are likely to provide the greatest opportunity for native fish as a result of channel size and consistency of flows.

Although the Community Plan area streams may not provide much on-site habitat opportunity for native fish populations, they do likely provide other important functions. These include habitat for native amphibians, export of coarse organic matter to downstream fish-bearing waters, water source for native wildlife, and macroinvertebrate habitat.

The Community Plan area contains an estimated 23.18 acres of wetlands and probable wetlands. Wetland plant communities typically consist of the forested, scrub-shrub, or emergent classes according to the U.S. Fish and Wildlife Service (USFWS) wetland classification system (Cowardin 1979). Emergent wet prairie wetland is found within the Nature Park, but some portions of this wetland have been planted to create a scrub-shrub community. Agricultural wetlands are also present in areas of annual crop production. Some agricultural fields may use tile drains to reduce saturated soil conditions; use of tile drains results in either a reduction of wetland acreage or the complete removal of wetland conditions relative to historical conditions.



The steeper, forested riparian areas within the Community Plan area generally appear to have good vegetative cover, whereas riparian areas in flatter areas tend to have had greater disturbance to the natural vegetation. Development activities in riparian areas up to a certain distance from the water body are typically regulated and protected for water quality and/or habitat protection purposes by local codes.

Upland Habitats

Much of the high quality upland habitat in the Community Plan area occurs within the Nature Park; however, there is considerable coverage of high quality habitat in private ownership as well. Upland habitat on private land within the Community Plan area is not currently protected by local Washington County and Clean Water Services regulations. The Community Plan project will determine how to protect high quality upland habitat areas, such as through application of a new Natural Resource Overlay designation.



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Acronyms and Abbreviations

Corps	U.S. Army Corps of Engineers
CWS	Clean Water Services
DEA	David Evans and Associates, Inc.
DSL	Oregon Department of State Lands
ESRI	Environmental Systems Research Institute
GIS	Geographic Information System
GPS	Global Positioning System
HBA	Habitat Benefit Area
HGM	Hydrogeomorphic
LIDAR	Light Detection and Ranging
LWI	Local Wetland Inventory
NHD	National Hydrographic Database
NRCS	Natural Resources Conservation Service
OAR	Oregon Administrative Rule
ODFW	Oregon Department of Fish and Wildlife
OFWAM	Oregon Freshwater Assessment Method
RLIS	Regional Land Information System
SNR	Significant Natural Resource
SNRA	Significant Natural Resource Area
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey



Project Overview

The Cooper Mountain Community Plan (Community Plan), which covers an approximately 1,240-acre area, will establish a long-term vision for the area's growth and development to support livable, walkable neighborhoods that honor the unique landscape and ensure a legacy of natural resource protection and connection. The area is anticipated to provide at least 3,760 homes, including a mix of single-family and multifamily homes. Annexation and development are not expected to occur until after the planning process is complete.

The plan will be created with the community. Public engagement will intentionally include historically underserved and underrepresented communities to ensure that the plan incorporates a broad array of ideas and feedback.

Report Purpose

This report is intended to provide a planning-level review of natural resources within the Community Plan area. Specifically, this report covers wetlands and waterways, riparian areas, and upland wildlife habitats. The goal of this report is to provide project planners with the ecological context to support concept and community plan development for the Community Plan area. A Local Wetland Inventory (LWI) has also been conducted for the Community Plan. The detailed LWI documentation has been prepared as a separate report; however, the LWI mapping results and general findings are included in this report.

Documentation of natural resources is intended to support compliance with Oregon State Goal 5 and associated Metro Titles 3 and 13. Washington County (County) and City of Beaverton (City) planning codes have also been taken into consideration. The Regulatory Context section of this report discusses the regulatory considerations for the various habitat types that are part of this planning-level review.

Landscape Setting and Land Use

The Community Plan area, shown in Figure 1, primarily consists of rural lands that are bordered to the east, north, and south by suburban development. The area to the west of the Community Plan area consists of rural landscape. The northern edge of the Community Plan area is situated along the top of Cooper Mountain, where topography is typically gently rolling, with slopes gradually steepening to the north and south to each side of the ridge top. In this area, vegetation consists of lawns and suburban landscaping, and remnant tree groves.

Slopes steepen quickly to the south of the Community Plan area, with several drainages flowing generally from northeast to southwest. These drainages typically occur in steep, forested V-shaped ravines, including McKernan Creek, which is the principal drainage. The headwater of Summer Creek is located east of SW 175th Avenue and drains the easternmost portion of the Community Plan area. Moderately sloping terraces occur



between the ravines. These land surfaces typically consist of pasture and more intensive agricultural production including annual crops, vineyards, and orchards. Some wood lots and native forest also occur on the terraced surfaces. The majority of the Cooper Mountain Nature Park (Nature Park) is located within the Community Plan area; however, a portion occurs just outside the area to the northwest. The Nature Park contains a host of native plant communities, including Douglas-fir (*Pseudotsuga menziesii*) forest, Oregon oak (*Quercus garryana*) and madrone (*Arbutus menziesii*) woodlands, and prairie.

The Nature Park is a key natural resource feature within the Community Plan area. As noted above, the Nature Park contains a diverse mix of native habitats, and considerable restoration work has been—and continues to be—carried out. The Nature Park contains the regionally rare upland prairie and oak and madrone woodland habitat, which supports what may be the largest remaining population of the state endangered pale larkspur (*Delphinium leucophaeum*). Park habitats also support populations of sensitive species including meadow checkermallow (*Sidalcea campestris*), breeding populations of Northern red-legged frog (*Rana aurora aurora*), and Western gray squirrel (*Sciurus griseus*). Restoring and enhancing oak and prairie habitat is one of the primary management goals for the Nature Park. Additional management goals include improving riparian corridors, enhancing park access through land acquisition, securing trail connections between major publicly owned properties, and keeping important wildlife corridors and buffers intact.

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The Community Plan area east of SW 175th Avenue is associated with the headwaters of the Summer Creek watershed. This area consists of relatively steep terrain with a relatively high percentage of cover by native trees including Douglas-fir. In comparison to much of the area west of SW 175th Avenue, the area east of the roadway tends to have smaller lot sizes consisting of single-family residences and much less land devoted to agricultural uses.



Methods

Resource review included a review of Community Plan area background materials, and drive-by and on-site field reconnaissance visits. Field work was conducted during the week of April 20, 2020.

Preliminary Resource Review

Reference materials were reviewed prior to the field investigation to provide information regarding the possible presence of wetlands, water features, hydric soils, wetland hydrology, site topography, and habitat conditions. The materials reviewed included:

- Environmental Systems Research Institute (ESRI) National Geographic World Map for ArcGIS (2020a)
- ESRI ArcGIS OnlineWorld Imagery aerial photo imagery for ArcGIS (2020b)
- Metro Regional Land Information System (RLIS) Geographic Information System (GIS) wetlands layer, hydric soils layer, and GIS streams layer (2020)
- Metro RLIS Natural color orthorectified digital imagery for the Portland Metropolitan area (2019), captured in summer leaf-on conditions on June 29, July 20, 22, 25, 29 and August 5, 2019.
- Metro Technical Report for Fish and Wildlife Habitat (2005a)
- Metro Cooper Mountain Natural Resource Management Plan (2005b)
- NRCS Soil Survey Geographic Database for Washington County, Oregon (2020)
- Oregon Department of Fish and Wildlife (ODFW) Fish distribution GIS layers (2020)
- Shapiro & Associates, Inc. City of Beaverton Local Wetland Inventory and GIS data (2000)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory Wetland Mapper (2020)
- U.S. Geological Survey (USGS) National Hydrographic Database (NHD) GIS high resolution streams layer (2020)
- City of Beaverton, January 2013, LIDAR (LIDAR stands for Light Detection and Ranging, a laser-based contour mapping technology) derived contours (2013)
- David Evans and Associates, Inc. (DEA) South Cooper Mountain Concept and Community Plans Natural Resources Memorandum (2013)
- DEA South Cooper Mountain Annexation Area Local Wetland Inventory (2016)

Resource-specific Methods

The methods used for mapping and evaluating waterways, wetlands, riparian and upland habitats, and wildlife habitat corridors are provided below.

Wetlands and Streams

A local wetland inventory, or LWI, was conducted for the Community Plan area in accordance with Oregon Department of State Lands (DSL) rules, specifically Oregon Administrative Rule (OAR) 141-086. Site access was requested for properties in the Community Plan area to support this inventory. A map of accessed properties can be found in the detailed LWI document. Where access was not granted, assessment from publicly accessible viewing areas and other data sources (e.g., hydric soils per County



soil survey maps) described below was used to evaluate the presence of wetlands. All wetlands 0.5 acre or larger were mapped as wetlands, while wetlands smaller than that were mapped as “probable wetlands.” Although DSL only requires that probable wetlands be mapped as point features (meaning that a single point would represent the wetland), for the Community Plan, these wetlands were mapped as polygons in locations where site access or clear indicators on aerial photographs allowed for a reasonably accurate level of mapping. This polygon mapping was conducted to aid the planning efforts, because these wetland features will likely need to be avoided or encroachment on them will likely need to be minimized. Mapping these features as polygons also enables the creation of buffers (such as Clean Water Services [CWS] “vegetated corridors”), which will also need to be avoided.

Where site access was available within the Community Plan area, sample plots documenting typical conditions for the respective wetlands were completed, and boundaries were mapped using Global Positioning System (GPS). Data collection and wetland boundary delineation followed the Level 2 Routine Delineation Method described in the U.S. Army Corps of Engineers (Corps) Wetlands Delineation Manual (Environmental Laboratory 1987) and further supported by the Western Mountains, Valleys, and Coast Region regional supplement (Supplement) (Corps 2010). This method requires the simultaneous presence of hydrophytic vegetation, hydric soils, and positive wetland hydrology to determine wetland delineations.

Mapping of LWI features was supported through use of high-resolution color aerial photography (ESRI 2020), the USGS NHD high resolution streams layer (USGS 2020), and LIDAR contour data provided by the City of Beaverton (2013). In-office review using aerial and LIDAR contours was conducted using GIS technology, which allowed for viewing information at various scales. Ground truthing occurred on tax lots where access was available and from publicly accessible viewing areas (i.e., roadway right of way).

Mapping of streams started with use of the USGS NHD high-resolution streams GIS layer, which matched very closely with LIDAR contours (City of Beaverton 2013). Stream lines were modified based on field observations where access was available. In other areas, were adjusted to better match topographic contours and aerial photo interpretation.

Wetland functions were evaluated for wetlands greater than 0.5 acre using the Oregon Freshwater Wetland Assessment Method (OFWAM). OFWAM results were used to determine whether any of the wetlands in the Community Plan area qualify as “locally significant wetlands” in accordance with criteria set forth in OAR 141-086-0350. Following DSL guidance, probable wetlands were not included in the evaluation of locally significant wetlands.

Riparian Habitats

In the context of this review, the term “riparian area” refers to the land surrounding wetlands, streams, and other water bodies. Typically, a buffer area of a certain distance from the water body is regulated and protected for water quality and/or habitat protection purposes. These buffer areas are typically determined through various land use codes, and the width of the buffer is determined by a mathematical formula that takes into account measures such as wetland size, stream type, drainage



basin area, and slopes. Beaverton, CWS (the water resources management utility in the area), and Metro all have regulations defining these areas. Generally speaking, the typical buffer width defined by these regulations is 50 feet, and this buffer width can extend to a maximum of 200 feet in areas of steep slopes (i.e., slopes of 25 percent or greater).

Riparian resources throughout the Community Plan area were mapped following CWS standards for determining buffer widths for vegetated corridors, as described in Design and Construction Standards for Sanitary Sewer and Surface Water Management (CWS 2007). However, CWS guidance requires that the determination of whether streams are perennial or intermittent occur during the summer dry season and that two site visits, one month apart, are required to confirm that a stream flows intermittently. Because site visits were conducted in April (i.e., still within the typical wet season rather than the dry season), a determination of perennial or intermittent for streams in the Community Plan area could not be accurately performed. As a result, all Community Plan area streams were assumed to be perennial for the purposes of determining the vegetated corridor. CWS currently does not have jurisdiction in the Community Plan area; however, CWS will have jurisdiction in the future if the Urban Growth Boundary is extended to include this area. Currently adopted Washington County Significant Natural Resource Areas (SNRAs) apply to these areas. CWS vegetated corridors are presumed to cover an equal or greater area than the County SNRAs.

An assessment of the quality of riparian corridors in the Community Plan area was based on Metro Title 13 habitat mapping, which was revised using a combination of site reconnaissance and aerial photo review. Metro's 2005 inventory of regionally significant riparian corridors and wildlife habitat provided the technical basis and starting point for this assessment. Starting with Metro's inventory allowed for the Community Plan natural resources review to incorporate and build on the extensive research, technical analysis, and public review that shaped Metro's regional inventory. DEA, the Community Plan project natural resource consultant, updated the riparian habitat boundaries as a result of changes to the underlying stream and wetland boundary mapping results from the LWI.

Metro classifies riparian habitats into Classes I, II, or III. Class I habitats are the highest quality habitats, and progressively lower quality habitat is provided by Classes II and III. According to the Metro method, these classifications are based on the ability of the riparian habitat to provide the following important ecological functions:

- Microclimate and shade
- Bank function and control of sediments, nutrients, and pollutants
- Streamflow moderation and flood storage
- Organic inputs and food web
- Large wood and channel dynamics
- Wildlife habitat/corridors

The following summarizes the mapping protocols/assumptions used for riparian habitat areas:



- **Riparian Corridor Width.** CWS rules used to determine riparian corridor widths, as follows:
 - 50 ft minimum along perennial flowing streams (all streams presumed perennial for this analysis)
 - 25 ft minimum adjacent to isolated wetlands less than 0.5 acres, 50 ft minimum adjacent to all other wetlands
 - Extension of minimum riparian width where slopes are greater than or equal to 25 percent slope, to a maximum of 200ft
- **Riparian Habitat Quality.** Riparian habitat quality classification within CWS buffers is determined as follows:
 - Forested and shrub habitats rated as Class I
 - More highly disturbed/developed areas (e.g. row crops, roads, residential landscaping, houses) typically rated as Class II.

Upland Habitats

DEA and MIG mapped upland wildlife habitat using Metro Title 13 habitat mapping. As with Metro's inventory, this mapping effort focused on forest vegetation, which provides critical functions for native wildlife in the Willamette Valley, including breeding, foraging, dispersal, and wintering habitat. Grassland and pasture habitats were included only if they were found to contain remnant native grassland or prairie (no such habitats were found outside the Nature Park). Orchards, hedgerows, and small patches of forested habitat were not included unless they were found to contain native oak habitat or to be especially valuable for wildlife migration (primarily due to location). Similar to the mapping for riparian habitats, upland habitat mapping was revised based on site reconnaissance and aerial photo review. Forested areas that had been harvested as of December 13, 2018, which is the date of the area's inclusion in the Metro UGB, were removed from mapping, as were areas where recent residential development had occurred. Evaluating whether areas were forested prior to the area's inclusion in the Metro UGB was determined by analyzing aerial photography captured in summer leaf-on conditions between June 29, 2019, and August 5, 2019. Aerial photography is available through Metro's Regional Land Inventory System (RLIS).

Title 13 upland habitat mapping was based on the following assumptions:

- Large habitat patches are more valuable than small patches.
- Interior habitat is more important to at-risk wildlife species than edge habitat.
- Connectivity and proximity to other habitat patches are important.
- Connectivity and proximity to water are important.
- Unique or at-risk habitats deserve special consideration.

Based on these assumptions, Metro classifies upland habitats into Classes A, B, or C. Class A habitats are the highest quality habitats (those that best meet the above assumptions), and progressively lower quality habitat is provided by Classes B and C (as measured against other habitat patches region-wide).



The following methodology was used to update Title 13 mapping for the Cooper Mountain area:

- **Upland Habitat Locations.** 300' buffers along stream corridors (outside of the stream, wetland, and riparian habitats described above) are included as upland habitat, along with Metro property associated with the Nature Park. Upland habitat outside this buffer that was identified in Title 13 mapping was refined to remove areas no longer forested as of 2019 using aerial photograph review.
- **Upland Habitat Classification.** Areas identified as Upland Habitat were classified as follows for the Cooper Mountain area:
 - All Metro properties were rated as Class A due to their management as protected natural area.
 - Lands within a 300' buffer of a stream or LWI feature was rated as Class A where they contain forested/native habitat, and Class C where they are occupied by agricultural lands, grasslands, or residential development as of 2019 using aerial photograph review, with the exception of Priority Streams discussed below.
 - Priority Streams include McKernan Creek and its tributaries MK4, MK4a, MK4b, MK4ab, and MK5. These streams are of greater habitat value because they provide habitat connection from the Cooper Mountain Nature Park and Winkleman Park areas to lands west of SW Grabhorn that will remain rural for the foreseeable future. Although some upland areas adjacent to Priority Streams lack quality habitat today, they provide important wildlife corridor function, particularly associated with the nature park, that will become increasingly important as the area becomes developed. Land within a 300' buffer of Priority Streams was rated as Class A where they contain forest cover/native habitat and Class B where occupied by agricultural lands, grasslands, or residential development as of 2019 using aerial photograph review.
 - Large patches of forested upland areas outside of this 300' buffer were mapped by Metro as part of the Title 13 adoption process. Where these lands contained forest cover/native habitat as of 2019, they were rated Class B.

Following Metro mapping methods, all areas within 300 feet of streams or wetlands also were mapped, whether they currently contain forested/native habitat (Class A or B), or they are occupied by agricultural lands, grasslands, or residential development (Class C).



Regulatory Context

Streams, Water Bodies, and Wetlands

All mapped drainages, including in-line ponds,¹ are assumed to be regulated by the Corps and U.S. Environmental Protection Agency under Section 404 of the Clean Water Act, and by the DSL under state Removal-Fill law. Mapped wetlands would also be regulated by these agencies; however, the Corps does not take jurisdiction over isolated wetlands, such as some of the small depressional wetlands not connected to streams. Small irrigation or stock water ponds clearly dug from uplands and not connected to jurisdictional waters may be exempt from the jurisdiction of both the DSL and the Corps. Local agencies, including CWS, the City, and the County, also have land use codes that protect streams, water bodies, and wetland resources. In general, regulations give first priority to avoiding these resources. Unavoidable impacts to these resources typically require mitigation.

Riparian Habitats

For the purpose of this natural resources review, riparian area boundaries have been defined in accordance with the methods for determining CWS vegetated corridor widths. As properties are annexed into the City and CWS district, CWS will have jurisdiction, and mapped vegetated corridors in the Community Plan area are assumed to be jurisdictional resources that have development restrictions. CWS requires all degraded vegetated corridors on a parcel to be improved as a condition of issuing development permits regardless of whether the vegetated corridor is impacted. In addition, CWS typically requires mitigation for unavoidable impacts.

CWS vegetated corridors mapped in Community Plan area are for general planning purposes, because as noted above, they currently do not carry CWS development restrictions. However, currently adopted County SNR regulations do apply. County mapping does not specifically show mapping of riparian communities in the Community Plan area; however, it does show a “Water areas, wetlands, and fish and wildlife habitat” SNR mapped along the various stream corridors. This County SNR mapping appears to be limited to the ravine bottoms and does not extend up the slopes as the CWS vegetated corridor mapping does.

In the early 2000s, both the County and the City were partners in the Tualatin Basin Natural Resource Coordinating Committee. Using Metro habitat mapping, this committee developed a voluntary program to protect, conserve, and restore Class I and II Riparian Habitats and Class A Upland Habitats, referred to as Habitat Benefit Areas (HBAs).

¹ An in-line pond is created by blocking flows within the stream channel.



Upland Habitats

The City protects upland habitats through the designation of high-quality areas, typically native forest, as an SNRA. The City's tree and vegetation protections also support protection of forested upland habitats. These protections would apply to the Community Plan area. The City's Resource Overlay will be further developed as a part of the Community Plan project.

As of this writing in December 2023, the County also protects upland habitats through designation of SNRs. However, no SNRs covering upland resources are mapped for the Community Plan area in the County's adopted SNR mapping.

As noted in the discussion of riparian habitats, above, Class A Upland HBAs are currently protected through voluntary means. These voluntary means include habitat-friendly development practices, but they do not necessarily include complete avoidance of impacts to these resources.



Existing Conditions

Drainage Basins and Streams

Roughly 7.83 miles of streams occur within the Community Plan area. The breakdown of the two stream types (perennial versus intermittent) is currently unknown, and because the field work occurred during the spring (not the dry season) and because of limited site access, determination of stream types in the Community Plan area was not conducted. However, many of the streams in the Community Plan area, particularly the upper reaches of these streams, are likely to be intermittent, whereas as the lower reaches likely to flow perennially. Table 1 provides a summary of Community Plan area drainage basins and associated streams. These are also displayed in Figure 2.

Based on a review of ODFW fish distribution maps, Community Plan area streams do not support populations of anadromous fish, such as salmon (*Oncorhynchus* sp.) and steelhead trout (*Oncorhynchus mykiss*). Likewise, there is limited habitat opportunity for native fish. Streams are fairly small (2 to 3 feet wide by 4 to 12 inches deep) and of relatively high gradient, and their upper reaches likely only flow seasonally. Portions of streams have also been rerouted, piped, and/or ditched. The lower reaches of McKernan Creek, within the Community Plan area, are likely to provide the greatest opportunity for native fish, because of their relatively larger channel size and consistent flows.

Although Community Plan area streams may not provide much on-site habitat opportunity for native fish populations, for the reasons described above, they likely do provide other important functions. These include habitat for native amphibians, export of coarse organic matter to downstream fish-bearing waters, water source for native wildlife, and macroinvertebrate habitat.

Those streams with the most intact riparian corridors are likely to be in the best condition. For example, the habitat within McKernan Creek, which primarily flows through a deep, forested ravine, should have greater bank and sediment stability, greater recruitment of woody debris and coarse organic materials, and greater overall habitat complexity than stream channels that have been notably altered and that run through agricultural fields or adjacent to roadways (such as Stream MK-2, which is an altered drainage that has been relocated into a roadside ditch between the edge of a field and the east side of SW Grabhorn Road).

Table 1. Drainage Basins and Streams

Clean Water Services Stream Shed ¹	Clean Water Services Basin ID ²	Water Body ³	Water Body ID ³
Jackson/Lindow	LW	McKernan Creek	MK
	LW	Unnamed tributary to McKernan Creek-1	MK-1
	LW	Unnamed tributary to McKernan Creek-2	MK-2
	LW	Unnamed tributary to	MK-3



Clean Water Services Stream Shed ¹	Clean Water Services Basin ID ²	Water Body ³	Water Body ID ³
		McKernan Creek-3	
	LW	Unnamed tributary to McKernan Creek-4	MK-4
	LW	Unnamed tributary to MK-4ab	MK-4a
	LW	Unnamed tributary to MK-4ab	MK-4b
	LW	Unnamed tributary to MK-4ab	MK-4ab
	LW	Unnamed tributary to McKernan Creek-5	MK-5
	LW	Unnamed tributary to McKernan Creek-6	MK-6
Summer Creek	SM7W4	Summer Creek	SM
	SM7W4	Unnamed tributary to Summer Creek	SM-1
Unnamed Tributary to Tualatin River	SMC	*Unnamed tributary to SMC	SMC
	TR06.5	*Unnamed tributary to Tualatin River	TR-1
	TR06.5	*Unnamed tributary to TR-1	TR-1a
Johnson Creek South	JSBS	No streams mapped in Community Plan area	--
	JSE	No streams mapped in Community Plan area	--
	JSCS	No streams mapped in Community Plan area	--

¹ Data from "CWS_SmallSubBasins" GIS shapefile, "STREAMSHED" data field.

² Data from "CWS_SmallSubBasins" GIS shapefile, "IDALL" data field.

³ Water body IDs assigned by Cooper Mountain Community Plan project.

Wetlands

Table 2 provides a summary of wetlands identified during LWI mapping for the Community Plan project. These are displayed in Figure 2. The Community Plan area contains an estimated 23.6 acres of wetlands and probable wetlands. Table 2 provides a list of individual wetlands, their sizes, and their hydrogeomorphic (HGM) and Cowardin wetland classifications. For the wetland acreage totals provided in Table 2, a wetland size was available only for probable wetlands that have a polygon associated



with them, not for those mapped as a point (entries in the table that are shown as having “0.002” acres.)²

Table 2. LWI Wetland Summary Results for the Community Plan area

Wetland ID ¹	Cowardin ²	HGM	Acres ⁴
PW-MK-1-a	PEM1B	Slope	0.07
PW-MK-4a-a	PEM1B	Depressional	0.002
PW-MK-a	PEM1B	Depressional	0.06
PW-MK-b	PEM1B	Depressional	0.04
PW-MK-c	PSS1B	Slope	0.22
PW-MK-e	PSS1B	Slope	0.48
PW-MK-f	PSS1B	Slope	0.38
PW-MK-g	PSS1B	Slope	0.41
PW-MK-h	PSS1B	Depressional	0.002
PW-SM-a	PEM1B	Slope	0.002
PW-SM-b	PEM1B	Slope	0.13
PW-SM-d	PSS1B	Riverine	0.12
PW-SMC-a	PSS1B	Slope	0.002
PW-TR-1-a	PSS1B	Riverine	0.17
PW-TR-1a-a	PEM1B	Slope	0.002
PW-TR-1a-b	PEM1B	Slope	0.08
PW-TR-1a-c	PEM1B	Slope	0.09
PW-TR-1a-d	PEM1B	Depressional	0.002
W-MK-1	PEM2Bf	Slope	4.01
W-MK-1	PEM1B	Slope	1.10

² The data in Table 2 is based on the draft Local Wetland Inventory submitted to the Department of State Lands in May 2024 and is currently under review as of the date of this report (August 2024).



Wetland ID ¹	Cowardin ²	HGM	Acres ⁴
W-MK-1	PFO1B	Slope	7.26
W-MK-1-1	PEM1B	Slope	1.31
W-MK-4-1	PEM1B	Slope	1.14
W-MK-4-a³	PEM1B	Depressional	0.37
W-MK-4-b³	PSS1B	Depressional	0.002
W-MK-6-1	PSS1B	Slope	1.79
W-MK-6-1	PEM2Bf	Slope	3.21
W-MK-6-1	PFO1B	Slope	1.05
W-SM-c³	PEM1B	Slope	
Probable Wetland Acreage			2.26
Wetland Acreage			21.35
Grand Total			23.62

¹ "W" = wetland, "PW" = probable wetland

² PEM2Bf= Palustrine Emergent, Nonpersistent, Seasonally Saturated, Farmed

PEM1B = Palustrine Emergent, Persistent, Seasonally Saturated

PSS1B= Palustrine Scrub-shrub, Broad-leaved Deciduous, Seasonally Saturated

PFO1B= Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated

³ Feature has been mapped as a wetland instead of a probable wetland despite being less than 0.5 acres. This is because the feature was part of a past wetland delineation that received DSL concurrence.

⁴ Probable wetlands with acreage of 0.002 are rough estimates of very small features that may be wetlands.

Only four wetlands larger than 0.5 acre occur in the Community Plan area. These tend to be relatively long and linear-shaped wetlands that follow along the McKernan Creek riparian corridors. These wetlands contain a patchwork of palustrine emergent wetlands that are dominated by non-native grasses (e.g., meadow foxtail [*Alopecurus pratensis*]) or are in agricultural production, as well as forested and scrub-shrub wetlands typically dominated by native plant species. One relatively large palustrine emergent wetland area occurs within the Nature Park and contains a relatively diverse native plant community as a result of active management.

Most wetlands were considered to be slope wetlands, because the dominant source of hydrology is likely hillside seepage or shallow subsurface flow. However, several small probable wetlands appear to be fed primarily by precipitation and a small amount of runoff, and had no outlet—these are classified as depressional. Two probable wetlands are fed primarily by flows from small streams rather than mainly groundwater and are classified as riverine.

Table 3 summarizes the functional assessment results for wetlands that are 0.5 acre or more in size. Wetland W-MK-1 meets locally significant wetland criteria (which means at least one of the four functions evaluated rated highly). Wetlands W-MK-1-1, W-MK-4-1,



and W-MK-6-1 do not meet locally significant wetland criteria, primarily because they do not provide fish habitat support and are fed by groundwater rather than river flows because of their positions that are much higher in the watershed than that of Wetland W-MK-1. However, it should be noted that the forested portions of both Wetland W-MK-6-1 and Wetland W-MK-1 meet the criteria for wetlands of Special Interest for Protection, because they are mapped Goal 5 resources.

Table 3. Wetland Functional Assessment Results

Wetland ID	Wildlife Habitat	Fish Habitat	Water Quality	Hydrologic Control	Meets Locally Significant Criteria
W-MK-1	Diverse	Intact	Degraded	Intact	Yes
W-MK-1-1	Degraded	Degraded	Degraded	Degraded	No
W-MK-4-1	Degraded	Degraded	Degraded	Degraded	No
W-MK-6-1	Degraded	Not applicable	Not present	Not present	No

Wetland plant communities typically consist of the forested, scrub-shrub, and emergent classes according to the USFWS classification system (Cowardin 1979). Emergent wet prairie wetland is found within the Nature Park, with portions having been planted to establish a scrub-shrub community. Agricultural wetlands are also present and occur in areas of annual crop production. Some agricultural fields may use tile drains to reduce saturated soil conditions, which results in either a reduction of wetland acreage or the complete removal of wetland conditions relative to historical conditions. The following sections provide additional details about the wetland plant communities.

Forested and Scrub-Shrub Wetland Habitat

The forested wetland habitat is typically dominated by Oregon ash (*Fraxinus latifolia*), red-osier dogwood (*Cornus stolonifera*), Pacific willow (*Salix lucida*), slough sedge (*Carex obnupta*), and reed canarygrass (*Phalaris arundinacea*). The same species, with the exception of Oregon ash, were found within the scrub-shrub wetland habitat.

Emergent Wetland Habitat

Emergent wetland habitats tend to be dominated by non-native pasture grasses. Dominant species typically included meadow foxtail (*Alopecurus pratensis*), tall fescue (*Schedonorus phoenix*), Kentucky bluegrass (*Poa pratensis*), and reed canarygrass.

Riparian Habitats

Aerial photo review reveals that the characteristics of the riparian areas in the Community Plan area correspond to their topographic settings. The steeper, forested riparian areas within the Community Plan area generally appear to have good vegetative cover, whereas riparian areas in flatter portions of the Community Plan area tend to have had greater disturbance to natural vegetation. This pattern is visible in



Figures 3 and 4. The steep ravine side slopes appear to have protected the forest within the riparian zones along these stream reaches. The Nature Park also provides important protection of riparian corridors in the Community Plan area. Table 4 provides a breakdown of riparian habitat classes in the Community Plan area.

Table 4. Title 13 Riparian Habitats in the Community Plan area

Title 13 Riparian Habitats (acres)	
Class I	Class II
135.14	47.68

Plant communities found within designated riparian areas in the Community Plan area include both true riparian plant communities (i.e., those typical of moist soil conditions) as well as those typically considered to be upland communities (i.e., relatively dry conditions). A description of the typical riparian plant community that is adapted to moist soil is provided below. Those plant communities that are adapted to relatively dry conditions and that may occur in the riparian or upland locations in the Community Plan area are described in the Upland Habitat section of this report, below.

Riparian Forest (Class I)

This habitat is dominated by a fairly open canopy of red alder (*Alnus rubra*), big leaf maple (*Acer macrophyllum*), black cottonwood (*Populus trichocarpa*), Douglas-fir, and western red cedar (*Thuja plicata*). The understory includes sword fern (*Polystichum munitum*), snowberry (*Symphoricarpos albus*), Indian plum (*Oemleria cerasiformis*), and tall Oregon grape (*Mahonia nervosa*), among others.

Upland Habitats

Much of the high quality upland habitat in the Community Plan area occurs within the Nature Park; however, there is considerable coverage of high quality habitat in private ownership as well. Table 5 provides a breakdown of upland habitat acreage by habitat class within the Community Plan area.

In addition, although not classified as Class A habitat, the numerous small groves of large conifer trees scattered among the residential units in the Community Plan area do provide valuable habitat, particularly for bird species.

Table 5. Title 13 Upland Habitats in the Community Plan area

Title 13 Upland Habitats (acres)		
Class A	Class B	Class C
243.18	152.38	149.15

Typical wildlife that may occur within upland areas includes numerous mammal species such as raccoon (*Procyon lotor*), black-tailed deer (*Odocoileus hemionus columbianus*), bobcat (*Lynx rufus fasciatus*), coyote (*Canis latrans*), Mazama pocket gopher (*Thomomys mazama*), and little brown bat (*Myotis lucifugus*), among others.



Birds heard during the site visits, including during the South Cooper Mountain Concept Plan site visits in 2013, include numerous songbirds, such as red-breasted nuthatch (*Sitta canadensis*), black-capped chickadee (*Poecile atricapillus*), Bewick's wren (*Thryomanes bewickii*), orange-crowned warbler (*Leiothlypis celata*), yellow-breasted chat (*Icteria virens*), and many others, and may include great horned owl (*Bubo virginianus*), sharp-shinned (*Accipiter striatus*) or Cooper's hawk (*Accipiter cooperii*), and hairy and downy woodpeckers (*Dryobates villosus* and *pubescens*), among others.

The following sections describe habitats outside of the Nature Park. Habitats within the Nature Park are described in detail in the Washington County Master Plan & Management Recommendations (2005). Where these habitats fall within the calculated CWS vegetated corridor, they are classified as riparian communities.

Mixed Forest (Upland Habitat Class A or Riparian Habitat Class I)

In the Community Plan area, forested areas are generally mid-seral to late seral (mid-seral refers to medium-sized trees generally 15 to 19 inches in diameter, and late seral refers to larger-sized trees generally larger than 20 inches in diameter). Overstory vegetation consists primarily of Douglas-fir and red alder, with smaller amounts of Oregon ash and Oregon white oak (*Quercus garryana*). Shrub cover ranges from sparse to dense and is dominated by snowberry, Indian plum, cluster rose (*Rosa pisocarpa*), beaked hazelnut (*Corylus cornuta*), Pacific madrone (*Arbutus menziesii*), poison oak (*Toxicodendron diversilobum*), and oceanspray (*Holodiscus discolorh*). Ground cover consists primarily of sword fern, native trailing blackberry (*Rubus ursinus*), salal (*Gaultheria shallon*), tall Oregon grape, and youth on age (*Tolmeia menziesii*). In densely forested areas, there tends to be minimal invasion of exotic species because of the closed forest canopy, although Himalayan blackberry (*Rubus armeniacus*) is present in places. However, where this habitat mixes with rural and semisuburban residences and roads, understory diversity has been reduced.

Oak Forest (Upland Habitat Class A or Riparian Habitat Class I)

Very little oak forest was present in areas with access, other than the Nature Park. Species in oak forest are similar to those described for mixed forest, but with greater cover by Oregon white oak, Pacific madrone, and poison oak. A few remnant individual oak trees or small oak groves are still present beyond the park boundaries. However, the relatively large grove of oak trees mapped by the Oakquest database north and east of SW Horse Tale Drive is no longer present (see Figure 3).

Young Forest and Mixed Shrub Areas (Upland Habitat Class B or C and Riparian Habitat Class II)

This habitat occurs in relatively unmaintained areas that were clear cut and have not been replanted with trees. Non-native grasses such as tall fescue and Kentucky bluegrass are being succeeded by Himalayan blackberry, trailing blackberry, and young trees. These habitat types were typically assigned to Upland Habitat Class C. Due to the relatively low functions. However, where these habitat types occurred along the main McKernan Creek corridor and McKernan Creek tributary confluence area, these habitat types were assigned to the Upland Habitat Class B category to acknowledge the important wildlife corridor functions they provide.



Agricultural Areas (Upland Habitat Class B or C)

These agricultural areas include fields planted with non-native grasses such as tall fescue and Kentucky bluegrass for pasture and grazing, as well as grape orchards with non-native grasses beneath. These habitat types were typically assigned to Upland Habitat Class C, due to the relatively low functions. However, where these habitat types occurred along the main McKernan Creek corridor and McKernan Creek tributary confluence area, these habitat types were assigned to the Upland Habitat Class B category to acknowledge the important wildlife corridor functions they provide.

Wildlife Corridors

Wildlife habitat areas in Cooper Mountain have been mapped.³ These include creeks, wetlands, and many forested areas. Discussions with natural resource stakeholders and community members during the Cooper Mountain Community Plan process identified several key strategies to protect and enhance habitat areas, which may be implemented by the City, private landowners and developers, and other agencies such as Metro and the Tualatin Hills Park & Recreation District (THPRD). These include the following:

- Strategies to connect significant habitats:
 - Focus conservation efforts to create a large habitat area that includes McKernan Creek, its tributaries, and Cooper Mountain Nature Park.
 - Protect and enhance wildlife corridors connecting “the creeks” to areas to the southwest, north, and east.
- Conservation Strategies:
 - Clustering new housing away from habitat areas.
 - Incentives for property owners and developers to protect habitat areas.
 - Wildlife crossings as part of the transportation network.
 - Linking habitat areas as part of neighborhood design.
 - Trails and public areas to provide access and habitat conservation.
 - Updating natural resource inventories to increase the accuracy of habitat maps.

In the Cooper Mountain area, all jurisdictional waterways, wetlands, and associated buffers will be protected to a degree via federal, state, and local land use regulations. These protected drainageways will provide the primary opportunity for wildlife movement. The wildlife corridors proposed within this section highlight key areas for wildlife movement that would benefit from specific acknowledgment, potential increased protection and/or planning and design guidance.

³ Mapping was based on a preliminary assessment of potential wildlife corridors data conducted in April 2022 and updated based on feedback during a Natural Resource Listening Session for the Cooper Mountain Community Plan conducted on April 12, 2022.



Corridor 1(a - d): This corridor indicates a connection from rural areas west of Grabhorn Road to the Cooper Mountain Nature Park. As the Cooper Mountain area develops, this corridor will become increasingly important to allow large mammals (e.g., deer, coyote) to move between the park and nearby rural areas. This corridor follows McKernan Creek (Corridor 1a) and its tributaries (Corridors 1b -d) and should allow for large mammal passage. This should benefit the local wildlife as well as reduce the risk for vehicle/wildlife interactions.

Corridor 2 (a - c): This corridor connects Corridor 1 to the Summer Creek drainage and associated habitats. Corridor 2a follows McKernan Creek to the east and connects with public lands owned/managed by Metro and Tualatin Hills Park and Recreation District (Winkelman Park area). Corridor 2b continues eastward from Winkelman Park to Summer Creek, crossing SW 175th Avenue. Based on input from the Natural Resource Listening Session it was determined that planned road improvements for SW 175th would likely be unable to provide large mammal passage; however, upland culverts for small animal passage (e.g., raccoons, possums) could still potentially be of benefit. Corridor 2c provides passage from the lower reaches of Summer Creek, located outside of the Cooper Mountain Community Plan, to upper reaches within the Plan area.

Corridor 3 (a - b): This corridor connects the Summer Creek drainage to an unnamed tributary of the Tualatin River that runs through South Cooper Mountain. The future realignment of SW 175th (at High Hill Lane) may provide opportunity for large mammal passage, though it is uncertain how much benefit this would provide due to the expected development in the Cooper Mountain area. However, small animals would still benefit from the creation of a habitat corridor connection.

Corridor 4: This corridor would connect upland habitats at Cooper Mountain Nature Park to upland habitats west of SW Grabhorn Road. Future realignment of Grabhorn Road design efforts in this general area should be reviewed to evaluate whether large mammal passage would be both feasible and beneficial to wildlife and vehicular safety.



Determination of Significance

Statewide Planning Goal 5 requires a determination of significance in order to enact land use regulations to protect an inventoried resource. The resources in this Cooper Mountain Natural Resources Report are determined to be significant or not significant, as follows:

- **Wetlands.** The Cooper Mountain Community Plan area's wetlands are documented in the Local Wetland Inventory (LWI), which follows the Department of State Lands requirements. Wetlands inventoried in the LWI are presumed to be subject to regulation by Clean Water Services and the Department of State Lands (contingent upon further site-specific delineations by property owners) and are therefore determined to be significant for the purposes of City's Goal 5 regulations.
- **Riparian Habitat Areas.** Riparian Habitat Areas (Class I and Class II in the Cooper Mountain area) are acknowledged Goal 5 resources and protected through the Tualatin Basin Plan, implemented by Clean Water Services. They provide valuable ecological services for the local flora and fauna and have environmentally beneficial impacts much further downstream. Therefore, Riparian Class I and Class II Habitat Areas are a significant regional resource.
- **Upland Habitat Areas.** In the Cooper Mountain area, upland habitat class A and Class B represent land with substantial ecological value today or potentially substantial ecological value in the future if protected through land use regulations. These areas were identified by Metro as regionally significant resources when occurring on lands added to the Urban Growth Boundary after December 28, 2005. Upland Class C in the Cooper Mountain area is significantly degraded through development or agricultural use, and not along priority drainages. Therefore, Upland Habitat Class A and Class B resources in the Cooper Mountain Community Plan area are determined to be significant.
- **Wildlife Corridors.** As described in the "Wildlife Corridors" section of this inventory report, the wildlife corridors in the Cooper Mountain area are generally coincident with riparian and upland habitat and will be subject to land use regulation and environmental protection through federal, state, and local law. The limited number of habitat connections that lie outside of protected Riparian/Upland Habitat areas are not specific to an individual location but represent focus areas for further study. For this reason, those wildlife corridors outside of inventoried riparian/upland habitat areas are not determined to be significant resources for the purposes of Statewide Planning Goal 5.



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Figure 1. Cooper Mountain Community Plan Area

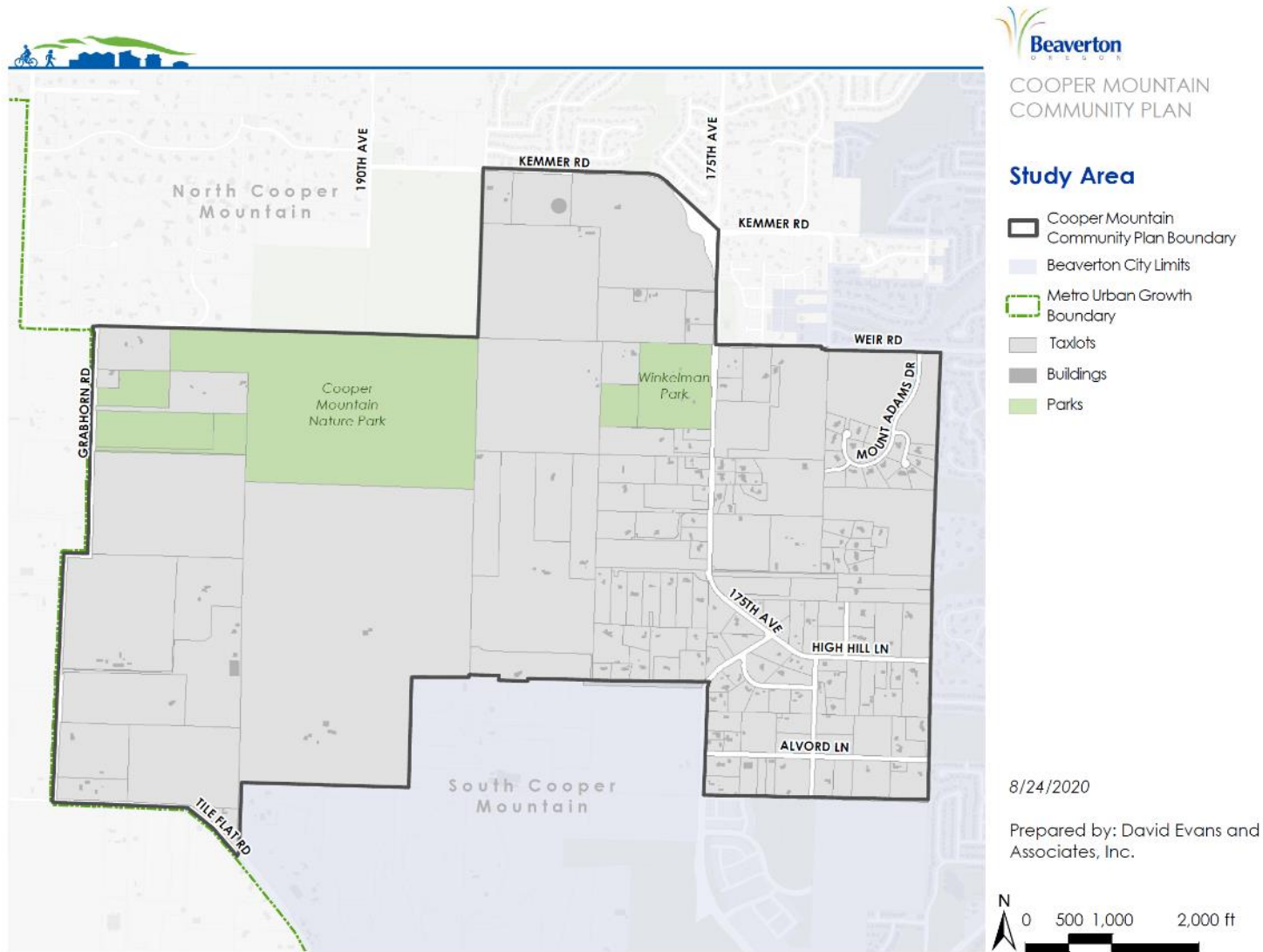


Figure 2. 2019 Aerial Imagery and Cooper Mountain Taxlots

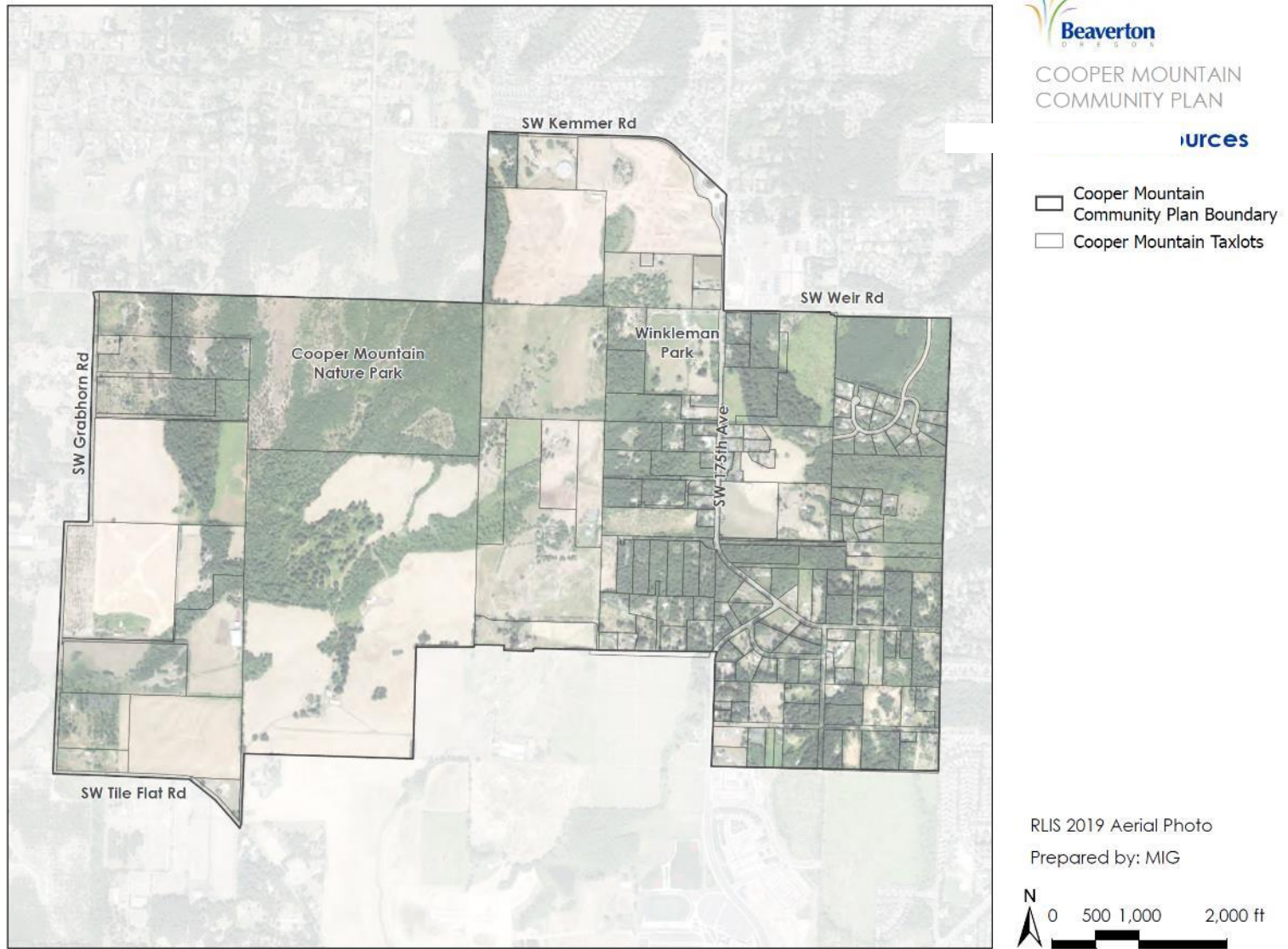


Figure 3. Drainage Basins, Streams, and Wetlands

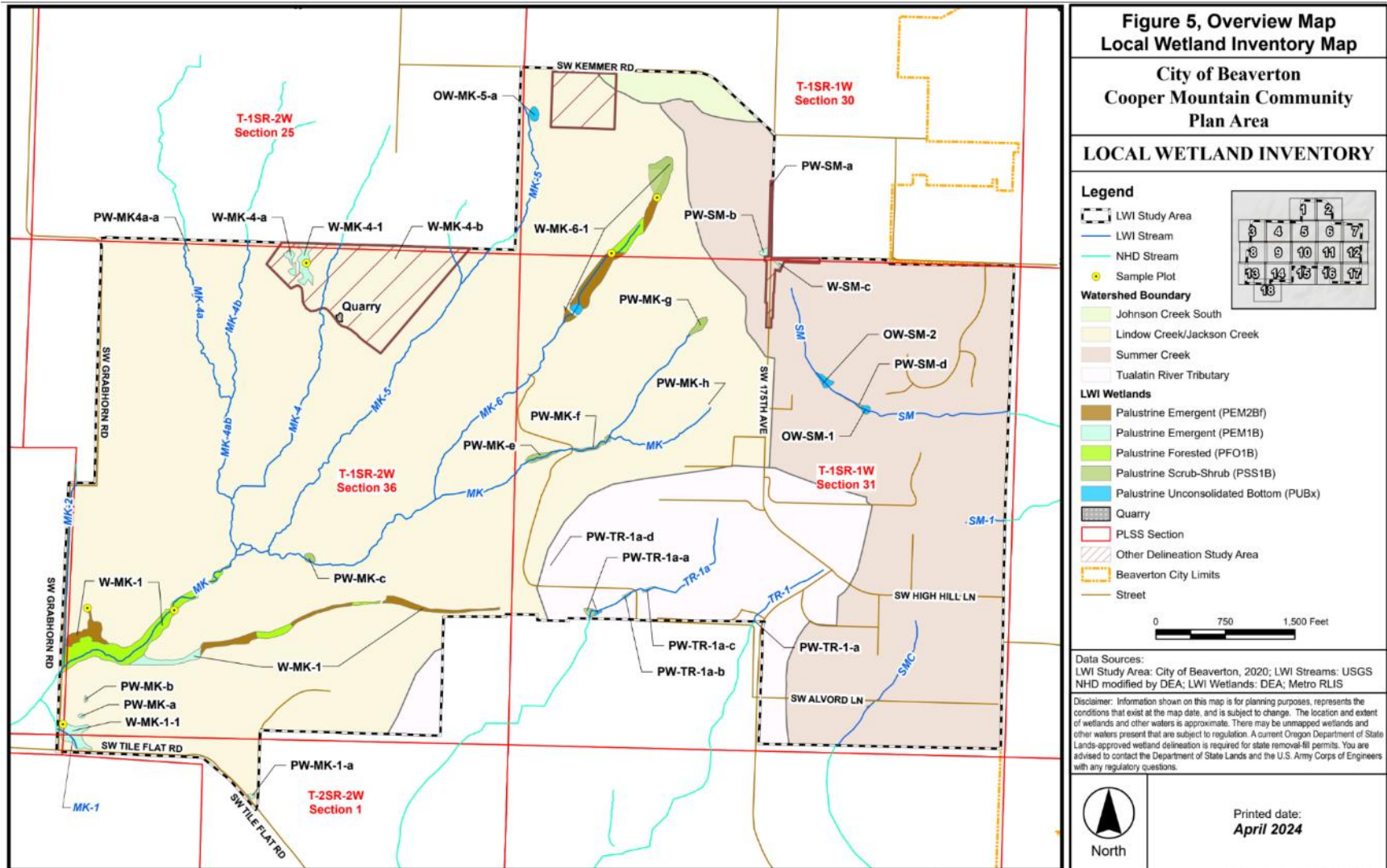


Figure 4. Tree Canopy/Height

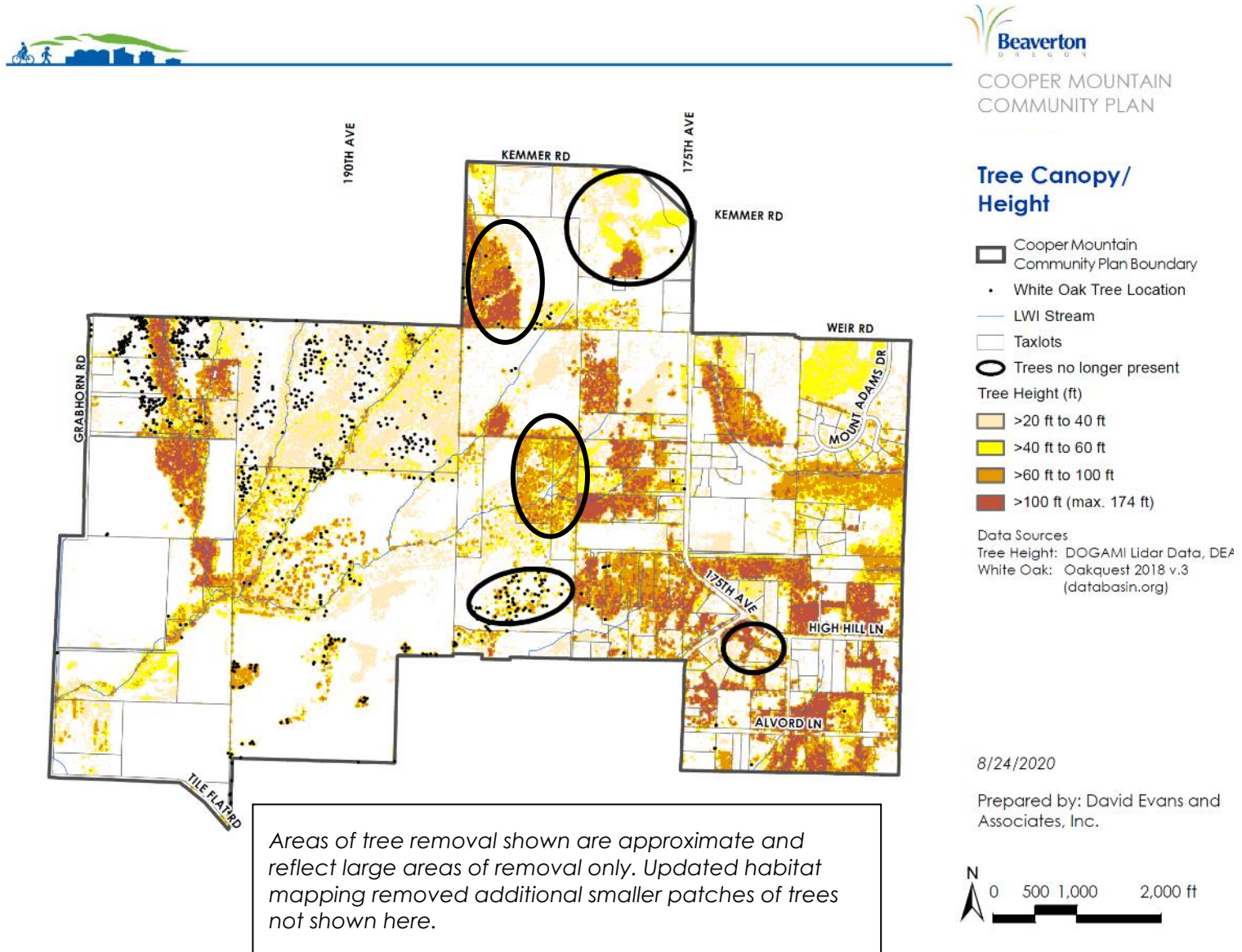


Figure 5. Streams, Local Wetland Inventory (LWI) Features, and Stream Buffers

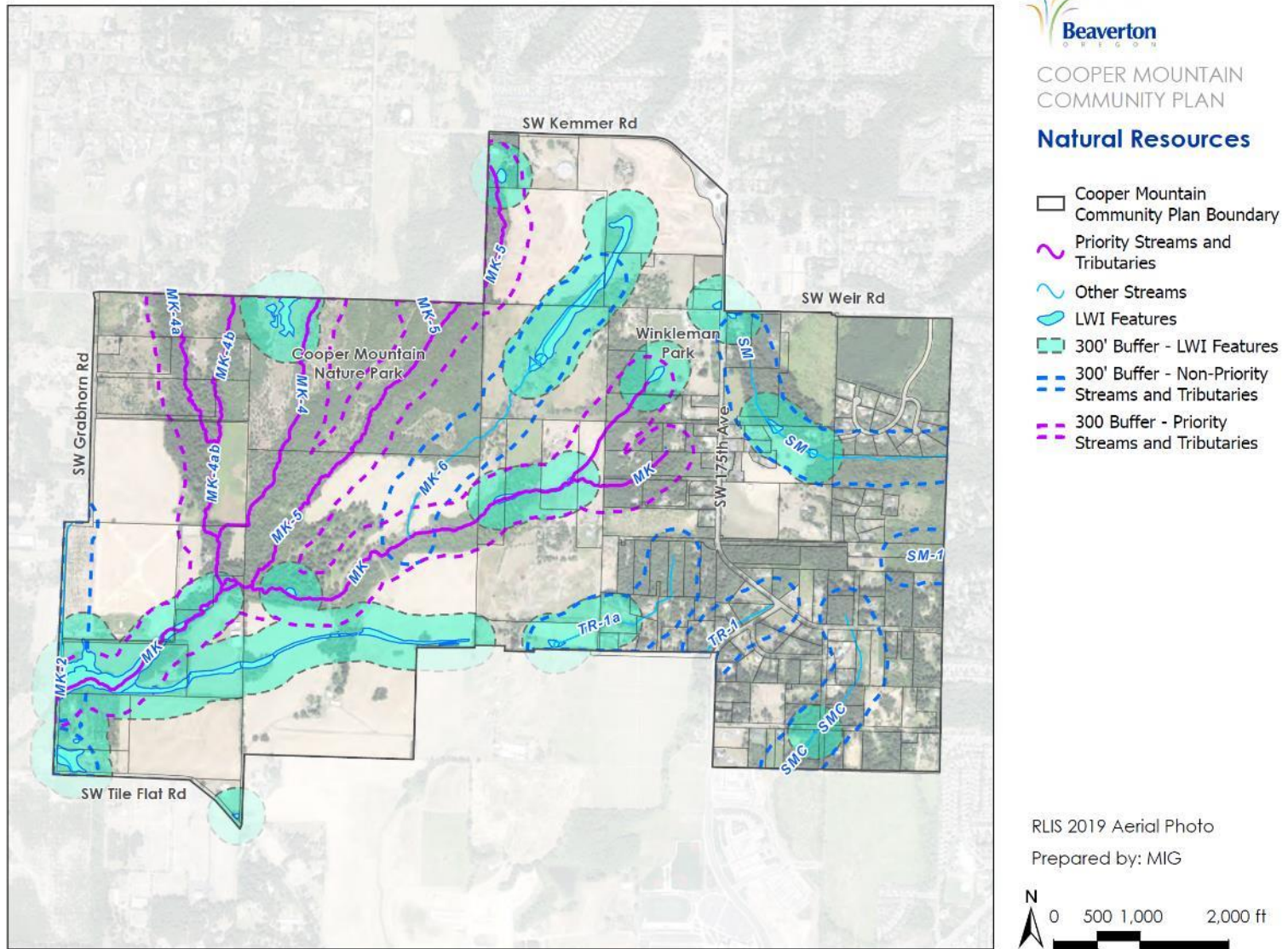


Figure 6. Riparian and Upland Habitats

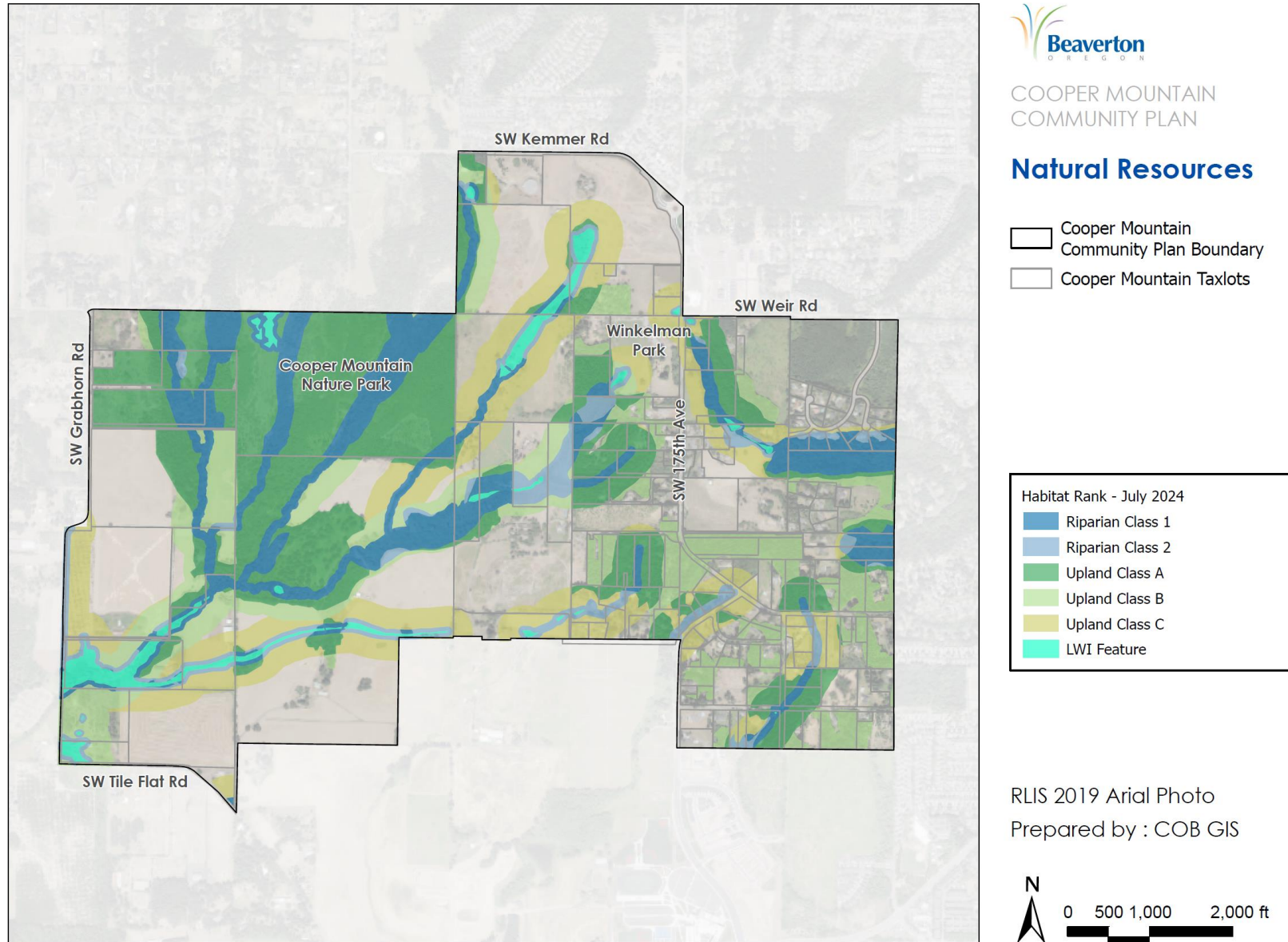


Figure 7. Cooper Mountain Natural Resources Inventory Buffers compared to 2005 Metro Title 13 Inventory

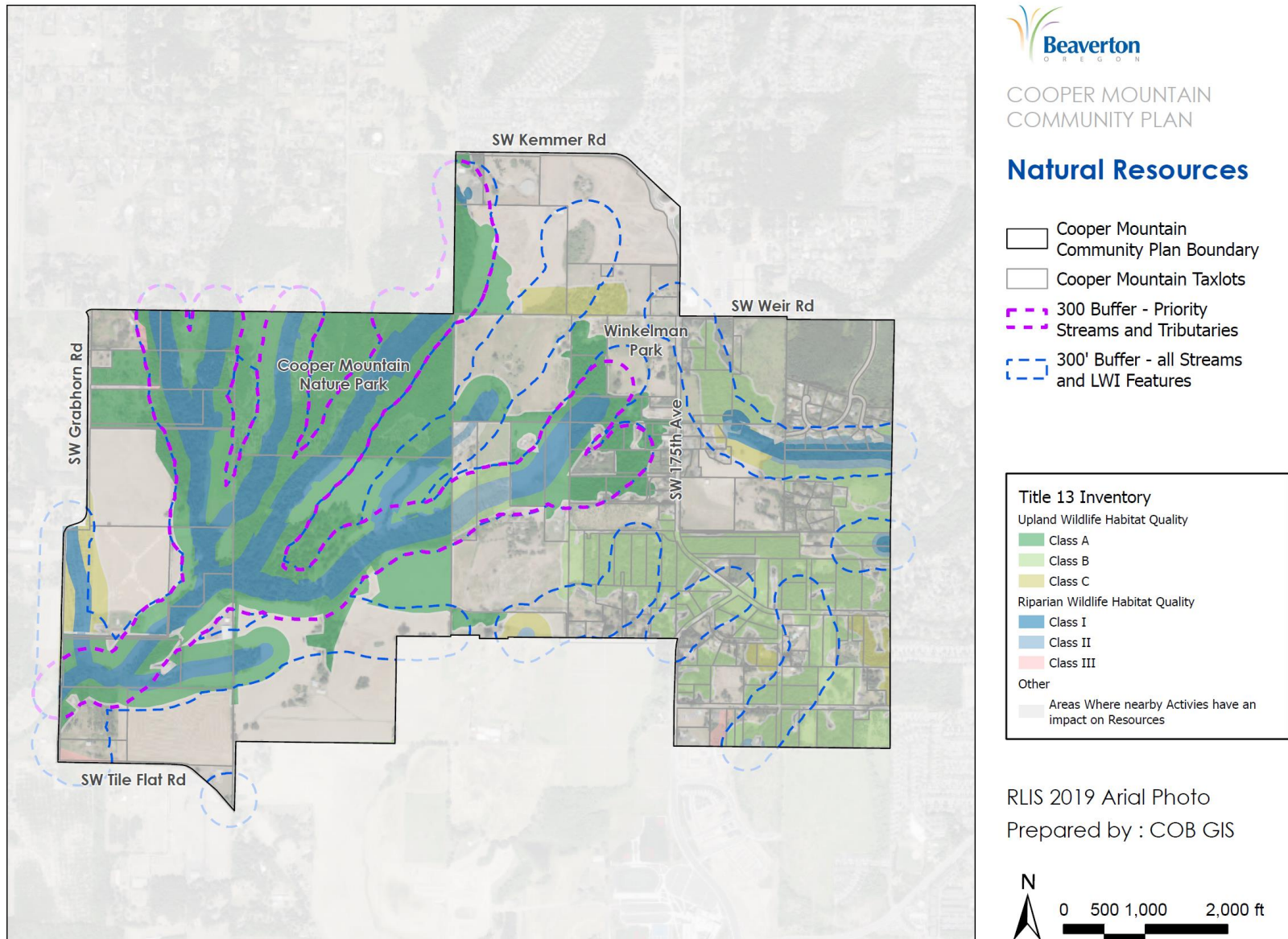
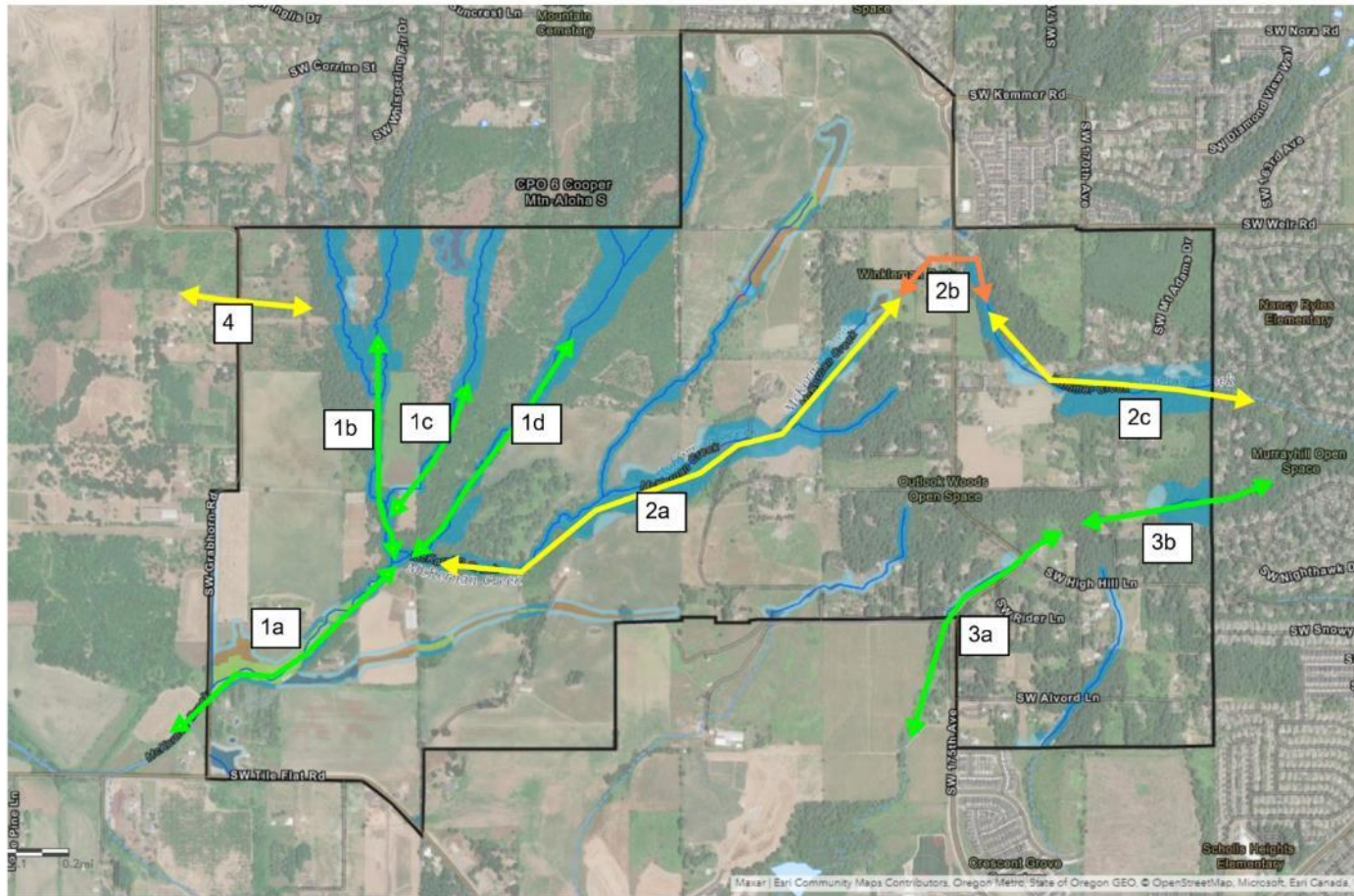


Figure 8. Wildlife Corridor Assessment



Cooper Mountain Proposed Wildlife Corridors (5/4/2022): See page 2 for additional information.

Green = Primary wildlife corridor. Large mammal passage (e.g., deer, coyote) is highly recommended

Yellow = Primary wildlife corridor. Large mammal passage feasibility/benefit unknown, but further review may be warranted. Smaller animals would still benefit.

Orange = Secondary wildlife corridor. May not be suitable and/or of high benefit for large mammals, but may still be beneficial to smaller animals.



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MEMORANDUM

TO: Project File

FROM: Alisa Maxwell, Capital Planning Project Manager

DATE: September 27, 2024

SUBJECT: Addendum to Cooper Mountain Community Plan, Natural Resources Report

On September 19, 2024, the Oregon Department of State Lands (DSL) approved the Cooper Mountain Community Plan, Local Wetlands Inventory (LWI). The approved LWI includes minor changes from the April 2024 LWI that was used to develop this Natural Resources Report.

The final approved LWI includes updates to naming and classification of wetland features. Specifically, wetland features previously classified as “open water” in the April 2024 LWI report have been classified as “probable wetland” and are included in LWI Wetland Summary Results Tables. As such, the following information in the Cooper Mountain Community Plan, Natural Resources Report (Final, August 2024) superseded by the following:

- Page iii – The Community Plan area contains an estimated 24.415 acres of wetlands and probable wetlands.
- Page 11 - The Community Plan area contains an estimated 24.415 acres of wetlands and probable wetlands.
- Table 2 is superseded by the table below.
- Figure 3 is superseded by the figure below from the approved LWI, dated September 2024.

The locations and sizes of wetland features used in the Natural Resources Inventory are unchanged. The open water features were previously included in the mapping of wetland features for the purposes of identifying riparian and upland habitat areas. The conclusions and recommendations throughout the Natural Resources Report are unchanged. The map of Riparian and Upland Habitat Areas (Figure 6) is unchanged and continues to serve as the Goal 5 inventory for the Cooper Mountain Community Plan area.

Table 1. LWI Wetland Summary Results for the Community Plan area

Wetland ID¹	Cowardin²	HGM	Acres⁴
PW-MK-1-a	PEM1B	Slope	0.07
PW-MK-4a-a	PEM1B	Depressional	0.002
PW-MK-a	PEM1B	Depressional	0.06
PW-MK-5-a	PUBx	Depressional	0.30
PW-MK-b	PEM1B	Depressional	0.04
PW-MK-c	PSS1B	Slope	0.22
PW-MK-e	PSS1B	Slope	0.48
PW-MK-f	PSS1B	Slope	0.38
PW-MK-g	PSS1B	Slope	0.41
PW-MK-h	PSS1B	Depressional	0.002
PW-SM-a	PEM1B	Slope	0.002
PW-SM-b	PEM1B	Slope	0.13
PW-SM-d	PSS1B	Riverine	0.12
PW-SM-d	PUBx	Depressional	0.17
PW-SM-e	PUBx	Depressional	0.33
PW-SMC-a	PSS1B	Slope	0.002
PW-TR-1-a	PSS1B	Riverine	0.17
PW-TR-1a-a	PEM1B	Slope	0.002
PW-TR-1a-b	PEM1B	Slope	0.08
PW-TR-1a-c	PEM1B	Slope	0.09
PW-TR-1a-d	PEM1B	Depressional	0.002
W-MK-1	PEM2Bf	Slope	4.01
W-MK-1	PEM1B	Slope	1.10
W-MK-1	PFO1B	Slope	7.26
W-MK-1-1	PEM1B	Slope	1.31
W-MK-4-1	PEM1B	Slope	1.14
³W-MK-4-a	PEM1B	Depressional	0.37
³W-MK-4-b	PSS1B	Depressional	0.003

Wetland ID ¹	Cowardin ²	HGM	Acres ⁴
W-MK-6-1	PSS1B	Slope	1.79
W-MK-6-1	PEM2Bf	Slope	3.21
W-MK-6-1	PFO1B	Slope	1.05
W-SM-c	PEM1B	Slope	0.11
Probable Wetland Acreage			3.062
Wetland Acreage			21.353
Grand Total			24.415

¹ "W" = wetland, "PW" = probable wetland

² PEM2Bf= Palustrine Emergent, Nonpersistent, Seasonally Saturated, Farmed

PEM1B = Palustrine Emergent, Persistent, Seasonally Saturated

PSS1B= Palustrine Scrub-shrub, Broad-leaved Deciduous, Seasonally Saturated

PFO1B= Palustrine Forested, Broad-leaved Deciduous, Seasonally Saturated

PUBx= Palustrine Unconsolidated Bottom, Excavated

³ Feature has been mapped as a wetland instead of a probable wetland despite being less than 0.5 acres. This is because the feature was part of a past wetland delineation that received DSL concurrence.

⁴ Probable wetlands with acreage of 0.002 are rough estimates of very small features that may be wetlands.

